

# “All With Theories To Sell”

Carleton S. Coon, Bentley Glass, Marston Bates, and the struggle by life scientists in the United States to construct a social mission after World War II

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## **Abstract**

This analysis, focused on the work of anthropologist Carleton S. Coon, geneticist Bentley Glass, and naturalist Marston Bates, provides insight into the constructed nature of scientific ideas and the limits of science-based claims to authority. Keying into Cold War cultural anxieties, life scientists in the United States between 1945 and 1963 tried to compete with the “hard” sciences for prestige and funding by proposing solutions to perceived social ills based on the claim that they understood the evolutionary process and could apply their knowledge to guide human biological and cultural development. Positioning themselves as critical to the mitigation of political and environmental problems associated with rapid human population growth, biologists and anthropologists modified Progressive era ideologies to address changing attitudes toward race and class without altering the underlying premise that human culture, particularly “industrial civilization,” was an anomalous evolutionary product that threatened the natural order, dictating scientific management and control.

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## Introduction

The concept of race, routinely used by life scientists during the first third of the twentieth century to categorize human populations and rank them against a scale of evolutionary progress, became radioactive in a flash at all but the same instant as the sands of Los Alamos.<sup>1</sup> For some, like anthropologist Ashley Montagu, a student of Franz Boas and author in 1942 of *Mankind's Most Dangerous Myth*, the sudden delegitimization of racist discourse at the end of World War II represented a great triumph.<sup>2</sup> But for others – their careers, reputations, and sense of self dependant on the idea that their science's social purpose was at least in part to understand and help manage “racial development”<sup>3</sup> – this shift was extremely unsettling as it undermined arguments upon which they based their claims to cultural authority. As life scientists struggled to compensate, chemists and physicists were demonstrating the power of the reductive sciences to control nature, a power then synonymous with progress in the public's mind.<sup>4</sup>

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<sup>1</sup> Though several prominent life scientists, including Julian Huxley and Hermann Muller, began to shift their rhetoric concerning the meaning, and even reality, of race beginning in the mid-1930s, as Elazar Barkan writes in *The Retreat of Scientific Racism*, “contrary to public memory which relies greatly on [Ruth] Benedict's testimony, the American scientific community – even if moving since late 1938 towards anti-racism had not reached this position before the outbreak of the war.” Barkan, 1992, p. 334. Barkan adds, “the uniqueness of Nazism underscored the immanent wickedness of racism, crystallizing the dichotomy between respectable bigotry within middle class circles and the evilness of the enemy.” Barkan, 1992, 345. Barkan's chronology tracks precisely with the treatment of the concept of race in American biology textbooks. The first strong refutation of race as a meaningful biological category appeared in biology textbooks in 1942. See Smith, 1942, pp. 107-114. The last use of a hierarchical chart categorizing the races from least to most advanced disappeared from textbooks after 1946, See Moon, 1946, p. 544.

<sup>2</sup> Montagu's *Mankind's Most Dangerous Myth* (1942) has been called “the earliest significant challenge to the race concept in American physical anthropology.” Littlefield, 1982, p. 641. However, critique of the race concept within cultural anthropology, at least as it related to innate intelligence, is commonly dated to the publication in 1911 of Franz Boas' *The Mind of Primitive Man*.

<sup>3</sup> The term “racial development” served as an acceptable euphemism for the word evolution in academic articles and biology textbooks from the 1930s through at least 1960. See Moon, 1933; Moon, Otto, and Towle, 1960.

<sup>4</sup> The atomic bomb represented the end of scientific innocence. As Robert Oppenheimer, quoting the Bhagavad Gita, so famously intoned after the Trinity test, “I am become death, the destroyer of worlds.” But the bomb also represented a triumph, proof that scientific reductionism, atomization and not integration, was the path to deeper scientific knowledge, if not to truth. After World War II, public

This confluence of events sent anthropologists and biologists into a scramble as they attempted both to distance themselves from disreputable ideologies and define and promote a social mission grand enough to allow them to compete with the “hard” sciences for status and dollars.<sup>5</sup> The struggle by life scientists in the United States to construct an institutional mission relevant to a Cold War world from the rubble of their Progressive era conceits opens a window on the social history and constructed nature of scientific ideas and the limits to science-based claims to authority, and reveals how a scientist’s training, religious and philosophical predispositions, political milieu, personality, and gender influence not only the priority of research, but also the scientist’s faith in the priority of his or her worldview relative to the greater culture.

Scholarship long ago undermined a romantic and essentialist view of science as the objective pursuit of absolute truths. But the debate over the extent to which science is “constructed” continues to wage. Briefly, “weak” social constructivists, though they concede that science is value-laden, suggest that if a field of study is open to all races, classes, and gender identities, the end scientific product can describe a universal or at least value-neutral truth. “Strong” social constructivists, to quote Helen Longino, question both the “autonomy” and “the epistemological integrity” of science.<sup>6</sup> Eric Engles, referencing the work of Bruno Latour, Steven Shapin, and Simon Schaffer, states that “constructivists make a convincing case that scientists do not reveal truth, they

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awareness and public support of the “hard” sciences of physics and chemistry grew steadily. Research dollars flowed into these sciences as the Cold War bloomed. See Rudolph, 2002.

<sup>5</sup> See Rudolph, 2002. Barkan, 1992. Naturalist Douglas Futuyma claims the academic pecking order *within* biology is still driven by a “physics envy.” He writes, “[P]erhaps reflecting the need to portray ourselves as physicalist and reductionist – as scientific – our field evolved its own dominance hierarchy, with mathematical theory at the top (it most resembles physics, after all), followed perhaps by experimental population genetics (now molecular population genetics), with ecological and evolutionary field studies situated well below.” Futuyma, 1998, p. 4.

<sup>6</sup> Longino, 1990, pp. 9-10.

*accomplish it.*”<sup>7</sup> Philosopher of science Michael Ruse, who has devoted volumes to the task of untangling the arguments here, in the end offers little more than the observation that science is both “special” in its methods and “not special” because it is inevitably a cultural product.<sup>8</sup> Without committing to a full exploration of the sociology of scientific knowledge, an examination of the rhetorical struggles that occurred within the life sciences between the years 1945 and 1963 does offer an opportunity to probe two interesting questions posed by Longino concerning the independence of scientific knowledge: First, “to what extent do or should scientific theories shape moral and social values?” And second, “to what extent do social and moral values shape scientific theories?”<sup>9</sup>

This study focuses on three individuals who, though certainly not representative of *all* life scientists, represent three distinct intellectual options open to anthropologists and biologists seeking to defend the continued utility of their respective disciplines’ Progressive era assumptions in the face of changing social attitudes toward race and class after World War II. Broadly speaking, the scientist could attempt to defend the continued use of race as a valid category for analysis, attempt to create new, more value-neutral classifications while continuing to promote the utility of categorization, or use the controversy surrounding the validity and use of race to promote alternative conceptualizations. Carleton Coon, author of *The Races of Europe* (1939) and *The Origin of Races* (1962), is an example of the first choice. Coon campaigned against the idea that race and social class were mere cultural constructions while positioning physical anthropology as a tool that could reintroduce a motivating primitive ethic into our

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<sup>7</sup> Engles, 1991, p. 27

<sup>8</sup> Ruse, 1999, p. 255.

<sup>9</sup> Longino, 1990, pp. 4-5.

“domesticated” modern society. Geneticist Bentley Glass, who as a member of the Baltimore City Board of School Commissioners lobbied for immediate desegregation after the 1954 *Brown v. Board of Education* decision, represents the second option. Glass attempted to update biology’s relationship to race while maintaining the position that cultures evolved progressively and that future progress would require significant scientific management. Naturalist Marston Bates chose the third path. Bates attempted to take advantage of the unsettled intellectual landscape in the life sciences to plant a secular version of William Paley’s natural theology;<sup>10</sup> of science not as a tool for controlling nature or guiding evolution, but as a method for appreciating the creation.

Using the standard questions and techniques of rhetorical analysis, this study will examine the published writings of anthropologist Carleton S. Coon, geneticist Bentley Glass, and naturalist Marston Bates. Each man was well known within his field and wrote prolifically during the period in question for scientific, general academic, and popular audiences, with their works in the latter two categories emphasized here. Though this essay focuses on the years 1945 to 1963, texts by these authors from the 1930s to as late as 1990 were reviewed. In addition, a wide range of additional primary sources were examined, from academic conference collections to individual academic articles to popular science works from the 1940s, 50s, and 60s.

Along with a broad review of secondary sources, the author builds on his own published study which analyzed high school and college level biology textbooks in use in the United States from 1907 through the early 1960s, including those developed by the

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<sup>10</sup> William Paley, to quote Phillip Appleman, “set out to prove that the study of natural history inevitably led to belief in a divine Creator.” Appleman, 2001, p. 37. In *Darwin’s Ghost*, Steve Jones warns, “Too often, enthusiasts for evolution do the same as they hail every quirk among plant and animals as evidence for selection’s power.” Jones, 1999, 87.

Biological Sciences Curriculum Study (BSCS), a group chaired by Glass and for which Bates served as one of three key authors.<sup>11</sup> Earlier studies of biology textbooks suggested that those published prior to the BSCS “versions” were not reflective of the their era’s best science and were effectively censored by publishers in order to accommodate regional objections to the teaching of evolution, human reproduction, and other sensitive but important biological topics.<sup>12</sup> However, it is asserted here that these texts should be viewed not as censored works disconnected from the scientific mainstream, but as fair reflections of the social attitudes of life scientists during the period in question. High school biology textbooks published between 1911 and 1963 are used to provide commentary and support an historical chronology charting shifting attitudes toward the concept of race, the meaning of evolution, as well as the values and sense of institutional and social purpose held by life scientists.

### **Combating an Identity Crisis**

At the close of World War II, Philip Pauly writes, biologists “struggled for an identity independent of medical scientists and for a recognized place at the federal table.”<sup>13</sup> At the same time, anthropologists struggled to erase the stereotype that they represented the tail end of a “class of pleasant gentlemen who, in the eighteenth century, knew something about almost everything but not much about anything.”<sup>14</sup> Biologists and anthropologists asserted that the life sciences, far from being irrelevant or anachronistic, were young and vibrant disciplines, critical to the integration of scientific knowledge, and

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<sup>11</sup> Ladouceur, 2008.

<sup>12</sup> Grabiner and Miller, 1974, pp. 832-837; Skoog, 1979, pp. 621-640; Moore, 2001, p. 790. See also Miller, 1966.

<sup>13</sup> Pauly, 2000, p. 239.

<sup>14</sup> Linton, 1945, p. 4.

as integrative sciences, that they held the key to future cultural progress in technology-dependant societies.

Though the post-war period was generally an era of economic growth in the United States, this growth, along with the rapid technological, political, and cultural changes that were both its consequence and fuel, generated significant social anxiety. Beginning in the late 1940s, a series of popular books, including Fairfield Osborn's *Our Plundered Planet*, William Vogt's *Road to Survival*, and Harrison Brown's *The Challenge of Man's Future* amplified these anxieties by fanning fears of a "population explosion" and an impending worldwide shortage of basic industrial and agricultural resources.<sup>15</sup> Anthropologists and biologists, both consciously and unconsciously, modified their premises and arguments in relation to these fears. But scientists working from the late 1940s through the early 1960s, scientists schooled in Progressive era evolutionary ideologies, faced an impossible dilemma when attempting to reconcile two mutually incompatible views of Western industrial culture: One, that Western industrial culture represented the apotheosis of a natural process of evolutionary progress that had led to the development of more complex and advanced forms of life, and two, that it represented a dangerous break from natural selection, and as such, threatened further biological and cultural progress.<sup>16</sup> Attempts to resolve this dilemma while avoiding one or the other of its horns drove many otherwise cautious scientists to construct grand but

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<sup>15</sup> The term "the population bomb," made famous by Paul R. Ehrlich when he used it as the title of his 1968 bestseller, originated as the title to a pamphlet issued by Hugh Moore, an American businessman and head of the Dixie Cup Corporation, who, as Lara V. Marks writes in *Sexual Chemistry*, saw in over-population "the greatest fuel for communism and threat to world peace." Marks, 2001. p. 28.

<sup>16</sup> In *Debating Darwin*, John C. Greene offers an alternative "positivist dilemma:" "If science and the scientific method are defined narrowly so as to exclude value judgments and all nonlogico-experimental statements ... it then becomes impossible to say why anything, science included, is important or valuable ... But if, on the contrary, science is declared competent to discover human duty and destiny ... one is soon confronted with the conflicting claims of Huxlian science, Freudian science, Marxian science, Comtean science, and a host of other scientisms." Greene, 1999, p. 17. referencing Greene, 1981, p. 188.

weakly evidenced theories and promote them as consensus science. Ultimately, all attempts ended in frustration. It is easy to read in the popular work of anthropologists and biologists during the period 1945 to 1963 a growing sense of despair as the contradictions inherent in their ideologies resisted resolution. Though the ideas proposed by life scientists to solve perceived social issues gained a popular audience in the early 1950s, their immediate impact on public policy was relatively negligible. However, as the decade wore on, Cold War anxieties, fueled by anti-Communist paranoia and the visible threat to both pride and place represented by the Soviet Union's successful launch of *Sputnik*, opened the floodgates of funding and public support. Life scientists were able to insert themselves forcefully into the national debate and have a significant impact on the direction of domestic and international public policies.

During the heady years of the Progressive era, circa 1910, many life scientists imagined themselves on the cultural vanguard and as playing a vital role in the promotion and management of a host of civic and social improvement programs and movements: sanitation, health education, conservation, and notably, the science of “breeding better humans” known as eugenics. Daniel J. Kevles, author of *In the Name of Eugenics*, a foundational work on the history of the topic, states that during the teens and 20s, “the science of human biological improvement provided an avenue to public standing and usefulness” for biologists.<sup>17</sup> However, during the 1930s, as the Depression undercut biologized notions of class, as Nazi policies accelerated the delegitimization of racist

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<sup>17</sup> Kevles, 1985, p. 69. Also see Dikotter, 1998, pp. 467-478. Kevles 1985 book is still considered a key reference on the topic of eugenics though subsequent scholarship has challenged Kevles' too easy division between “mainline” and “reform” eugenics. This study asserts that there is a greater continuity between the early eugenics movement in the United States and Great Britain and what Kevles labels the “new eugenics” of Hermann J. Muller and others, a movement that expressed itself forcefully toward the end of the 1950s. Kevles, 1985, pp. 253-268.

discourse, and as it became apparent that environmental improvements could deliver many of the same results promised by genetic management, eugenic fever began to wane. Perhaps more importantly to career scientists, eugenics, for all of its early “promise,” was proving itself a dry well for research. As Phillip Pauly writes, “Biologists left eugenics less because of refutation or revulsion than from a dearth of innovation.”<sup>18</sup> Further, “mainline” eugenics, to use Daniel Kevles nomenclature, became increasingly identified with racists and nativists. In an effort to salvage eugenics and its claim to cultural authority, a group of prominent life scientists, including Julian Huxley and Hermann J. Muller, joined with Frederick Osborn and C. P. Blacker to articulate a “reform” eugenics that adjusted the movement’s ideology to better match changing social attitudes toward race and class.<sup>19</sup> Reform eugenicists still held to the belief that long-term conscious management of human reproduction was necessary and desirable, but suggested that the measures mainliners used to judge the relative superiority or inferiority of a particular “germ plasm” – measures such as race, economic status, and intelligence – were too crude, too environmentally dependant, and too difficult to test objectively to be useful. According to the reformers, the economic inequalities generated by industrialism and capitalism made it impossible to separate good inheritance from bad environment. Before scientists could begin the hard work of identifying superior germ plasm, human societies, reformers argued, would have to be “leveled up.”<sup>20</sup>

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<sup>18</sup> Pauly, 2000, p. 216; Kevles, 1985, p. 170.

<sup>19</sup> See Kevles, 1986. Huxley, 1936, pp. 11-31; Muller, 1939, p. 521.

<sup>20</sup> In her popular high school biology textbook *Exploring Biology*, Ella Thea Smith, who was a significant early critic of the concept of race and popular enthusiasm for eugenics, would nonetheless state, as late as the 1954 edition of her text, “Geneticists today recognize the value of a program to improve mankind through genetics. They also recognize the many problems to be solved before any such program will be effective.” Smith, 1954, 440.

Reform eugenics was a clever attempt to sidestep race and class issues; to allow for the support of liberal economic policies then in ascent while retaining the claims to authority and purpose that were so clear to life scientists just a couple of decades before. But, perhaps because eugenic concerns no longer seemed so urgent, the program generated little of the enthusiasm mainline eugenics had commanded in the late teens and early 20s. By the early 1940s, eugenics, in both its mainline and reform flavors was, to use Steven Seldon's word, "moribund."<sup>21</sup> At the same time, the very platform from which life scientists launched their claims of purpose – their special knowledge and command of the theory of evolution – was being challenged from within. The hodgepodge of orthogenic, mutational, and environmental evolutionary theories that life scientists had been free to pick from to create whatever convenient assemblages they needed to support pet cultural theories was giving way to a more mathematically robust set of ideas known variously as the synthetic theory, the neo-Darwinian synthesis, or simply, the modern synthesis.

Though Julian Huxley coined the term "the modern synthesis" in 1942, the synthesis – an update to Darwin's theory of natural selection from a genetic and populational point of view – dates to 1937 and the publication of Theodosius Dobzhansky's book *Genetics and the Origin of Species*. Consolidation of the synthesis, which united the disciplines of botany, zoology, paleontology, genetics, and ecology, is associated with a conference held in 1947 at Princeton and the subsequent publication of its proceedings edited by Ernst Mayr and George Gaylord Simpson. Subsequent to the

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<sup>21</sup> See Seldon, 1999, p. xv.

publication in 1950 of G. Ledyard Stebbins *Variation and Evolution in Plants*, the theory was considered complete.<sup>22</sup>

General acceptance of the modern synthesis would require anthropologists and biologists to demonstrate their scientific bona fides before proposing evolution-based social theories, or at least pay lip service to its genetic and populational viewpoint before advancing speculative theories of progress. However, general acceptance among life scientists of the modern synthesis, with its dramatic refutation of the evolutionary ideas that had been in circulation during the previous six decades and used so freely in support of eugenics, immigration restrictions, and other now questionable social policies, did little to humble life scientists. If anything acceptance of the modern synthesis fueled the promotion of biology-based social policies that were even more dramatic and far reaching than any imagined by an earlier generation of life scientists.

The consolidation of the modern synthesis allowed scientists to claim that the process of evolution was well understood and may soon even come under the control of scientists. Interestingly and importantly, evolution under the rubric of the modern synthesis was promoted both as a completely purposeless and blind process and as a creative and almost purposeful force. The angle emphasized by a particular author depended greatly, if not entirely, on the rhetorical need. Some scientists, particularly naturalists, framed evolution as a process that, though blind, led to beautifully coordinated and stable systems. Others, like Julian Huxley, continued to see in the history

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<sup>22</sup> Huxley's priority regarding the modern synthesis is a matter of some significant dispute. Though he coined the term, his book is more a catalog of other scientists' work wrapped by an introduction and closing chapter that attempted to position the synthesis as a derivation of his own eugenic-era inspired progressive evolutionism. Huxley is not generally credited as one of the synthesis' key architects. See Huxley, 1964b; Smocovitis, 1996.

of evolution evidence of progress toward “more mind.”<sup>23</sup> However, the ostensibly optimistic view of the process of evolution by both naturalists and progressionists almost always came accompanied by dark warnings. Harrison Brown’s 1954 *The Challenge to Man’s Future* and William Vogt’s 1948 *Road to Survival* both provide emblematic examples.

Brown framed evolution as a blind and brutal process that would eventually wipe away the species it had blindly created if not consciously resisted. Western industrial society, and the benefits it offered were, according to Brown, not the product of industry and personal ambition, but accidental accomplishments, unplanned chance events that, if allowed to run their natural course, would mutate to poison the environment in which they had evolved, leading to inevitable cultural collapse. The solution, according to Brown, was to transcend nature by mastering and managing the accidental process of evolution. Though industrial civilization required no expert control and no real planning to come into existence, it now required exactly those services, and required them immediately if it was to avoid catastrophic destabilization leading to a “reversion to agrarian existence.”<sup>24</sup> Similarly, Vogt wrote, “The modern world has gone down twice – and only extraordinary measures can keep it from going down again.”<sup>25</sup> Progress, these authors suggested, would sow the seeds of its own destruction if not controlled and managed by experts who understood the process of evolution.

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<sup>23</sup> Colin Divall writes of the persistence of Huxley’s ideas relative to the development of the modern synthesis from the mid-1930s to 1950: “How coherent was Julian Huxley’s most ambitious intellectual project, ‘scientific’ or (as he later called it) ‘evolutionary’ humanism? ... The basic ideas were essentially completed in his earliest collection of writings, *Essays of a Biologist*, published in 1923. They still formed the core of his last major collection, *Essays of a Humanist*, in 1964.” Waters and Van Helden, 1992, 31.

<sup>24</sup> Brown, 1954, p. 264.

<sup>25</sup> Vogt, 1948, p. 282.

Regardless of his or her personal orientation toward the theory of evolution, most life scientists from the late 1940s through the early 1960s agreed on one thing, the world was in trouble. Too many people were being born. Too few were dying. Though the birth rate in Europe was below replacement level, and the rate in the United States was trending down, Third World birth rates were skyrocketing and unlikely to come under control, it was widely believed, without outside assistance. From the later 1940s through the early 1970s at least, the exponential growth of the total human population – the “population explosion” or “population bomb” – was presented without debate as a proximate threat to the survival of industrial civilization and perhaps to life on the planet. This premise greatly colored the judgment and the public work of life scientists during this period. The prospect of a planet full of people that would require ever more complex and managed social relationships in order keep those people from killing one another combined with a powerful nostalgia for simpler times to set the conditions for scientists to offer utopian dreams, convinced they could bring a new and better world into existence through the application of logic and the scientific method.

John C. Greene, historian of ideas and author of *The Death of Adam*, believes the embrace of progress served as a necessary substitute for the “discarded traditional religious and philosophical ways of giving meaning to science and human existence.” He writes, “No one can live without hope, and modern man’s hope is in progress.”<sup>26</sup> Greene notes the tendency of popular evolutionary biologists to resort to “teleological, vitalistic, and anthropomorphic figures of speech,” and suggests this reflects “underlying tensions in biological thought.”<sup>27</sup> Despite the fact that, “all attempts to define biological progress

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<sup>26</sup> Ibid., p. 12.

<sup>27</sup> Greene, 1999, p. 14.

... collapsed into mere survival or likelihood of survival,” Greene writes, “life scientists were (and are) unable to speak of evolution without resorting to metaphors of progress.”

### **The Post-War Transition**

In the early 1940s, Ralph Linton, a noted anthropologist who had studied under Earnest Hooton at Harvard and later succeeded Franz Boaz at Columbia, suggested that science, particularly his science, anthropology, could uncover the rules governing “the processes involved in the growth, flowering and collapse of civilizations.”<sup>28</sup>

Anthropology, Linton believed, could join with sociology, economics, and history to “arrive at certain generalizations, ‘laws’ in common parlance, which will make it possible to predict the course of events and ultimately to control it.”<sup>29</sup> In 1945, the Columbia University Press issued a volume of essays titled *The Science of Man in the Modern World Crisis*. Edited by Linton, *The Science of Man* is a record of a discipline in transition, and in trouble, at the close of World War II. Race was clearly on the minds of the volume’s editor and its contributors. Any lingering reliance on racist proofs to support methods and purpose was an albatross that had to be quickly cut from the anthropology’s neck.

The lead article, written by Linton and titled “The Scope and Aims of Anthropology,” provides an overview of the discipline’s history framed to offer rhetorical cover for the articles that would follow. For example, in describing “somatology,” a sub-

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<sup>28</sup> Linton, 1945, p. 9.

<sup>29</sup> *Ibid.*, p. 11. The absurdity of Linton’s claims for near-term discovery and possible broad application of the “laws” anthropology might discover and describe is made apparent in his description of the practical application of physical anthropology during the war years as contributing to the design “of better airplane cockpits” and in its probable use in “the post-war development of new furniture designs.” Linton, 1945, p. 16.

discipline of anthropology traditionally concerned with measurement and development of the human body, Linton wrote of its practitioners, “Until very recent times, most of their attention has been concentrated upon the classification of the various human varieties – that is, races – and their possible relationships.”<sup>30</sup> But, as Linton noted, “In recent years attention has been turned to less obvious but intrinsically more important differences such as blood types, differences in musculature, and so on.”<sup>31</sup> Still, even as Linton attempted to distance somatology and his discipline in general from an association with crude racial gauges, the lingering tendency to describe populations typologically, rather than statistically and variably, led him to list categories for measurement that carried strong racial associations: “differences in growth rates, time of sexual maturation, metabolic rates, and disease immunities.”<sup>32</sup> Anthropology’s move away from a racial focus would require many steps, and the three essays that followed Linton’s would highlight the split between typological thinking and populational thinking dictated by the modern synthesis.

The second article in *The Science of Man*, an essay titled “Society and Biological Man” by H. L. Shapiro, is noteworthy not for the new ground it covered but for the effort its author made to defend the middle ground between anthropology’s traditional view of race as a meaningful concept and Montagu’s “radical” view that race was a “myth.” Shapiro, who like Linton had studied under Hooton and taught at Columbia, defended a biologized view of culture, and suggested that the scientific management of culture, based on an understanding of its biological nature, was more critical than ever. Shapiro wrote, “As society becomes more complex and ramified (sic) the danger increases of

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<sup>30</sup> Ibid., p. 6.

<sup>31</sup> Ibid.

<sup>32</sup> Ibid.

fatally divorcing society from its biological origins.”<sup>33</sup> Shapiro stated that those in the life sciences, “shocked by the monstrous abuse, for political ends, of a highly tentative scheme of human classification,” were overreacting, and in their efforts to “deny the existence of race altogether,” were threatening to “throw the baby out with the bath water.”<sup>34</sup>

While Linton and Shapiro attempted to negotiate a settlement that would allow anthropologists to accommodate changing attitudes toward race and class while retaining their right to use race for professional analysis, in *The Science of Man's* third article, “The Concept of Race,” Wilton Marion Krogman introduced what would prove to be a more enduring alternative. Krogman, an admirer of Franz Boas and professor at the University of Chicago, and who as such was outside the orbit of both Hooton and Harvard, introduced his fellow anthropologists to the modern synthesis and several of its key architects, including biologists Mayr and Dobzhansky. The potential usefulness of the synthesis for anthropologists seeking to define and defend an alternate mission relative to race is evident in Krogman’s article. He wrote, “If we accept that there *are* stocks and races, we accept also that such a classification is not a rigorous one, not even a

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<sup>33</sup> Ibid., p. 19.

<sup>34</sup> Ibid., p. 21. Life scientists, when challenged to defend their interest in and need to study race and racial differences consistently defended their position as being the logical middle ground between extremes. Earnest Hooton wrote in 1931: “So much nonsense has been talked about ‘race’ that many pessimists are inclined to regard it as little more than a slogan of mass snobbery bellowed by propagandists or piped by anemic pleaders for an aristocratic regime long obsolete and vanished ... In taking this view I think that these students are guilty of emptying the baby out with the bath water.” Hooton, 1931, 501. Shapiro wrote in 1945: “Opposed to them, in part or in whole, are those students who deny the existence of race altogether ... Here may be found those who quite legitimately have been profoundly shocked by the monstrous abuse, for political ends, of a highly tentative scheme of human classification ... They would like to throw the baby out with the bath water.” Linton, 1945, 21. Muller, only slightly more subtly, wrote in 1959: “We need not set forth in detail here the mistakes made by many of those who in the past have taken this problem seriously: their great overestimation of the speed of the genetic processes in question, their even greater underestimation of the efficacy of cultural influences in the shaping of men’s minds, and the notorious support that some of them gave to the vicious doctrines of racism. Along with the highly essential repudiation of these mistakes, there has been a tendency to go to the opposite extreme of throwing out also the hard core that is really valid.” Tax 1977, p. 434.

clearly circumscribed one, and certainly *not* a hierarchical one.”<sup>35</sup> Positioning the anthropologist in a new role, not as an apologist for the way things are, but as an advocate for the way things could be, Krogman stated his views with dramatic force. He wrote, “The physical anthropologist, we repeat, can and does place an evaluation upon his fellow men: biological equality!”<sup>36</sup> Otto Klineberg in *The Science of Man’s* fourth essay reinforced Krogman’s point. He wrote:

[A]ny hope we have of making our own democracy broader and more efficient rests not so much on an improvement in our ‘stock’ as on making available to the whole community the educational and economic opportunities which pave the way for fuller and richer living.<sup>37</sup>

These four articles, Linton, Shapiro, Krogman, and Klineberg’s, taken together describe a path life scientists were beginning to cut at end of World War II to move their disciplines away from the use of race as a measure of cultural progress, and by extension away from a strongly biologized view of human culture, and toward the view of anthropology and biology as having utility in informing culture, not explaining it or claiming a special capacity to understand and manage it. But midway into *The Science of Man*, Linton placed an article that marked a different, more reactionary, and ultimately more exploitable path, one that proved more attractive to life scientists seeking to engage the public in a more dramatic Cold War era social mission.

The turn of the century fear, expressed not only by eugenicists, but also famously by Theodore Roosevelt, that Anglo-Saxons were committing “race suicide” by not reproducing themselves at replacement levels had receded greatly by the mid-1940s.<sup>38</sup> By that decade’s end, as Kevles writes, “The postwar population explosion had mocked

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<sup>35</sup> Linton, 1945, p. 61.

<sup>36</sup> Linton, 1945, p. 61.

<sup>37</sup> Ibid., p. 77.

<sup>38</sup> See Jacobson, 2000.

prewar demographic predictions ... [as] the middle and upper middle classes were contributing mightily to the baby boom.”<sup>39</sup> But almost without pause, this boom turned from providing a balm for social anxieties to being their primary motor. In a completely interconnected post-colonial world, the “problem of human reproduction” would shift quickly and dramatically from a domestic issue concerned primarily with too few of the “right” people being born to an international issue focused on too many of the “wrong” people being born.

In *The Science of Man*, Karl Sax, an American geneticist, offered a pessimistic take on the state of the world’s affairs. In an article titled “Population Problems,” which appeared midway through the volume, Sax repackaged key eugenic arguments in the flimsiest of “race-neutral” containers, and globalized the concern. Paying tribute to the need to distance his claims from an association with current events, Sax wrote, “There is ... no biological justification for the myth of racial superiority.”<sup>40</sup> He added, “The major races of man do differ in morphological characteristics and psychological traits ... but in neither case can we be sure that there are inherent differences in intelligence.”<sup>41</sup> But these statements were an obligatory tribute, the barest air cover necessary to permit Sax to promote a clearly eugenic agenda sans that “third rail” word.

Sax built his claim on the belief, broadly expressed by biologists since the turn of the twentieth century, that natural selection was no longer able to operate as the manager of human evolutionary development. Sax felt deeply that Western industrial societies had to compensate. In order to do so, they would have to abandon traditional religious philosophies, particularly as they related to support for the poor, in favor of scientific

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<sup>39</sup> Kevles, 1985, p. 258.

<sup>40</sup> Ibid., p. 275.

<sup>41</sup> Ibid., p. 276.

controls. Ignoring disconfirming evidence, Sax began his argument with a standard eugenic assertion: “[M]orons continue to be produced. Under modern conditions of differential birth rates and a more humanitarian civilization their production is increasing.”<sup>42</sup> Though still wedded to the Spencerian concept of survival of the fittest, Sax suggested that survival no longer necessarily conferred a positive meaning. He wrote, “Survival value in the modern world is not a valid measure for human values.”<sup>43</sup> Though conceding environmental improvements had led to improvements in general health and well being in the industrial world, Sax believed that “modern means of transportation” were merely “suppressing the effects of deleterious genes.”<sup>44</sup> Modern culture, Sax asserted, remained “dysgenic.” According to Sax, “Those who are economically most able to have children do not have enough and those who are poor have more than they can provide for.”<sup>45</sup> Sax listed “the Negro,” “the French in Canada,” “Italians” and “Mexicans” as proof that innate genetic capabilities varied between human populations, and he singled out Catholics for special rebuke. Sax wrote, “Certain religious leaders are inclined to associate poverty and ignorance with spiritual development.”<sup>46</sup> The Church, according to Sax, was guilty of “glorifying ignorance and poverty,”<sup>47</sup> a mortal sin for a scientist who believed “Man’s spiritual development [was best] developed by a greater knowledge and control of nature.”<sup>48</sup>

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<sup>42</sup> Ibid., p. 269.

<sup>43</sup> Ibid., p. 270.

<sup>44</sup> Ibid., p. 276.

<sup>45</sup> Ibid., p. 281.

<sup>46</sup> Ibid., p. 278.

<sup>47</sup> Ibid., p. 272.

<sup>48</sup> Ibid., p. 279.

Sax became heavily involved with population issues in the 1950s.<sup>49</sup> In 1951 he was selected to deliver the Lowell Lectures in Boston, where he spoke on the topic. In 1955 he authored the book *Standing Room Only, The World's Exploding Population*, which, along with Fairfield Osborn's 1948 *Our Plundered Planet*, are the only two sources cited in Paul Ehrlich's *The Population Bomb* that predate Rachel Carson's *Silent Spring*. Sax was involved with both the Population Association of America and the Planned Parenthood League. In addition to many national and international honors and honorary degrees, Sax lectured nationally between 1957 and 1962 on the topic of "world population problems" on behalf of the American Institute of Biological Sciences.<sup>50</sup>

Sax's assessment of the state of the world was strangely at odds with the article it immediately followed in *The Science of Man*. In "State of World Resources" by Howard A Meyerhoff, the author offered a generally rosy picture of the coming post-war world, making the claim that industrialized nations would have access to all the raw materials necessary for further development. A similar assessment was offered by Kirtley F. Mather in his 1944 book, *Enough and to Spare*. Mather's belief that "most of the human race is now living in a Malthusian equilibrium, with high birth rates nearly balanced by high death rates,"<sup>51</sup> represented a significant challenge to Sax's worldview and claims to authority. Sensing the challenge, Sax countered Mather's view forcefully. As it turned out, more forcefully than was necessary. As colonial control receded across the world, the optimistic view of Meyerhoff and Mather quickly gave way. A popular 1943 biology

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<sup>49</sup> In her article "Prescribing the Pill: Politics, Culture, and the Sexual Revolution in America's Heartland," Beth Bailey notes that the "sexual revolution" that followed the introduction of the birth control pill was largely an unintended consequence. She writes, "The birth control pill originally became available to unmarried women on a large scale due to federal initiatives, which were motivated by concern about the twinned issues of population control and poverty. Bailey, 1997, p. 845.

<sup>50</sup> National Academy of Sciences, 1987, pp. 373-398.

<sup>51</sup> Sax, 1945, p. 325. The Mather/Sax debate circa 1945 is remarkably similar rhetorically to the Simon/Ehrlich debate circa 1990. See Mather, 1944; Mather, 1945; Sax, 1945; Sax, 1945b; Ahlburg, 1998.

textbook hints at the anxieties that would bloom in the years after World War II. First, it stated optimistically, “With rapid expansion in the use of airplanes man will soon obtain a three-dimensional freedom ... and future generations will measure distances in hours rather than miles.”<sup>52</sup> But then in a shift of tone, the book noted that this freedom would come at a cost. The “intelligent people of the world,” the authors claimed, would have to confront those “slow to accept the benefits of science,” and if necessary force them to adopt new medical, agricultural, and environmental technologies before the diseases and political dissatisfactions of the world became domestic issues. The post-war realization that the world was intimately interconnected manifested itself in the United States in a call to arms, a get them (or more precisely, *fix them*) before they get us attitude. By the later 1940s, hope that a global fix was possible waned, helped along by the apocalyptic warnings of Sax, Vogt, Brown, and to a lesser extent, Fairfield Osborn. These authors suggested that the signs of the end were obvious, and little could be done to forestall the inevitable. Exponential population growth would lead to the exhaustion of most critical resources by the turn of the twenty first century. But long before, competition over dwindling supplies would lead to another, even more brutal, world war.

Fears over the loss of the political control combined powerfully in the 1950s with Sax’s eugenic-inspired brand of neo-Malthusianism to set the foundational assumptions public scientists would be expected to assess and address in any work they produced that touched on public policy. Though it seems mightily myopic in hindsight, for life scientists – mostly men working in an increasingly militarized society decades before any serious feminist critique – the only solution to problems caused by the rapid adoption of

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<sup>52</sup> Baker and Mills, 1943, p. 484.

life-extending and life-enhancing scientific technologies was the application of even more technology and more scientific control. That this often translated into more male control, particularly over human reproduction, should perhaps not be surprising.

### **Gender, Population Control, and Environmental Management**

In her 1987 book *Reproductive Rights and Wrongs*, Betsy Hartmann writes,

Population control, as a major international development strategy, is a relatively recent phenomenon, dating back to the aftermath of World War II. Yet its origins reach back to the intellectual currents which culminated in an organized birth control movement in Europe and the United States.<sup>53</sup>

Hartmann states that the birth control movement “carried within it the seeds of birth control as a liberating force, as well as a means of coercive population control.”<sup>54</sup>

Hartmann challenges the “Malthusian orthodoxy” she claims was common within the population control movement from the 1940s through the 1970s, questioning its baseline scientific assumptions and suggesting it served as a substitute for “social justice and much need reforms,” reinforced “Western ethnocentrism,” and was used as “a weapon of cultural genocide.”<sup>55</sup>

Suzana Sawyer and Arun Agawal suggest a broader frame. In their article “Environmental Orientalisms,” the authors connect eugenics, population control and environmentalism to two related themes: “the West's feminization of Nature (or unexplored territory) and its concomitant obsession with the sexuality and reproduction of nonwhites.”<sup>56</sup> Sawyer and Agawal group biologists Paul Ehrlich, Norman Myers, and E. O. Wilson, and criticize the lot for their presumption of male ownership over, and their

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<sup>53</sup> Hartmann, 1987, p. 91.

<sup>54</sup> Ibid., p. 92.

<sup>55</sup> Ibid., p. 31.

<sup>56</sup> Sawyer and Agawal, 2000, p. 72.

desire to control, “Feminized Nature.” Nature, according to Sawyer and Agawal, is in the minds of Ehrlich, Myers and Wilson, “anointed that possession most cherished by the *pater* – the patrimony, the inheritance to be passed through the masculine line.”<sup>57</sup> They add, “Disconcerting parallels emerge between a neo-Malthusian environmental discourse that seeks to protect a feminized, fragile Nature against overpopulation and a colonial legacy to protect fragile, white women against ominous nonwhite men.”<sup>58</sup> Dennis Hodgson writes, “The uneducated, animalistic, largely alien lower classes were thought to be not at all interested in, or capable of, birth control.”<sup>59</sup> Sawyer and Agawal do not argue that environmental degradation is not real, but suggest that it cannot be connected to total human population or population growth in any particular region or country. Hodgson writes, “Biological Malthusians came to view feminism itself as part of the problem.”<sup>60</sup> As Sawyer and Agawal note, “Conveniently, this shifts the blame for Nature’s degradation on Third World populations.”<sup>61</sup>

Hartmann, Molly Ladd-Taylor, Garland Allen, and a host of other scholars have connected the modern population control movement directly to the popular eugenics movement in the United States as it expressed itself in the first third of the twentieth century. Hartmann notes the connection without offering a deep explanation. Ladd-Taylor and Allen examine this transition through an analysis of the works of Paul Popenoe and Raymond Pearl respectively. Both Ladd-Taylor and Allen question the sufficiency of Daniel J. Kevles’ division between “mainline” and “reform” eugenics, and Kevles’ claim that the latter movement’s adherents, including Frederick Osborn,

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<sup>57</sup> Ibid., p. 89.

<sup>58</sup> Ibid., p. 88.

<sup>59</sup> Hodgson, 1991, p. 6. See also, Hodgson and Watkins, 1997; Hodgson, 2001.

<sup>60</sup> Hodgson, 1991, p. 6.

<sup>61</sup> Sawyer and Agawal, 2000, p. 91.

Hermann Muller, J.S. Haldane, and Julian Huxley, who though “freighted with class-dependent biases,” were generally free of the mainliner’s “patent social prejudice.”<sup>62</sup>

Allen writes, “Population control was little more than eugenical thinking applied on a larger scale.”<sup>63</sup> Ladd-Taylor, noting the “apparent” discontinuity between Popenoe’s early career as a mainline eugenicist and his later career as the author of the popular newspaper column “Can This Marriage Be Saved,” writes, “If Popenoe’s long career seems discontinuous, it is because most scholarship on eugenics has ignored gender to focus almost exclusively on ideologies of race and class.”<sup>64</sup>

### **Rachel Carson’s Radical Critique**

Rachel Carson’s *Silent Spring* is often credited with being the genesis event of the modern environmental movement. What is sometimes lost to our collective memory is the fact that *Silent Spring*, Carson’s “little book of horrors,” as it was derisively labeled by one reviewer,<sup>65</sup> was as much about the horrors a blind allegiance to progress-oriented scientism had wrought as it was about the horrors technology, somehow divorced from science, had generated. *Silent Spring* was a direct challenge to a long-dominant view of science as a progressive force and the idea that this force was manifest in science’s ability to control and exploit nature.<sup>66</sup> As Michael Smith writes, “[Carson] offered a vision of science that expressed a reconsideration of the Baconian model that has more or less

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<sup>62</sup> Kevles, 1985, p. 176.

<sup>63</sup> Allen, 1991, p. 248.

<sup>64</sup> Ladd-Taylor, 2001, p. 300.

<sup>65</sup> Williams, 1998, p. 296.

<sup>66</sup> Michael Smith writes, “At various stages of the writing process Carson wanted to call her book ‘Control of Nature’ and ‘Man against the Earth.’” Smith, 2001, p. 746.

guided Western science since the seventeenth century.”<sup>67</sup> Coming at the dawn of the age of mutually assured destruction, and building on fears of the mutational effects of radioactive fallout in common currency,<sup>68</sup> Carson suggested that, as there could be no winner in a nuclear exchange, there would be no winner in a total war with nature either. Faith in science triumphant, Carson implied, was a dangerous illusion. She wrote, “the road we have long been traveling is deceptively easy, a smooth superhighway on which we progress with great speed, but at its end is disaster.”<sup>69</sup>

Carson biographer Linda Lear claims “*Silent Spring* ... dealt a mortal blow to public confidence in ‘experts.’”<sup>70</sup> But there are many who disagree. Leo Marx writes, “On balance ... the attitudes toward the environment sanctioned by the official culture of the United States continue to reflect the view, central to the belief in progress, that nature exists chiefly to satisfy human needs.”<sup>71</sup> Despite its popularity, Carson’s critique of science did little to derail the dominant view of science as a progressive force. Later “eco-catastrophes,” such as Paul Ehrlich’s 1968 book *The Population Bomb* and Garrett Hardin’s 1968 article “The Tragedy of the Commons,” found a receptive audience among academics and a public prepared in part by *Silent Spring*. But the focus in these latter works on the impending peril of rapid human population growth, and the calls by their authors for drastic action to counter that growth, owed less to Carson’s book and more to popular apocalyptic works from the 1940s and 50s including the work of Vogt, Brown, and Sax. In fact it could be argued that Paul Ehrlich’s *The Population Bomb*, published

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<sup>67</sup> Smith, 2001, p. 746

<sup>68</sup> See Muller, 1949; Huxley, 1964b; Commoner; 1966. Between 1955 and 1957, Bentley Glass was quoted in at least 11 articles concerning the effects of atomic radiation on human genes published in the *Baltimore Evening Sun*.

<sup>69</sup> Carson, 2002, p. 277.

<sup>70</sup> Lear, 1998 qtd. in Williams, 1998, p. 296.

<sup>71</sup> Marx, 1992, p. 465.

six years after *Silent Spring* represents a throwback to the harsh neo-Malthusian notions promulgated by mainline eugenicists four decades earlier. *Silent Spring* was a radical work, but it was radical within the literature, ironically, because it suggested that modest controls within a democratic framework could correct the damage science and technology had caused, a position in stark contrast to that held by more apocalyptic theorists. Rather than taking their cues from Carson, anthropologists and biologists who chose to make a public case for their relevance in the 1960s and 70s, continued to amplify public anxieties, exploit fears, and promote the need for dramatic fixes as had their counterparts in the 1940s and 50s. The underlying assumption that the application of more science or the imposition of a scientific worldview was necessary to correct the imbalances caused by industrialism, social welfare services, medical technology, and consequent population growth was rarely questioned. The acceptance of this assumption led otherwise levelheaded scientists to suggest solutions to social ills that were both wistful and Draconian, often at the same time, as is demonstrated by an analysis of the work of Carleton Coon, Bentley Glass, and Marston Bates.

### **The Race Hunter: Carleton S. Coon**

Closing his 1981 autobiography, Carleton Coon pictured himself as above and separate from the controversy that had surrounded his work on human race and evolution from the 1930s on, controversy that climaxed with the publication of his magnum opus, *The Origin of Races* in 1962. Quoting the *Iliad*, Coon wrote of himself, “He walked in silence on the shore of the much-roaring sea.”<sup>72</sup> Then, after offering an apology to

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<sup>72</sup> Coon, 1981, p. 397.

“anyone I may have offended unintentionally,” Coon turned to make one last stab at his many academic tormentors, writing “Better to have one’s bones picked by the delicate teeth of fish than by the knifelike beaks of vultures.”<sup>73</sup>

Coon had lived in virtual academic exile since walking out of the May 1962 meeting of the American Association of Physical Anthropologists (AAPA), a group to which he had been elected president just the year before, in protest over an effort by members of that group to bring a resolution to the floor condemning Carleton Putnam’s 1961 anti-integrationist tract *Race and Reason*. Coon maintained until his death that his reasons for not supporting the Putnam resolution were purely scientific, and suggested his fellow physical anthropologists’ support of the resolution proved they were “apparently as brainwashed as Pavlov’s puppies, or as most of the social anthropologists.”<sup>74</sup> Coon imagined that he, unlike his brainwashed colleagues under the spell of “the cult leadership of Franz Boas”<sup>75</sup> was an objective observer, and as such, not subject to the intellectual and political fashions of the times. Coon may have even believed his own story. However, as John P. Jackson Jr. demonstrates in his article “In Ways Unacademical,” Coon was heavily engaged in politics himself. For several years prior to the fateful 1962 AAPA meeting, Coon had carried on a lively correspondence with Putnam, who was in fact a distant cousin, counseling Putnam for example to shy away from using eugenicists Madison Grant and Lothrop Stoddard as sources and instead cite less identifiably racist and more academically acceptable, or at least lesser known,

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<sup>73</sup> Ibid.

<sup>74</sup> Ibid., p. 335.

<sup>75</sup> Coon further stated, “The snake of racial consciousness had raised its head out of the central European bulrushes, largely through the cult leadership of Franz Boas.” Ibid., vii.

sources such as the neo-Malthusian Garrett Hardin.<sup>76</sup> Tellingly, according to Jackson, Coon repeatedly refused Putnam's plea that he be allowed to identify Coon as a correspondent and advisor.

Coon was an anthropology professor, archeologist, museum curator, and adventurer and explorer in the classic sense.<sup>77</sup> When not teaching and writing he was traveling, digging, and during World War II, spying for William Donovan and the OSS. His 1954 *The Story of Man*, a 437-page history of the human race, was a best seller, and was cited in "further reading" sections of science textbooks published throughout the 1950s and 60s.<sup>78</sup> Pat Shipman sees Coon as "the last of a type of flamboyant anthropologist-explorer, the sort epitomized by men of the nineteenth and early twentieth centuries like Richard Burton ... or T. E. Lawrence of Arabia." W. W. Howells describes Coon as "modest despite his flamboyance and totally devoid of self-importance."<sup>79</sup> However, these descriptions do not square with the picture that emerges from reading Coon's work.

Though Shipman asks us to see Coon as "a man betrayed by history,"<sup>80</sup> a man who suffered the simple "misfortune" of living into a time when "colonialism became a derogatory term,"<sup>81</sup> an analysis of Coon's writing reveals a rather bullying and brittle personality. Though forgivingly described as a "raconteur" by Howells, John Maddocks,

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<sup>76</sup> Jackson, 2001, pp. 256-57.

<sup>77</sup> Schmeck, 6 June 1981, p. 1.19.

<sup>78</sup> Coon's *The Story of Man* was cited in the "further readings" section of several high school biology textbooks, significantly in the BSCS "yellow" version. BSCS "yellow" version, 1963, p. 687. Interestingly, the version cited was the 2<sup>nd</sup> edition, which included updates that brought the book in line with the Coon's highly controversial racial theory detailed in his *Origin of Races*, published that same year. Coon, 1962. Despite the public and academic controversy surround *Origin*, the BSCS "yellow" version second edition, published in 1968, retained its recommendation of *The Story of Man*. BSCS "yellow" version, 1968, p. 641.

<sup>79</sup> Howells, 1989, p. 116.

<sup>80</sup> Shipman, 1994, p.173.

<sup>81</sup> *Ibid.*, p. 174.

in a contemporary review in *The New York Review of Books* of *The Origin of Races*, pointed to Coon's unusual and unprofessional preoccupation with sex. Maddocks described Coon's text as studded with inappropriate "verbal nudges and winks,"<sup>82</sup> as for example when Coon, commenting on the scarring on the skulls of the female fossil specimens of Solo man found in Java, opined, "their social life seems to have been active, and S1 many have been particularly popular." Bawdy jokes and disparaging asides, particularly toward women, appear throughout Coon's work. In her apologia, Shipman writes, Coon "had a puckish habit of recounting scatological or ribald customs of tribal peoples he had known, in a carrying voice in very proper circumstances."<sup>83</sup> But Coon's "puckishness" can easily be read as a lack of empathy, an odd quality for an anthropologist. In an overview authored for the 1977 *Annual Review of Anthropology*, Coon recounted a "humorous" story of the time his mentor, anthropologist Earnest Hooton, left a jar containing three human heads at the top of the stairs at Harvard. Coon wrote, "a pregnant vistress, panting after her five-story climb, had a miscarriage, and threatened to sue Harvard. Hooton brought the jar back inside."<sup>84</sup> In his 1981 autobiography, Coon tells a story of one of his "Radcliffe tutees" from the lat 1930s, the only one "of foreign nationality," who "was paying her way through college by performing personal services," He heard the story from his dentist. Coon wrote, "While I was reclining in his chair playing 'Open wider, please,' he told me that she had proposed to pay his bill that way – but he preferred cash."<sup>85</sup>

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<sup>82</sup> Maddocks, 1963.

<sup>83</sup> Shipman, 1996, p. 173.

<sup>84</sup> Coon, 1977, p. 6.

<sup>85</sup> Coon, 1981, p. 133.

Coon's disparaging stories of women connect to a more general and more pervasive theme found throughout his work: disgust for all things domesticated. He expressed this disgust in criticism of his academic rivals, particularly Ashley Montagu and other "devotees" of Franz Boas who had "leaked introspection into our curricula,"<sup>86</sup> and Theodosius Dobzhansky who had the temerity to criticize Coon, not from the field, but from the safety of a fruit fly laboratory. But this disgust also extended to the tropical peoples he studied who Coon suggested had been "domesticated" by the harsh sun,<sup>87</sup> and even more generally to all post-hunter/gatherer cultures. In *The Story of Man* Coon wrote, "Among garden-cultivators ... whose women do most of the agricultural work, the men have little to do," adding that they must hunt and fish to "compensate for the woman's superior role in food-production."<sup>88</sup>

It is easy to label Coon a racist or a sexist (or both), but to do so creates a generality that prevents the examination of why, exactly, Coon spent the most productive years of his career fighting a tide that was clearly going against him. What Coon claimed he saw in his Columbia rivals, the Boasians, was a "prudery" about race that Coon belittled and disparaged by comparing it to "Victorian prudery about sex."<sup>89</sup> Coon took the effort on the part of Boas and his students to delegitimize racist discourse extremely personally. He saw it as part of a plan designed not to illuminate but to complicate and obfuscate – an intentional and directed attempt to domesticate both physical anthropology and Coon himself. Contrary to what his critics suggested, Coon claimed one could easily find order "spinning and winding around inside the inscrutable chaos of cultures which

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<sup>86</sup> Coon, 1981, p. vii.

<sup>87</sup> Coon, 1954, pp. 200 – 213.

<sup>88</sup> Ibid., p. 178.

<sup>89</sup> Ibid., p. 188.

Franz Boas, high pontiff of Columbia Heights, told his students ... could never be solved.”<sup>90</sup> Physical artifacts that could be dug up, measured, cataloged, and displayed were enough to tell “man’s” tale. Blood groups, genes, and other products of laboratory science were not required, and Coon was determined to prove it.

Theodosius Dobzhansky’s 1937 *Genetics and the Origin of Species* is credited with first describing the evolutionary process in genetic terms, and in the process, reestablishing Darwin’s theory of natural selection as central to evolutionary studies. Though Darwin was lionized for his breakthrough ideas during the first decades of the twentieth century, prior to *Genetics* and the subsequent development of the synthetic theory or the modern synthesis, natural selection was considered a relic, or at least only a very partial explanation of the process of evolution. Peter J. Bowler writes, “If there was a Darwinian Revolution in this field, it occurred only in the 1940s, when the modern synthesis in evolution theory finally made it impossible to believe that nature had been striving throughout evolution to create the human form.”<sup>91</sup> Coon who came of age intellectually in the 1920s, was a product of his times, and of his mentor, Earnest Hooton, who wrote tellingly in his 1931 book, *Up From the Ape*, “now if this principle of the non-heritable character of modifications is true, all or almost all of the stages of progression from the lower animals to man have little meaning.”<sup>92</sup> Hooton added, “if evolution happened this way it is a depressing business.”<sup>93</sup> From 1939 on, Coon seems to have made it his mission to keep Hooton from feeling depressed. Over the next three decades Coon would resist the claims of geneticists, and attempt to demonstrate the continued relevance

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<sup>90</sup> Coon, 1981, pp. 156-57.

<sup>91</sup> Bowler, 1988, p. 151. See also, Bowler, 1983.

<sup>92</sup> Hooton, 1931, p. 599.

<sup>93</sup> *Ibid.*, p. 600.

of physical anthropology in examining human variability and in the meaningful application of its findings to a general theory of evolution. The rise of the genetic view of evolution to Coon had less to do with science and more to do with fashion and politics. Even as he looked back in his autobiography in 1981, Coon attributed the controversy surrounding his 1939 book *The Races of Europe* to its being published “at that time the age of blood groups had begun to dawn and conventional physical anthropology was on the wane, mostly because of counterprejudice owing to Hitler’s treatment of minorities and his resurrection of the Aryan dream.”<sup>94</sup>

With *The Races of Europe*, Coon set himself against the trend even his fellow Hooton-trained colleagues felt they must follow. Ralph Linton, who Coon described as “truly great and no-humbag anthropologist”<sup>95</sup> despite Linton’s later move to Columbia and assumption of the chair in anthropology previously held by Franz Boas, reflected the trend when he wrote in 1938, “although old style racial studies have received a powerful impetus in at least one European country, many of the younger physical anthropologists are beginning to recognize this approach as a cul de sac and turn elsewhere.”<sup>96</sup> But though Coon was more than aware of his discipline’s shift on the topic of race, he pushed ahead with his project, even rejecting an offer by Hooton to assume authorship of *The Races of Europe* so that its sensitive thesis would not tarnish Coon’s budding reputation.<sup>97</sup>

The *Races of Europe* confined itself to the development of European racial “stock,” but suggested generally that individual “stocks” or “races” of modern *Homo*

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<sup>94</sup> Coon, 1981, p. 137.

<sup>95</sup> Coon, 1981, p. 138.

<sup>96</sup> Linton, 1938, p. 242.

<sup>97</sup> Coon, 1981, p. 137.

*sapiens* owed their individual racial “character” to ancestral *sapiens* or *pre-sapiens* species that had evolved independently, in parallel, against various environmental backgrounds. To a degree, Coon’s thesis was simply a variant of the “multiregional hypothesis” or the “polycentric theory” of human origins identified with the work of Franz Weidenreich, a theory which posited an earlier origin of the single species *Homo sapiens* than the competing “out of Africa” thesis which suggested that all living humans could trace their ancestry back to a common point perhaps as recent as just one hundred thousand years ago.<sup>98</sup> Though recent genetic studies favor the “out of Africa” model, this question even today has not been entirely settled. It certainly was an open area of debate in 1939, and even in 1962 when Coon published his more general theory in *The Origin of Races*. However, it is not Coon’s fealty to multiregionalism or polycentricism, but his efforts to construct a science to defend these ideas that is most interesting. Coon’s core idea, that race was not merely a convenient label but actually descriptive of ancient and meaningful divisions within the species *Homo sapiens*, proved impervious to new data and new ways of thinking. The idea’s dependence on orthogenic trends and direct environmental influences on the evolution of species did not cause Coon to in any meaningful way alter his theory even when both concepts were rendered obsolete under the modern synthesis.<sup>99</sup>

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<sup>98</sup> Johanson, May 2001.

<sup>99</sup> In his 1939 *Races of Europe*, Coon wrote, “We submit the thesis that man, as a domestic animal, is extremely variable; and that he has subjected himself, in his wanderings, to all of the environments of the earth, and hence is subject to environmental modification in a way unequalled by any other species. We further suggest that man, through his development of human cultures, has modified his bodily form by his own devices.” Coon, 1939, p. 1.

*The Races of Europe* was generally praised upon its release<sup>100</sup> and sold well, though the fact that Boas did not issue a review stung Coon.<sup>101</sup> According to a 1941 review in *Man*, Coon's use of physical data as a complement to cultural data when sorting human groups for comparison, or *racial analysis*, was the proper middle position between two extremes. The review did note that "the most recently collected records, viz., those for blood groups" were not included,<sup>102</sup> but considered this a benign omission, not, as it would later prove to be, an intentional dismissal by Coon of data collected in a lab, not heroically in the field. One reviewer did question the adequacy of Coon's evidence to support his "theory of Neanderthaloid-*sapiens* hybridization, but praised the work as a "compact, highly condensed compilation of the extant knowledge concerning the physical form of man."<sup>103</sup>

In his autobiography, Coon claimed that in *The Races of Europe* he "made no mention of racial difference in intelligence."<sup>104</sup> This is true, though elsewhere in his work he certainly implies such.<sup>105</sup> Still, in fairness, though Coon clearly suggested that there were character differences between the races, his primary concern was less a possible difference in intelligence between races and more a difference in the relative level of racial "foetalization." Foetalization refers to the idea that the human species, with its smooth skull and long post-birth dependency on parental care for survival, represented, to

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<sup>100</sup> Gillin, 1939, pp. 746-747. G. M. M., 1941, pp. 45-46. Roucek, 1940, pp. 79-80. W. M. Krogman offered a somewhat tepid review, *The American Journal of Sociology*. Krogman, 1939, pp. 284-286.

<sup>101</sup> In his autobiography Coon referred to Boas' silence as a "pocket veto." Coon 1981, p. 138.

<sup>102</sup> Coon, 1954, p. 46.

<sup>103</sup> Gillin, 1939, pp. 746-747.

<sup>104</sup> Coon, 1939, p. 138.

<sup>105</sup> For example, in *The Origin of Races*, Coon wrote, "it is a fair inference that fossil men now extinct where less gifted than their descendants who have larger brains, that the subspecies which crossed the evolutionary threshold into the category of *Homo sapiens* the earliest have evolved the most, and that the obvious correlation between length of time a subspecies has been in the sapiens state and the levels of civilization attained by some of its populations may be related phenomena." Coon, 1962a, pp. ix – x.

use Coon's words, a form of "foetalized terrestrial ape."<sup>106</sup> In its fully-foetalized form, what Coon called the "main stem," *Homo sapiens* branched out from its point of origin and crossed with earlier "non-foetalized" species to create the modern races of Europe, as well as North Africa and northern Asia. Among these "non-foetalized" forms were "the fossil men of Java, of Peking, and *Homo neanderthalensis* ... a heavier, hypermasculine endocrine form, with a luxuriance of jaws, teeth, and bony crests."<sup>107</sup> Adding to this picture of the difference between the rugged earlier form and the more foetalized later form, Coon posited that the more foetalized "main stem" invaders were agriculturalists, while *Homo neanderthalensis* were hunters. While historians generally present the development of agriculture as an advance, for Coon, agriculture represented a break from natural selection, and apparently natural "maleness." The difference between the hunter and farmer for Coon represented the difference between freedom and domestication. Fifteen years later, Coon found great popular success and a relative degree of academic respectability and calm when he decoupled his idea of "man-the-hunter" from its overt racial connection and presented it generally as *The Story of Man*.

Upon the publication in 1954 of *The Story of Man*, Coon reminisced years later, "nobody ... called me a racist, anti-Semite, or anything else horrid or pejorative ... I was Mr. Clean, just for once."<sup>108</sup> With *The Story of Man*, Coon attempted nothing less than a history of his species, complete with suggestions for survival into the future. Though clearly aware of the need to navigate the topic of race, Coon was nonetheless critical of "academic debunkers and soft-pedalers who operate inside anthropology" and suggested

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<sup>106</sup> Coon, 1939, p. 1.

<sup>107</sup> Ibid.

<sup>108</sup> Coon, 1981, p. 294.

it was “immoral to study race, and produce book after book exposing it as a ‘myth,’”<sup>109</sup> a clear reference to Montagu. Coon was less critical of the geneticists, claiming they “were eager to see race studied.” But he suggested that the geneticists were too careful, and that if scientists were to wait until geneticists could definitively pronounce on racial divisions, “we would be unable to speak of race for decades to come.”<sup>110</sup>

The question that must be answered is why, if, as Coon writes in *The Story of Man*, “each of us needs to be reminded that every other human being is unique and of equal importance,”<sup>111</sup> Coon felt he must speak of race at all. Why, if as Coon wrote, “the question of racial equality will soon be taken out of academic hands,” was it impossible for Coon to simply work without race? The answer can be found 375 pages into *The Story of Man*. In a chapter titled “From Coke to Atoms,” Coon moves from a narrative of human history in which our species “came down from the trees to master the way of the hunter,” a period of “fifty thousand or more generations” where “nature remained in balance,” to the industrial period, which he dates to the mid-seventeenth century, when humans “carried the mutilation of the earth’s surface, which started in the Neolithic, to a point of crisis.”<sup>112</sup> Believing humans “could not bear to lose the scientific knowledge that we have slowly accumulated during the ... centuries,” Coon’s proposed that the solution was to allow scientists to study and recapture the spirit of the Neolithic hunter and educate the world on their findings.<sup>113</sup> Borrowing from Huxley and the reform

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<sup>109</sup> Coon, 1954, p. 187.

<sup>110</sup> *Ibid.*, p. 188.

<sup>111</sup> *Ibid.*, p. 377.

<sup>112</sup> *Ibid.*, p. 375.

<sup>113</sup> The topic of racial diversity is of central and common interest to Coon, Glass, and Bates. It was assumed by Glass and Bates that the races, no longer isolated by time and distance, would gradually merge with one another. See Coon, 1962b, p. 183; Bates, 1952, p. 38; Glass, 1971, pp. 28-28. This merger represented both a positive social development and a cause of concern due to a worry on the part of Glass and Bates that a merger would translate to a loss of genetic diversity. Coon was certain mutual disgust would keep the races

eugenicists, Coon made the claim that “the state of being underprivileged” was a creation of industrial culture, which “grew like a noisome tumor as rabble, mobs, and masses arose in villages and slums, as a product of the widening gap between rich and poor, between noble and slave.”<sup>114</sup> However, society could return to a more “natural” egalitarian state, with “an equality of opportunity like that which exists among hunters,” and retain its technological comforts, if population were limited. Since this solution was obvious to science, all that would be required was “a general rise in the level of world education.”<sup>115</sup>

Coon believed that evolution by natural selection had led step-by-step to *Homo sapiens* (and its presumed most advanced subdivision, the white male). But he also believed, paradoxically, that the culture this same white male had created for his comfort and for the comfort of the his less progressed female and non-white companions now represented a threat to his further advance. The solution to this paradox of progress rested on the study of race.

According to Coon, “the whites ... carried the main line of civilization,” because unlike the darker races, “they remained unadapted to their environment.”<sup>116</sup> Coon wrote:

While Mongoloids and Negroids became adapted for living in physiologically trying environments, the Caucasoids or whites remained unadapted because they continued to live in parts of the world where climatic conditions were optimum in terms of heat and light, where the ultra violet radiation was not too strong ...<sup>117</sup>

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generally separate, though he too worried that advancing Western culture would drive out diversity, though through extinction of races, not their merging through mating. Though this worry about loss of genetic diversity seems superficially similar to present worries about loss of bio-diversity in places like the Amazon rain forest, this latter worry is over a loss of species, not individuals. Coon, Glass, and Bates all claimed to believe *Homo sapiens* to be one, inter-fertile species. However, their shared worry over loss of diversity suggests they may not have embraced this shared claim completely.

<sup>114</sup> Ibid., p. 420.

<sup>115</sup> Ibid., p. 421.

<sup>116</sup> Ibid., p. 213.

<sup>117</sup> Coon, 1954, 213.

Coon's idea represents a deft update and end-run around to the brutal and discredited concept of "survival of the fittest." Natural selection was no longer seen as a creator of "supermen," but as a Procrustean bed that forced species to sacrifice parts of themselves in order to fit in and adapt. In other words, outside the tropical zone, natural selection did not have sufficient power to restrict progressive evolutionary development. However, the domesticating effects of industrial culture, a somehow "non-natural" product of natural selection, threatened to undo this progress. To compensate, Coon believed his "Caucasoids" had to rediscover their inner *hunter*.

Ironically, Coon's archetypical hunter was represented for him by a people he considered the most archaic living humans, Australian aborigines. Aborigines, with their "sloping foreheads and small chins,"<sup>118</sup> Coon believed, were "true survivors of Pleistocene man."<sup>119</sup> He and his fellow scientists, Coon suggested, could, with their technology, balance the races by compensating for supposed innate differences. This concept of equality through technology addressed racial sensitivities while protecting an ideology dependant on meaningful differences in racial capabilities. Though Coon claimed to be in "complete agreement" with his fellow anthropologists' 1947 "Statement On Human Rights," which affirmed that "no technique of qualitatively evaluating cultures had been discovered," he felt quantitative differences were obvious. Some cultures were simple, others complex. That his beliefs implied progressive human development, and that this progress could be tied to a shorthand description called race,

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<sup>118</sup> Ibid., p. 73.

<sup>119</sup> Coon, 1947, p. 214.

was of little consequence, according to Coon, as long as one understood he was not pursuing “value judgments.”<sup>120</sup>

Of course the many contradictions within Coon’s belief system were impossible to square, and starting at the end of World War II, a frustration with his culture’s willingness to accommodate the Boasians and others committed to what Coon believed was the misguided “concept of the brotherhood of man,”<sup>121</sup> surfaced in his work. Though wartime labor shortages had led to sex and race integration on the factory floor generally without incident, Coon believed this was a temporary situation driven by extreme conditions. He felt that men and women of different races and nationalities working side-by-side without incident was not “natural,” and this cooperative behavior would soon break down. “In time of war ... few care to complain about the incompatibility of the man at the next lathe ... as long as the common pressure to win the war is maintained. ” “However,” Coon wrote in a 1946 article titled “Universality of Natural Groupings,” “once [the pressure] is relaxed, all of the pent-up grievances, all of the latent causes of disequilibrium, break out.”<sup>122</sup> As always, Coon was projecting his personal feelings as a universal truth. Unfortunately for Coon, the “period of readjustment” when humans would return to associations of “small natural groups” strictly divided along many tribal lines, but certainly by race, never rematerialized in the United States. Meanwhile, the worldview of Franz Boas and Ashley Montagu took hold, which pushed Coon to write and publish his career-ending book, *The Origin of Races*.

Coon framed his decision to write *The Origin of Races* as his “obligation to tell the exact objective truth,” to neither “exaggerate my findings for the ‘racists’ nor

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<sup>120</sup> Ibid., p. vii.

<sup>121</sup> Coon, 1954, p. 187.

<sup>122</sup> Coon, 1946, p. 167.

minimize them for the ‘egalitarians.’”<sup>123</sup> Though the book received positive reviews from Julian Huxley, George Gaylord Simpson, Ernst Mayr, and Margaret Mead among others, two sharply critical reviews published in the February 1963 issue of *Current Anthropology*, one by Theodosius Dobzhansky and another by Ashley Montagu, ignited a firestorm from which Coon could not escape. Though Coon characterized Montagu’s comments as merely “pompous,”<sup>124</sup> Dobzhansky’s critique was much less easily dismissed. Coon attempted to defend his thesis – that the modern races evolved from a *pre-sapient* state separately, with “Caucasoids” crossing the “erectus-sapiens” boundary some 200,000 years before the “Negroids” – by resorting to his “natural groupings” theory. In response to Dobzhansky’s critique Coon wrote:

Dobzhansky should note that, unlike his fruit-flies, human beings do not mate at random, but are kept apart to a large extent and quite effectively by cultural barriers such as language, religion, and such other customs as feelings about integration and segregation.<sup>125</sup>

But Coon’s defense would no longer play among scientists schooled in the modern synthesis. Dobzhansky had repeatable mathematics-based experimental genetics on his side. In the end it was Coon who became the politician. As so ably demonstrated by Jackson, Coon secretly fed Carleton Putnam inside information to help Putnam support his racist conspiracy theories, a fact Coon would deny until his death.<sup>126</sup>

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<sup>123</sup> Coon, 1981, p. 338.

<sup>124</sup> *Ibid.*, p. 354.

<sup>125</sup> Dobzhansky, Montagu, and Coon, 1963. p. 366.

<sup>126</sup> See Jackson, 2001.

### Science's Minister: Bentley Glass

In his 1952 review of *Races*, Bentley Glass complimented Carleton Coon and his co-authors for being “reasonably well acquainted with the genetic viewpoint upon evolutionary processes.” But, as his use of the word ‘reasonably’ implies, this was faint praise. Just a few sentences later Glass criticized Coon and his co-authors for defining race with no mention of gene frequencies and for their out-of-date typological thinking, implied in their decision to illustrate “30 ‘races’ within the 6 major ‘stocks’” using a single photograph of each.<sup>127</sup> Seven years earlier, Glass had taken Coon’s mentor, Earnest Hooton, to task also for not being “more widely acquainted with genetic work.”<sup>128</sup> From the later 1930s on, geneticists like Glass grew increasingly bold in their criticism of the categorization of human populations by gross phenotypic characteristics like hair type or skin color. This is not to say geneticists believed race was a meaningless concept. True, Glass did praise Coon’s chief tormentor Ashley Montagu for the “clear, thought-provoking discussion of the question of existence of races in man and the problem of racial prejudice” Montagu offered in his book *Man’s Most Dangerous Myth*. But Glass made sure to point out that Montagu was “not denying the existence of human ethnic groups which would fit the genetic definition of a geographic race.”<sup>129</sup> For geneticists like Glass, the concept of race was not invalid, just crude and old-fashioned. Since the publication of Dobzhansky’s *Genetics and the Origin of Races*, it was no longer “scientific” to talk in terms of race. Geneticists talked of populations. Conveniently, populational thinking not only advanced the disciplinary status of genetics, it provided a way for any who adopted it to talk about variations between human groups without

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<sup>127</sup> Glass, 1952, p. 133.

<sup>128</sup> Glass, 1945, p. 85.

<sup>129</sup> Glass, 1946, p. 128.

triggering accusations of racism. In fact, few geneticists believed all populations were of equal capability or of equal “genetic health.” Not only did geneticists note the tendency of some groups to suffer certain genetic diseases, like sickle cell anemia or Tay Sachs syndrome, uniquely or disproportionately to other groups, many continued to maintain that traits like intelligence or temperament likely varied population to population as well. As late as 1964 Julian Huxley could write, “it is theoretically inconceivable that such marked physical differences as still persist between the main racial groups should not be accompanied by genetic differences in temperament and mental capacities, possibly of considerable extent.”<sup>130</sup>

Populational thinking provided a work-around for reform eugenicists like Huxley which allowed them to accommodate changing social attitudes toward race while holding on to their core ideology. Yet, even for scientists who worked to subtract race and class from their analysis of human differences, faith in the reality of biological progress, and a desire to position the life sciences as critical to the necessary management of biological progress, led to difficult moral questions and complex rationalizations, which often led right back to race. If a particular individual or population suffered from a genetic “weakness,” for example, what should be done about it? If a particular individual or population expressed a specific genetic “strength,” should that strength be taken advantage of, and if so, how? Who was to judge what were “weaknesses” and what were “strengths?” And perhaps one of the more vexing questions of all: How could life scientists promote their role as managers of human genetics and biological and cultural

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<sup>130</sup> Huxley, 1964a, p. 257.

progress during the Cold War against a background of personal and institutional support for individual liberty, free inquiry, and equal rights?<sup>131</sup>

Bentley Glass thought he had the answers.

Bentley Glass was born in China to Baptist missionaries in 1906. He left China at the age of 17, earned his bachelor's degree at Baylor University and his doctorate at the University of Texas. Glass studied under Hermann J. Muller in the 1930s and traveled with Muller to Berlin where he witnessed the first Nazi book burning. He served on the faculty of Johns Hopkins from 1948 to 1965, and then on the faculty of the State University of New York at Stony Brook through 1976.<sup>132</sup> Glass was editor of *The Quarterly Review of Biology*, a journal founded by Raymond Pearl, from 1944 to 1986. He served as president of the American Institute of Biological Sciences (AIBS) from 1954 to 1956, and was chairman of the Biological Sciences Curriculum Study from 1959 to 1965. He also held many other highly visible administrative positions. Glass's first book, *Genes and Man*, was published in 1943. He also published several collections of essays, several academic articles on evolution, including two ground-breaking post-World War II studies based on blood group analysis, one on gene flow between black and white populations in North America and another on genetic drift among the Old German Baptist Brethren, the "Dunkers." After his retirement, Glass devoted several books and articles to the history of genetics.

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<sup>131</sup> Kevles notes the anti-democratic nature of the eugenics movement. He writes, "Socialist, progressive, liberal, and conservative eugenicists may have disagreed about the kind of society they wished to achieve, but they were united in a belief that the biological expertise they commanded should determine the essential human issues of the new urban, industrial order." Kevles, 1986, p. 76.

<sup>132</sup> According to Erk, Glass disliked his first name, Hiram, and in the late 1940s moved from using the moniker H. Bentley Glass to simply Bentley Glass. See Erk, 2005.

Glass credited his Baptist missionary parents as the source of his strong liberal social values, and cited his experience in Germany in the early 1930s as a motivation for his life-long political activism. Audra Wolfe notes that during his career, “Glass became involved in a number of public controversies, including but not limited to race relations, Lysenkoism, academic freedom, and nuclear fallout.”<sup>133</sup> Allergic to the loyalty oaths common in the McCarthy era, Glass refused, “famously” to use Wolfe’s word, an appointment to the Maryland Radiation Control Advisory Board, though he did serve on the federal Atomic Energy Commission. Glass also served as the president of the Maryland Chapter of the American Civil Liberties Union from 1955 to 1965, wrote a regular column devoted to science for the *Baltimore Evening Sun*, and as a member of the Baltimore Board of School Commissioners, helped Baltimore become the first major U.S. city to comply with the Supreme Court’s 1954 *Brown v. Board of Education* desegregation decision.

In its obituary, the *Washington Post* described Glass as a “peripatetic figure in the 1950s and 1960s,” a man who seemed to be everywhere and advising everyone. But Audra Wolfe notes that the “approximately 90 linear feet” of archive materials stored at the American Philosophical Society reveal “surprisingly little about his personality or political views.”<sup>134</sup> Subsequent to Wolfe’s article, Glass’ colleague and close friend of 56 years, Frank C. Erk, published an 11-page biographical sketch in the *Quarterly Review of*

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<sup>133</sup> Wolfe, 2003.

<sup>134</sup> Bernstein, 2005, p. B6; Erk, 2005, pp. 164-173; Martin, 2005; Wolfe, 2003. In his obituaries, Glass was described as “provocative” and “outspoken.” Editors of course made note of Glass’ more controversial comments, such as his 1971 statement that, “No parents will in that future time have the right to burden society with a malformed or mentally incompetent child,” a remark that the New York Times wrote, “is still regularly deplored by opponents of abortion.” Martin, 2005. Other notices, such as the one that appeared in the *Bulletin of the Atomic Scientists*, labeled Glass more forgivingly as a “rabble-rouser,” and noted, “Of all his pronouncements, none permeated the cultural lexicon more than his 1962 prediction that cockroaches would be the sole survivors of nuclear war.” Anonymous, 2005, p. 14.

*Biology* based in part on a videotape interview conducted by Erk's daughter, who was also Glass' goddaughter, a few years before Glass' death.<sup>135</sup> However, Glass remains enigmatic. Wolfe writes, "Glass held several intriguing and seemingly contradictory beliefs, and his papers unfortunately reveal little about the logic behind them."<sup>136</sup> Wolfe cannot understand, for example, "how this lifelong Sunday School teacher decided that evolution should form the central pillar of a high school biology education!"<sup>137</sup> However, a survey of Glass' published books, papers, and articles suggests that Glass held two related core beliefs: One, that science was the "greatest liberating, liberalizing force in human thought,"<sup>138</sup> and two, that to maintain cultural progress into the future, humans would have to consciously set the conditions whereby which natural selection would continue to "evolve" the human species, leading to a progressive increase in its average intelligence level and the improvement of its emotional character.

Though Glass was a fierce critic of mainline eugenics, he embraced reform eugenics, and believed firmly that improvement in social and economic conditions would lead to improvement in the genetic capacity of the whole of the species. In a 1941 review, Glass praised Frederick Osborn's *Preface to Eugenics*, calling the new eugenics "less exciting than the one older advocates envisioned, but far more soundly based on present scientific knowledge of the interaction of heredity and environmental factors."<sup>139</sup> Ladd-Taylor writes, "Osborn proclaimed in 1940; eugenic mating should not be forced. Rather, it should be a 'natural and largely unconscious process' bolstered by education,

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<sup>135</sup> Erk, 2005, p. 172.

<sup>136</sup> Wolfe, 2003.

<sup>137</sup> Wolfe, 2003.

<sup>138</sup> Glass, 1960, p. 61.

<sup>139</sup> Glass, 1941, p. 570.

counseling, and pro-family social policies.”<sup>140</sup> Osborn’s book, according to Barkan, reflected a generational break between older eugenicists who clung to typological thinking and racist ideologies and younger eugenicists who had adopted a more populational perspective and who recognized “racism as abhorrent.”<sup>141</sup> But, Barkan adds, “While ... the racial language had become more moderate, [reform] eugenicists were reluctant to give up their social prejudice,” including, “a qualified belief in the higher biological capabilities of the rich.”<sup>142</sup> Glass’ views closely paralleled those of Osborn as described by Ladd-Taylor and Barkan. Glass, like most of his contemporaries, accepted that “the reproductive rate varies inversely with income.” But he was also aware that “the only extensive study on the subject ... revealed no perceptible decline in those genes contributing to high intelligence,” Nonetheless, writing in 1959, Glass stated, “there is little doubt that there is some positive correlation between intelligence and economic and cultural level.”<sup>143</sup> Glass held that humans could, in fact must, consciously set the social conditions necessary to allow natural selection to continue improving the species.<sup>144</sup> Embracing Julian Huxley’s view of *Homo sapiens* as a dominant species, “the most progressive line, because it is most adaptable without being overspecialized in any limiting way,”<sup>145</sup> Glass saw evolution as a progressive creation despite his putative embrace of the modern synthesis and his own work on the topic of genetic drift.

According to Wolfe, the logic behind Glass’ seemingly “contradictory beliefs” remain unrevealed in his archive. But that is not entirely true. Though Glass was able to

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<sup>140</sup> Ladd-Taylor, 2001, p. 302.

<sup>141</sup> Barkan, 1992, p. 275.

<sup>142</sup> *Ibid.*, 275-76.

<sup>143</sup> Glass, 1960, p. 45-46

<sup>144</sup> Glass, 1971, p. 27.

<sup>145</sup> Glass, 1951, p. 368.

largely abandon race-biased and class-biased assumptions, he was never able to abandon his faith in evolution as a progressive process or a faith in science as the “greatest liberating, liberalizing force in human thought.” When he asked in 1959, “Where is the wisdom that will permit us to weigh present values against the future price that must be paid? Where the insight to prevent fatal consequences of errors of judgment?” Glass, the Baptist Sunday School teacher, is revealed by his answer: “Man’s religious beliefs and his dedication to something higher and greater than himself, must, I hold, become ere long a crucial factor in his further evolution.”<sup>146</sup> Glass cast himself as science’s minister. As its minister, he would steer and counsel science away from the devils of prejudice and social injustice while aggressively seeking converts to the cause of setting the conditions necessary to progressively improve the genetic basis of his species.

The key to Bentley Glass’ ideology can be found in a review he wrote in 1951 of Roderick Seidenberg’s 1950 book *Posthistoric Man*.<sup>147</sup> Seidenberg’s thesis – that the potential for new knowledge was finite and that the acquisition of knowledge through science would eventually cause human culture to “crystallize” into an unchallenging routine – greatly agitated Glass. Rather than writing a standard column-length review, as the editors of *The Scientific Monthly* had originally asked, Glass turned his analysis of *Posthistoric Man* into a long article in which he articulated his view of science, society and human evolution. Glass would refer to the themes established in this article throughout his life.

What seems to have troubled Glass most was Seidenberg’s suggestion that science was inevitably “involved in the decisive struggle between the dying ideal of the

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<sup>146</sup> Glass, 1960, p.115.

<sup>147</sup> Glass, 1951, p. 365.

‘intrinsic superiority’ of the individual and his absorption and subordination within the dominant collectivity.”<sup>148</sup> In other words, to quote Glass, Seidenberg believed, “The salvation of the person is being replaced in the system by the security and welfare of the collective individual.”<sup>149</sup> By “focusing wholly upon the external manipulation of its affairs and the purely mundane solution of its problems,” Seidenberg wrote, society had abandoned the option of drawing “strength and sustenance from the inner sources of being through the revelations of saint and mystic.”<sup>150</sup> But Glass did not see science as removing mystery, perfecting knowledge, or subordinating the individual to the collective. Rather, science, by providing ‘rules of the road,’ was broadening and democratizing intellectual exploration. Glass wrote:

Primitive man, loaded with tabus (sic) and hemmed by superstitious fears, was freed by the advancement of knowledge. Science itself, by vastly enlarging the scope within which human choices can be made, has contributed basically to human freedom.<sup>151</sup>

Glass subscribed to the view of evolutionary progress held by Julian Huxley and articulated in Huxley’s book *Man Stands Alone*.<sup>152</sup> Huxley believed evolutionary history should be read not as a branching bush, with all surviving species equally “evolved” relative to their environments,<sup>153</sup> but as a succession of “dominant types:” protozoa, trilobites, reptiles, mammals, and as a new kind of distinct type, humans, appearing successively over time at an accelerating rate. Huxley believed that each emergent dominant type was a literal improvement upon the previous type, both more organizationally developed and more efficient at converting resources to its needs.

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<sup>148</sup> Seidenberg qtd. in Glass, 1951, p. 365.

<sup>149</sup> Glass, 1951, p. 365.

<sup>150</sup> Seidenberg qtd. in Glass, 1951, p. 365.

<sup>151</sup> Glass, 1951, p. 365

<sup>152</sup> Ibid.

<sup>153</sup> See Stephen Jay Gould’s essay, “Life’s Little Joke.” Gould, 1991, pp. 168-181.

Huxley strongly implied that *only* dominant types evolved, rapidly radiating once they emerged into niches occupied previously by the former dominant type. Yet dominant types were also new creatures not yet fully developed. Though they represented an improvement on the displaced type, a new dominant type, at the moment of its creation, was only at the beginning of its evolutionary journey. As Huxley put it, “all new dominant types begin their career in a crude and imperfect form.”<sup>154</sup> According to Huxley, dominant types needed time to fully explore their full dominating potential. Prior to the evolution of humans, this process was directed by natural selection. However humans, according to Huxley, were a wholly different kind of type, no longer bound by the blind process of natural selection, in command of their own “psycho-social evolution.”<sup>155</sup>

The influence of Huxley on Glass is clear. In his review of Seidenberg, Glass wrote, “The intelligence of man is an evolutionary product of natural selection for adaptability to great variation of surroundings, to tremendous vicissitudes of experience.”<sup>156</sup> Glass suggested that further evolution in *Homo sapiens* required the intentional development of adaptability through the act of scientific exploration. Where Seidenberg suggested that science would inevitably lead to a perfected “crystallized” world, with all people subordinate to the unassailable logic of the collective, Glass suggested that, though science established rules, those rules did not limit intellectual exploration but actually gave more people the ability to ask more questions. By

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<sup>154</sup> Huxley, 1964a, p. 253.

<sup>155</sup> In 1964, Huxley described his theory this way: “All evolution is directional and therefore relative. But whereas the direction of biological evolution is related to the continuing improvement of organisms in relation to their conditions of life, human evolution is related to the improvement of the entire psychosocial process, including the human organism, in relation to man’s purposes and beliefs, long-term as well as short-term. Only in so far as those purposes and beliefs are grounded on scientific and tested knowledge, will they serve to better human evolution in a desirable direction.” Huxley, 1964a, p. 265.

<sup>156</sup> Glass, 1951, p. 366.

encouraging this process, Glass claimed our species would evolve and radiate, naturally and progressively, into the new “ecological” space, a mental space, or to use Huxley’s terminology, a “psychosocial” space, created by the evolutionary development of consciousness and intelligence.

Yet, though Glass worked to present his ideas positively, his optimistic rhetoric was balanced by apocalyptic warnings every bit as dire as Huxley, Vogt, Brown, or Seidenberg’s. For example, Glass implied that the failure of Western industrial culture to understand and support conditions necessary to promote natural evolutionary progress was more than merely a missed opportunity, it was a threat to the very survival of the human species. Since humans had already “chosen” the path of evolution of intelligence verses evolution of instincts, the species had no choice but to continue down that path. Glass wrote, “Any regression of intelligence is ... likely to bring the swift extinction of our species.”<sup>157</sup>

In 1958 Bentley Glass gained an opportunity to put his ideas into action when he became chairman of the BSCS. The BSCS was one of a great many curriculum reform programs undertaken in the United States during the 1950s and early 1960s in response to the economic and technological threat represented by the Soviet Union. Though biologists had talked of the need for a broad public school curriculum development effort starting as early as 1952, it was only after the launch of *Sputnik* that sufficient federal and institutional funds were made available through the National Science Foundation (NSF) to support the project. Organized in late 1958, the BSCS held it first Steering Committee meeting on February 5, 1959, just as a new wave of interest in evolution began to crest.<sup>158</sup>

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<sup>157</sup> Ibid., p. 367.

<sup>158</sup> See Rudolph, 2002, pp. 101-103; BSCS, 1961; Smocovitis, 1999 p. 278; Larson, 2004, p. 248.

Through the 1950s, as the modern synthesis took hold and Darwin's reputation rebounded, major academic conferences were scheduled worldwide to celebrate the centennial anniversary of Darwin's *Origin of Species*, which was first published in 1859. The largest conference, the University of Chicago's Darwin Centennial Celebration, was held in November of that year. According to Vassiliki Betty Smocovitis, anthropologist Sol Tax, the organizer of the Darwin Centennial, hoped the conference would begin to forge a theoretical synthesis between biology and the social sciences.<sup>159</sup> Biologists seeking to define and advance an institutional social mission hoped for very much the same thing. Though Glass played no major role in the Darwin Centennial, many of its attendees and speakers were also involved in the BSCS curriculum development effort. Among the most influential, and vocal, was Bentley Glass' old mentor, Hermann J. Muller.

In the late 1950s, Hermann J. Muller was a man on a mission. Muller believed that conscious control of the evolutionary process could lead to "the improvement of those genetic characteristics which make (a) for health, (b) for the complex called intelligence, and (c) for those temperamental qualities which favor fellow-feeling and social behavior."<sup>160</sup> The events of the twentieth century, rather than undercutting his faith in eugenics, only served to reinforce Muller's belief in the need to breed out brutality from the human race. Muller believed deeply that people had to begin consciously countering the cultural and economic forces that "tend to preserve and in some ways even to aid the multiplication of characteristics that are disserviceable to the welfare of the

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<sup>159</sup> Smocovitis, 1999, p. 287.

<sup>160</sup> Muller et. al., 1939, 521.

group as a whole.”<sup>161</sup> Muller’s reform eugenics found little traction immediately after World War II, but *Sputnik*, renewed interest in Darwin and evolution, and the subsequent national interest in curriculum reform provided Muller a new platform and the funds necessary to attempt to put his ideas into action. In a controversial 1958 speech before a group of educators in Indianapolis titled “One Hundred Years Without Darwinism Are Enough,” Muller called for a sweeping reform to the biology curriculum with a renewed emphasis on the teaching of the theory of evolution at its center. If people understood the full implications of the theory of evolution, Muller claimed, humans would be able to “telescope what would in the past have been a thousand years of progress into every single year of our times.”<sup>162</sup> Scientists had learned much about “evolution’s progress, stagnation, [and] retrogression”<sup>163</sup> since the time of Scopes, Muller stated, but few were aware of these advances due to “the slighting of the subject in our schools.”<sup>164</sup> Textbook publishers, he noted, tended to downplay controversial topics such as evolution and human reproduction in order to make their textbooks more broadly marketable. This led to society’s effective “domination by antiquated religious traditions.” Echoing Karl Sax, this pandering to a non-scientific minority, according to Muller, had not only prevented exploration of the great potential of selective breeding, it was threatening the human species by disallowing a discussion on how best to compensate for our species’ break from the bonds of natural selection.<sup>165</sup> As he stated in his paper at the Darwin Centennial, Muller believed that without conscious scientific management of human reproduction, “the one final remaining line of man will, if he retains or amplifies his technological

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<sup>161</sup> Tax, 1977, p. 424.

<sup>162</sup> Muller, 1958, p. 146.

<sup>163</sup> *Ibid.*, p. 142.

<sup>164</sup> *Ibid.*, pp. 139-140.

<sup>165</sup> For a complementary analysis, see Riddle, 1954.

culture, meet with biological extinction long before the earth grows too hot or too cold to support him.” Muller asked his audience of high school teachers, “Can we afford to let the profit system destroy us?”<sup>166</sup>

Hermann J. Muller earned his Ph.D. in 1915, and was famous throughout the middle part of the twentieth century for his discovery in 1927 of the mutagenic effects of X-rays on the chromosomes of fruit flies. His portrait appeared in almost all biology textbooks published between the early 1930s and the early 1960s, and was almost always given greater prominence than Darwin’s. Muller was respected, but as his biographer notes, was “subject to an insecurity that welled up in a competitive, often polemically expressed and self-defeating desire to prove the priority of his ideas and experiments.”<sup>167</sup>

Like Julian Huxley and other reform eugenicists, Muller suggested that before favorable genetic traits could be identified culture needed to be “leveled up.”<sup>168</sup> Yet, like Huxley, Muller was not willing to wait very long for this “leveling up” to occur. Urgent action, he suggested, was necessary. Looking a few thousand years into the future, Muller saw a day when “the job of ministering to infirmities would come to consume all the energy that society could muster for it, leaving no surplus for general cultural purposes.”<sup>169</sup> But, Muller noted, it would not take nearly that long to reach a critical point. “Long before such an ‘advanced’ stage of the genetic cul-de-sac was reached ... this medical utopia would probably be subjected to such great strains as to throw men

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<sup>166</sup> Muller, 1958, p. 148.

<sup>167</sup> Kevles, 1981, p. 1233.

<sup>168</sup> Muller wrote in 1939, “there can be no valid basis for estimating and comparing the intrinsic worth of different individuals, without economic and social conditions which provide approximately equal opportunities for all members of society.” Muller et. al. 1939, p. 521.

<sup>169</sup> Tax, 1977, p. 432.

back toward more primitive ways of life.”<sup>170</sup> And to bring the danger even closer, Muller claimed the “genetic load” of the human species, the number of deleterious recessive genetic mutations present within the entire human population, was likely to increase rapidly. He wrote, “at least one person in five, or 20 per cent, carries a detrimental gene which arose in the immediately preceding generation.” While natural selection would have once eliminated these mutations from the human population, advances in science and culture now allowed their carriers to successfully reproduce.<sup>171</sup> He wrote:

Although the mores of our society approve the extension of society’s aid to individuals for the purpose of saving their lives and thereby enabling them to reproduce, they do not yet, reciprocally, recognize the duty on the part of individuals to exercise their reproductive functions with due regard to the benefit or injury thereby done to society.”<sup>172</sup>

Muller reasoned, not entirely logically, that since science had provided an “escape” from the bonds of natural selection, it should be given authority to compensate in order to rebalance the equation. An evolving scientific ethics had to replace static religious ethics. For that to happen, Muller contended, the public needed to be broadly educated about evolution: both its potential, and if left unmanaged, its dangers. Echoing Huxley, as well as mainline eugenicists, Muller believed a few genetically gifted individuals drove cultural progress, and that broad social gains could be had if there were even a slight increase in the production of genetic geniuses. Telegraphing his affection for a coming brave new world, Muller wrote, “When one considers how much the world owes to single individuals of the order of capability of an Einstein, Pasteur, Descartes, Leonardo, or Lincoln, it becomes evident how vastly society would be enriched if they were to be

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<sup>170</sup> Ibid.

<sup>171</sup> Ibid., pp. 430-431.

<sup>172</sup> Ibid., p. 436.

manifold.”<sup>173</sup> To this end, Muller would in the 1960s help establish a sperm bank to house the superior genetic material of scientists. In an introduction to Muller’s papers, Glass noted that three such facilities opened in 1972, and that “the practice is certainly gaining currency.”<sup>174</sup>

Did Bentley Glass subscribe to Muller’s “great men” theory of cultural progress? The only evidence that he did find among the documents reviewed is a quote found in the biology textbook Glass co-authored for the BSCS. There he wrote, “man’s cultural evolution has been determined in large part by the ability of some men and women to look ahead and foresee a better world.”<sup>175</sup> Never the less, in many ways the two men’s beliefs were closely aligned. In a lecture that could have been delivered by Muller, Glass asked in 1959, “Can we continue indefinitely to load our population with hereditary disabilities for the benefit of the immediate case? Is that not to damn the future for the selfish interest of the present?”<sup>176</sup> He added, “Enough is now understood of the workings of the evolutionary process to give man a very great measure of control over his future biological evolution, including that of his mental capacities, health, and vigor.”<sup>177</sup> Though Glass was always more skeptical than Muller of the efficacy and morality of any eugenics program, he was in close agreement with Muller on the main issue: the need to invest in science the authority to determine how best to compensate for Western industrial culture’s supposed abrogation of natural selection. In a review he wrote for the *Quarterly Review of Biology* in 1959, Glass made his point clear:

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<sup>173</sup> Ibid., p. 454.

<sup>174</sup> Carlson (ed.), 1973, xiv.

<sup>175</sup> BSCS “yellow” version, 1963, p. 684.

<sup>176</sup> Glass, 1960, p. 113.

<sup>177</sup> Ibid., p. 114.

With each advance in human power and each increase in control, with each increase in efficiency or effectiveness through the application of scientific method, there is a proportionate increase in the precariousness of human existence, and this must in turn require further scientific advance and control.<sup>178</sup>

“Only education can save us,” Glass wrote, “but it must be an education that is science-oriented.”<sup>179</sup>

The BSCS provided an incredible opportunity for Glass to put his ideas into practice. Established without a detailed mandate, Glass helped drive the BSCS to see itself as critical to the establishment of a “science-oriented” worldview: to claim for biology priority in teaching students an appreciation of science in general, and, critically, to position biology as the mediator between the “hard” sciences and social policy. In the introduction to the BSCS “yellow” version Glass co-authored with Arnold Grobman, he wrote:

A sound biological understanding of such matters as these is the inalienable birthright of every future parent and citizen. To establish a basis for a better public understanding of the wise management of natural resources, of the biological hazards of nuclear agents in peace and war, and of the methods by which scientific information is achieved, as primary sources of national strength and well-being in this new era of history, was clearly also an inescapable obligation of the new biology curriculum.<sup>180</sup>

Between 1959 and 1963, Bentley Glass guided the BSCS as it spent \$6 million in federal and institutional funds to write and prepare for publication three new biology textbooks and other curriculum support materials. These three books, the BSCS “blue,” “green” and “yellow” versions as they are known, would prove to be extremely popular, accounting

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<sup>178</sup> Glass, 1959, p. 240.

<sup>179</sup> Glass, 1960, p. 69.

<sup>180</sup> BSCS “yellow” version, 1963, p. xviii. Glass’ hand is clear here as this quote is nearly identical to one contained in article by Glass from 1962. There he wrote, “A rapidly changing society whose ways of life are continually disrupted and transformed by the advances of science and scientific technologies, and a democracy in which ultimate policy depends upon the enlightenment of the average citizen, must provide for the general citizen an education that makes possible adjustment to changing conditions, as well as some degree of foresight—an education that provides an understanding of the very nature of the scientific process that makes inevitable the grave decisions.” Glass, 1962, pp. 19-20.

for half the textbooks in use in high school biology classrooms in the United States by 1970. As per the hope of the BSCS, and presumably to the delight of Muller, these new textbooks also altered the market, forcing competing publishers to rewrite their own books in order to remain competitive. Social conservatives reacted quickly to the prominence of the theory of evolution in the new wave of textbooks.<sup>181</sup> However, at least in the short run, their protests proved counter-productive. Challenges to these texts inspired lawsuits that led the last of the Scopes-era laws against the teaching of evolution in public schools to be overturned.<sup>182</sup>

Bentley Glass' personal focus through the first two years of the BSCS effort was on improving classroom laboratory studies. He saw these "lab blocks" as a method of empowering students by allowing them to "do" science, not merely learn facts. But a significant shift occurred midway through the project when Muller joined the BSCS Steering Committee. At his first committee meeting in February 1961, Muller chastised the group for not taking full advantage of the opportunity it had been given. Muller's lecture goaded Glass to take action, and appears to have provided him an excuse to become more directly involved in effort. Subsequent to Muller's comments, Glass established a "theme corps" of six individuals to oversee the rewriting of the test textbooks the BSCS had already produced with a stronger focus on the single theme of evolution.<sup>183</sup> Glass then assigned himself the task of co-authoring, along with fellow

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<sup>181</sup> Ironically, it was not a BSCS textbook, but the 1965 edition of *Modern Biology*, a text which had traditionally offered a weak presentation of the topic of evolution, which triggered the lawsuit, known as *Epperson v. Arkansas*, that led to the overturning of one of the last Scopes-era laws prohibiting the teaching of evolution in public schools. Larson, 2003, pp. 98-99.

<sup>182</sup> See Larson, 2003.

<sup>183</sup> Rudolph, 2002, p. 147.

geneticist and Darwin Centennial attendee John A. Moore, one of the group's textbooks, the BSCS "yellow" version.

The claim that cultural evolution was not simply an analog of biological evolution, but its extension, served to support biologists' claims of purpose during the Progressive era. High school teacher and textbook pioneer George W. Hunter made the point clear in the introduction to his influential work, *A Civic Biology*, published in 1914: "the plan of this book recognizes first-year biology as a *science* founded upon certain underlying and basic principles. These principles underlie not only biology, but also organized society."<sup>184</sup> Truman J. Moon, in his 1921 textbook, *Biology for Beginners*, explained, in terms that would later be developed by Huxley, that though *Homo sapiens* represented the pinnacle of evolutionary progress, the species was of a different type, a "generalized order" free of the restrictions of specialization, but because of that freedom, dependant on intelligence and intelligent management for survival.<sup>185</sup> Critical to both Hunter and Moon's argument was the evidence of progressive evolution and increased dependence on intelligence that could be gleaned from an examination of a hierarchy of human races, from the "Malay" and "Ethiopian," described by Moon respectively as "very primitive" and as "cannibals,"<sup>186</sup> to the "Caucasians," described by Hunter as "the highest type of all."<sup>187</sup> In fact, in all editions of Moon's textbook issued between 1933 and 1960, the term 'racial development' was used as a substitute for the word 'evolution.'<sup>188</sup> Racist evidence in support of cultural evolution survived in textbooks for

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<sup>184</sup> Hunter, 1911, p. 5.

<sup>185</sup> Moon, 1921, p. 314.

<sup>186</sup> *Ibid.*, p. 340.

<sup>187</sup> Hunter, 1914, p. 196.

<sup>188</sup> In "Ella Thea Smith and the Lost History of American Biology Textbooks," I challenge the traditional view that the topic of evolution in biology textbooks published after the Scopes trial (1925) was

more than three decades, until just after World War II, when it was finally scrubbed.<sup>189</sup>

With the racist proofs went the topic of cultural evolution, and with that, a key pillar supporting the argument that biology could serve as the mediator between science and society. The topic of cultural evolution would not return to American high school textbooks until 1963, when it was boldly reintroduced to students by Bentley Glass and John A. Moore in the BSCS “yellow” version. A close examination of this textbook, particularly its presentation of the topic of cultural evolution, reveals how Glass ministered to racial sensitivities as he attempted to manage and mitigate the eugenic rhetoric of Huxley and Muller in order to reclaim biology’s social mission.

Despite the group’s claims that its work represented a revolutionary biology curriculum, the BSCS “yellow” version was organized quite traditionally, with opening chapters devoted to scientific basics, followed by an introduction to biochemistry, a discussion of the cell, a section devoted to plants, a section devoted to animals, and then closing chapters devoted to heredity, evolution, and conservation and ecology.<sup>190</sup> The book’s central arguments in support of scientific management of the process of evolution build across its final 12 chapters, starting with a discussion of heredity and evolution and closing with a discussion of how “civilized man” had broken through nature’s limits and

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progressively censored in order to accommodate the objections of religious conservatives. The substitution of “racial development” for the word “evolution” in the 1933 edition of Moon’s *Biology for Beginners* (later *Biology, Modern Biology*) has been presented as evidence of this censorship. See Grabiner and Miller, 1974; Skoog, 1979; Moore, 2001. But I suggest that this edit represents only a minor concession to fundamentalist pressure as the treatment of the topic of evolution, under the heading “racial development” (a euphemism for evolution in common use during the period) actually expanded from 17 pages in Moon’s 1921 edition to at least 46 pages in his 1933 edition. Ladouceur, 2008.

<sup>189</sup> In 1947 James Otto significantly revised Moon’s text and dropped the chapter on cultural evolution that had been standard in previous editions. As a result, Moon’s racist “proof” of progressive evolution also disappeared. Now named *Modern Biology*, the textbook still implied evolutionary progress, with chapters starting at the cell and stepping up a sequence of “adaptation” that culminated with “man, the most complex form of life.” But with cultural evolution gone, the topic of evolution no longer had a home in the middle of the text. Otto, like all of his contemporaries, moved the discussion of the method of evolution after heredity and before conservation to conclude the book. Moon, Mann, and Otto, 1947, p. 418.

<sup>190</sup> See BSCS “yellow version,” 1963.

now represented a threat to itself and the planet. Glass seems to have strongly influenced this structure, which moves, step-by-step, to a full reprise of the philosophical concerns Glass first outlined in his 1951 review article on Seidenberg's *Posthistoric Man*. Prior to the arrival at the textbook's climax, the authors make clear their awareness of the need to address and navigate the disreputable history of eugenic management and the racial assumptions that had supported biology's first claims to a social mission.

The BSCS "yellow" version's section on human heredity opened with a direct critique of eugenics. It dismissed efforts to "improve the human race" by "eliminating undesirable genes" or "encouraging geniuses to have more children." The authors cited two problems: "One of these is our relative lack of knowledge about most of human heredity; the second is that it is never quite clear in just what direction we want to guide the path of human improvement." In curiously antiseptic language, the authors dismissed the most brutal negative eugenic experiment of the century when they wrote, "Certainly the elimination of large gene pools from the face of the earth, as Hitler tried during World War II, is neither morally nor scientifically defensible."<sup>191</sup> Yet a program of genetic management was not dismissed out of hand, but rather carefully tended as a near-term possibility, dependant only on further scientific study. The authors listed three main impediments to understanding human heredity: humans were not fruit flies in that they breed too slowly, their total number of offspring were few, and "planned matings" were impossible. Yet, after an examination of the hereditary nature of range of traits such as eye color, skin color, baldness, height, and weight, the authors included a discussion of the genetic nature of certain diseases such as hemophilia, color blindness, diabetes,

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<sup>191</sup> BSCS "yellow" version, 1963, p. 584.

resistance to tuberculosis, schizophrenia, and surprisingly for a biology textbook published as late as 1963, the catch-all eugenic-era category “feeble-mindedness.”<sup>192</sup> The book includes no direct statement as to the value of understanding the genetic nature of these traits and diseases, but the implication was clear: in the near future the genetic nature of these traits and diseases would be adequately understood, and might well be managed. Exactly how these genetic traits would be managed was left to the imagination of the student.

As was typical of biology textbooks throughout the twentieth century, the “yellow” version segued directly from a discussion of heredity to a discussion of evolution. But in a curious retreat from a modern synthesis-aware treatment of the topic of evolution presented in the best textbooks of the 1950s,<sup>193</sup> the “yellow” version offered a stark presentation of Malthus’ population claims and their use by Darwin as evidence in support of evolution by natural selection. A graph indicating the runaway geometric reproduction rate of a population unchecked dominates the introduction to the topic. The priority given to population growth in the BSCS textbooks represented a dramatic change in the presentation of the topic of evolution. George Gaylord Simpson’s *Life*, published in 1957 and considered by Muller and many others the best college-level biology textbook then in use,<sup>194</sup> had presented a much more moderate, much less “explosive” view of population growth. Simpson’s book explained how population growth under both experimental and real-world conditions did not continue exponentially until all resources were consumed, but moderated even without predation.<sup>195</sup> However, the authors of the

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<sup>192</sup> Ibid., p. 586.

<sup>193</sup> See Simpson, 1957; Smith, 1949; Smith, 1954; Smith, 1959.

<sup>194</sup> Muller, 1958, p. 143.

<sup>195</sup> Simpson, 1957, p. 652.

“yellow” version provided no such moderating subtleties. This may have been nothing more than an attempt to simplify the narrative for a younger student, though it must be noted that their alarming presentation of unchecked population growth made the authors’ implied arguments in favor of genetic management and reproductive control much stronger. Later in the text the authors presented to students a frightening view of the future, stating that, “within two centuries, there will be more than 150 billion people.”<sup>196</sup> They then added, “the present explosive increase in human population, worldwide, represents a completely unstable situation.”<sup>197</sup> The text suggested little hope that population growth would moderate naturally. Though the “yellow” version suggested books by Simpson in its ‘further readings’ section at the end of its chapter on evolution, it did not include Simpson’s *Life*.

It is clear Bentley Glass was acutely aware of the need to address the concept of race prior to any discussion of cultural evolution. The chapter titled “The Evolution of Man,” which immediately preceded the “yellow” version’s chapter on cultural evolution, closed with a 3-page discussion of race. “All men are of one species,” the book stated. “The distribution of intelligence, moreover, seems to be an individual, not a racial, matter.”<sup>198</sup> The “yellow” version then suggested books by both Carleton Coon and Ashley Montagu in the chapter’s ‘further readings’ section. Yet, on the first page of the next chapter, titled “The Cultural Evolution of Man,” the authors illustrated “primitive” cultural development using a photo of a modern family of African Bushmen, stating in its caption that the family was representative of “the hunting and food-gathering peoples of

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<sup>196</sup> BSCS “yellow version,” 1963, p. 712.

<sup>197</sup> *Ibid.*, p. 718.

<sup>198</sup> BSCS “yellow” version, 1963, p. 672.

10,000 to 25,000 years ago.”<sup>199</sup> Despite the authors’ efforts, it seems impossible that students would see the family group of African Bushmen, pictured nearly naked, squatting on the dusty ground, one pregnant and another eating from a gourd using a stick, as anything other than a “less evolved” example of the human race.

The first half of the chapter devoted to cultural evolution reads almost as a synopsis of Coon’s *The Story of Man*. It offers a tale of our species’ progress from savage to civilized, a process that proceeded rapidly relative to biological evolution, and was now accelerating at a “terrifying” rate. Only pages earlier, the authors claimed that the human species had evolved to its present form 25,000 years ago, but then immediately contradicted themselves by stating that, “human evolution, which went on for several hundreds of thousands of years at a fairly rapid rate, has in the last 25,000 years speeded up tremendously.”<sup>200</sup> Referring back to a graph charting the rapid increase in population, the “yellow” authors wrote, “The circumstances of human life change faster and faster. The pace can best be assessed only in terms of a logarithmic increase.”<sup>201</sup> This increase in “circumstances” was then tied by the next sentence to the logarithmic increase in human population.

The problem of human population growth, or more specifically, the problem of controlling it without also “controlling” science, presented a key conundrum for Glass. In what, based on its similarity in theme and content to his other writings, we can assume to be a section he authored, Glass presented the problem: “three times in human history the sizes of human populations have increased at a logarithmic rate ... In each of the former

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<sup>199</sup> Ibid., p. 676.

<sup>200</sup> Ibid., p. 683.

<sup>201</sup> Ibid., p. 686.

cases, the progress in technology later diminished and came to a relative standstill.”<sup>202</sup>

Though Glass could seem to have been suggesting here that the answer to logarithmic human population growth was to limit technological progress, he was not, unsurprisingly, as such a suggestion would be counter to his most strongly held beliefs. Glass instead was making the case that scientific advance must continue, despite the dangers it represented. Yes, population growth threatened the planet, but as we have seen, Glass believed any call to limit science represented an even greater threat. He asked plaintively, “Will the era of exploration and discovery in science come to an end, like the era of geographical exploration and discovery that waned when the world had been penetrated and mapped?” In answer, Glass restated his belief that the potential for scientific knowledge was infinite. Without making a clear argument, Glass simply asserted, “at this moment no one can see an end to the scientific enterprise, no day when history will come to an end because everything is known and everything is managed for the best possible welfare of humanity.” In the end it was Glass, the “minister of science,” who wrote, “You must appreciate the nature of this human conquest which, more than toolmaking and more than agriculture, makes man like the ancient gods in his power to control nature and to work ‘miracles.’”<sup>203</sup> Though Glass did not state it starkly in his textbook, he believed that in order for humans to continue to explore the infinite universe of scientific knowledge, the species would have to continue to change, evolve, and improve ... at the genetic level. From 1940 through 1963, Glass seems to have held on to the belief that education alone would set the conditions for further evolutionary progress. That faith would not survive the decade.

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<sup>202</sup> Ibid.

<sup>203</sup> Ibid.

As the optimism of the early 1960s waned, as DDT and napalm became tied to establishment science in the public's mind, and as a new generation embraced "instinct and emotion" over rationality and logic, Glass seemed to lose faith in the power of science-based education alone to set the conditions for further progressive human evolution, and his ministrations took on a darker hue. By 1971 Glass thought it inevitable that population growth would lead to a "far more regulated society" where "the once sacred rights of man" would give way to a world where it would "no longer be affirmed that the right of the man and the woman to reproduce as they see fit is inviolate."<sup>204</sup> Glass described an era soon to dawn, where "no parent will ... have a right to burden society with a malformed or a mentally incompetent child."<sup>205</sup> Though Glass insisted that people must avoid "any measures that might decrease human genetic diversity" such as selective breeding, in his 1971 article he promoted genetic screening and 'prenatal adoption' to ensure that each child was born of "a sound heritage, capable of fully utilizing the opportunities provided by society for optimal development."<sup>206</sup> The rhetoric of the reform eugenics of Frederick Osborn, embraced by Glass in 1941, gave way as his ministrations by 1971 to a harsher rhetoric, not unlike that of the impatient Muller from 1958, or the eugenic mainliners of the generation before.

Among the suggestions for additional reading included at the end of the "yellow" version's chapter on cultural evolution were two books of note. One was Carleton Coon's *The Story of Man*. Another was *Man in Nature*, a book authored by a naturalist who had been assigned the task of leading the development of a second BSCS textbook, the "green" version, the book that would become one of the most popular biology textbooks

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<sup>204</sup> Glass, 1971, p. 28.

<sup>205</sup> Ibid.

<sup>206</sup> Ibid.

of the 1960s.<sup>207</sup> Its author would bring to the project a point of view quite critical of the faith in evolutionary progress embraced by so many of his peers. His name was Marston Bates.

### **Marston Bates: Preaching a Simpler Darwinism**

In a series of books published between 1950 and the early 1960s, Marston Bates criticized and dismissed the solutions to social ills his fellow scientists were proposing, particularly those that he felt overemphasized the role of biology on behavior and evolution on culture. “The woods are full of neo-Darwinians, anti-Darwinians, Lamarckians, Bergsonians, orthogenists, and goodness knows what else,” wrote Bates in 1950, “all with theories to sell.”<sup>208</sup> Bates dismissed eugenicists, noting how easy it was to “poke fun” at them for the “absurd” lengths they had gone to in “attributing human behavior to genetic inheritance and in classifying ‘desirable’ and ‘undesirable’ kinds of people.”<sup>209</sup> He was equally dismissive of environmental determinists, historians and anthropologists like Arnold Toynbee and H. L. Shapiro too taken with the “civilization and climate” theories of Yale geographer Ellsworth Huntington.<sup>210</sup> But Bates was equally critical of theorists, like Julian Huxley, who attempted to advance their eugenic-era notions of progress and purpose by stirring them into the modern synthesis to create an overly complicated quasi-religious stew.<sup>211</sup> The core of such theories, Bates wrote, “when

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<sup>207</sup> Meyer, 1986, p. 490.

<sup>208</sup> Bates, 1950, p. 236.

<sup>209</sup> Bates, 1955, p. 206.

<sup>210</sup> Bates called his 1952 book, *Where Winter Never Comes*, “my ‘anti-Huntington tract.’” Bates, 1952, p. 119. See Huntington, 1915; Huntington, 1919.

<sup>211</sup> Huxley devoted volumes to the defense of his “religion without revelation.” See Huxley, 1927.

finally arrived at, usually looks to me like metaphysics – an *élan vital*, an innate tendency of some kind beyond the reach of the experimental method.”<sup>212</sup>

To understand the critical interdependencies of life and to have an adequate scientific foundation for social action, Bates suggested, Darwin and natural selection were enough. He wrote, “We still, I think, have managed little improvement on Darwin’s theory.” He chided promoters of grander ideas, suggesting their systems and schemes were based on nothing more than wild scientific speculation. Quoting George Gaylord Simpson, Bates wrote, “the researcher who is seeking explanations must seek physical explanations only ... Personal opinion is free in the field where this search so far has failed, but this in no proper guide in the search and no part of science.”<sup>213</sup> But Marston Bates motives in calling for a simpler interpretation of the meaning of evolution were not entirely pure, for he had his own metaphysics, his own theory to sell.

Marston Bates was a Midwesterner. Born in Grand Rapids, Michigan in 1906, he moved with his family to a farm in Fort Lauderdale, Florida in 1916. An only child reared in near isolation, Bates, like Darwin before him, developed a strong interest in the natural world, particularly insects. After earning his B.S. from the University of Florida in 1927, Bates worked for three years as an entomologist on behalf of the United Fruit Company in Honduras and Guatemala. He earned his Ph.D. from Harvard in 1934. From 1937 to 1948, Bates was a staff member of the International Health Division of the Rockefeller Foundation, where he first served in Albania. He married Alexander Graham Bell’s granddaughter, Nancy Bell Fairchild, in 1939. The two transited through Egypt at the outbreak of World War II on their way to the very rustic village of Villavicencio,

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<sup>212</sup> Bates, 1950, pp. 236-37

<sup>213</sup> Simpson qtd in Bates, 1950, p. 236.

Columbian, where Bates studied mosquitoes and mosquito-borne diseases through the 1940s. Upon his return to the United States in 1948 Bates did postdoctoral work at the Johns Hopkins School of Hygiene, and it was here that he likely met Bentley Glass. Bates became a professor of biology at the University of Michigan in 1952, and worked there until his retirement in 1972. Two years later, in Ann Arbor, Marston Bates died.<sup>214</sup>

Bates' popular writing is often compared to Rachel Carson's. Indeed, the two authors closely paralleled each other in topic and tone in their respective books through the 1950s and early 1960s. Both worked outside the research mainstream, and as naturalists, somewhat outside the scientific mainstream of the 1950s with its Cold War-driven proclivities toward reductionism. As E. O. Wilson writes in the afterward to the fortieth anniversary edition of *Silent Spring*, "ecology was near the bottom of the scientific disciplines in prestige and support; few Americans even knew what the word meant."<sup>215</sup> Carson is often credited for raising the public's awareness of ecology. But it was Bates' 1960 book, *The Forest and the Sea*, not *Silent Spring*, one reviewer noted, that made "ecology a household word."<sup>216</sup> Bates in fact noted the potential impact of DDT on bird populations, the basis of Carson's central parable in *Silent Spring*, in his book *Man In Nature*, published the year before.

Bates' switch from being a biologist "chiefly concerned with mosquitoes and viruses" to becoming a scientist and popular author interested primarily in "the role of science and scientists in our civilization" he dated to a fateful conversation he had in October of 1948 with George K. Strode, director of the International Health Division of the Rockefeller Foundation. Strode asked Bates to study "the human population

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<sup>214</sup> Gale Reference Team, 2007; Bates, 1967, dust jacket; Bates, (Nancy Bell), 1947.

<sup>215</sup> E. O. Wilson "Afterward." Carson, 2002 [1962], p. 257.

<sup>216</sup> Clawson, 1989.

problem,”<sup>217</sup> hoping Bates could help answer critics of the foundation who suggested that its public health policies were actually doing more harm than good; that instead of relieving human suffering they might be “providing more tinder for death by starvation in the overcrowded world, might be changing the disease problem into the population problem.”<sup>218</sup>

Bates work on the issue of human population, which he probably began in earnest after completing his 1952 book on tropical cultures, *Where Winter Never Comes*, was strongly influenced by the popular work of William Vogt, Fairfield Osborn, and Harrison Brown, authors to whom Bates stated in *The Prevalence of People* he owed a “considerable debt.”<sup>219</sup> In a 1954 *New York Times* review, Bates called Brown’s book, *The Challenge of Man’s Future*, “a masterly synthesis of all the diverse fields of scientific knowledge that bear on the problems of relations between population and resources.”<sup>220</sup> In fact, when Brown’s book appeared in 1954, Bates, who was putting the finishing touches on *The Prevalence of People*, wrote, “I had the horrid felling that Mr. Brown had already written my book for me.”<sup>221</sup> However, though he shared many of Vogt, Osborn, and Brown’s concerns regarding near-term resource depletion and the social disruption raw material shortages would cause, Bates assumed a less apocalyptic stance, certainly than Vogt or Brown, and claimed to hold out hope that the human animal, with its capacity to learn, might yet take action ahead of disaster. He wrote, “If anything is clear from history and anthropology, it is the great plasticity of culture.”<sup>222</sup> He

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<sup>217</sup> Bates, 1955, pp. 1-2.

<sup>218</sup> *Ibid.*, p. 2.

<sup>219</sup> Bates, 1955, p. 252.

<sup>220</sup> Bates, 21 March 1954.

<sup>221</sup> Bates, 1955, p. 247.

<sup>222</sup> *Ibid.*, 249.

added, “Man and this culture of his are curious phenomena – with the equipment we have, essentially unpredictable. In this uncertainty I find my hope.”<sup>223</sup> This is not to say that Bates believed all would be well without significant cultural changes occurring.

Like Huxley, Muller, and Glass, Bates believed that the world opened by science could not be governed by the rules of a pre-scientific era. “Man, in gaining the godlike quality of awareness,” Bates wrote in *The Forest and the Sea*, “has also acquired a godlike responsibility.”<sup>224</sup> Science, all these men believed, would turn on its makers like Frankenstein’s monster if the technological fruits of science remained decoupled from a science-based ethics that mediated their application. The question became, upon what value or values to base a scientifically informed ethics? “We have drifted in the modern world into a position of ethical relativism,” Bates wrote, “which leaves us with no absolutes of good and bad, right and wrong.” Bates proposed, rather meekly, replacing the “dogmas and revelations” science had undermined with “a sort of faith, a sort of humanism,” that would be applicable to all men and all places and not depending on any particular dogma or any specific revelation.<sup>225</sup> Skeptical of the notion of scientific progress, and by association “evolving” ethical systems like Huxley’s “scientific,” or “evolutionary humanism,” Bates adopted Aldo Leopold’s belief that humanity must develop an “ecological conscience.” With an ecological conscience, ecological diversity became the primary value. Upon this rock Bates would build his metaphysics.<sup>226</sup>

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<sup>223</sup> Ibid.

<sup>224</sup> Bates, 1960, pp. 256-57.

<sup>225</sup> Ibid.

<sup>226</sup> Writing in 1998, Futuyma suggests diversity remains the naturalist’s primary value: “I believe that if we as a community of evolutionary and ecological biologists have one overriding ethical responsibility, it is to contribute what we can to preserve the biological diversity that is our subject. Futuyma, 1998. p. 4.

Bates wrote, “Just as health in a nation is, in the long run, promoted by a diversified economy, so is the health of the biosphere promoted by a diversified ecology.” But as evidenced by spreading suburbs, industrial standardization, and the “the trend of human modification of the biological community ... toward simplification,”<sup>227</sup> more people meant less diversity. “Man’s mad spree of population growth,” according to Bates, was forcing the species into an “ever more arbitrary, more artificial, more precarious relation with the resources of the planet.”<sup>228</sup> “Teeming numbers” of humans would lead inevitably to “epidemic catastrophe” and “totalitarian government.”<sup>229</sup>

Critical as Bates was of the “artificial” world created by the homogenizing imperatives of Western industrialism, he had a greater concern: the impact of Western technology, particularly medical technology, on cultures unready in Bates’ view to adjust their reproductive patterns in accordance. Puerto Rico provided a prime example of the potentially “disastrous consequences” of an ostensibly “successful imposition of public health.”<sup>230</sup> Bates warned, “when these medical techniques are imported, as things-in-themselves, into a culture where the other factors are not operating, we may end up with a multiplication of misery despite our good intentions.”<sup>231</sup> As Western nations could not prevent the spread of medical knowledge or its implementation, “except perhaps where they govern as colonial powers,” the only solution to the imbalance caused by the export of Western technologies, Bates believed, was to consciously export a Western scientific mindset. “My argument,” Bates wrote, “is that we might help the tropics most ... if we would export capital not only for things like industrialization, but for the establishment of

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<sup>227</sup> Bates, 1960, p. 260.

<sup>228</sup> *Ibid.*, 261.

<sup>229</sup> *Ibid.*

<sup>230</sup> Bates, 1962, p. 269.

<sup>231</sup> *Ibid.*, p. 272.

local institutions of basic science in a few key places on a grand scale.”<sup>232</sup> Bates suggested that a few institutions, “deliberately planned for the furtherance of basic science ... like the Johns Hopkins, the University of Chicago, and Leland Stanford,” could be built in the tropics, and that they in due course would generate a class of individuals, indigenous and therefore sensitive to the local culture, yet committed to “basic science.”<sup>233</sup> With a missionary zeal at least equal to that of Bentley Glass, Bates wrote:

Just as Western theologians consider that the way to salvation lies through Christianity, and Western politicians that it lies through democracy, and Western industrialists that it lie through the fostering of manufacturing plants, so I consider that the way to salvation for the tropics lies through science.<sup>234</sup>

Bates belief in the necessity of coupling the export of technology with the export of basic science was both an acknowledgment and a challenge to “transition theory,” an idea popular among demographers immediately following World War II. Transition theorists acknowledged the rapid increase in fertility in the Third World, but posited that Westernization would lead naturally to fertility declines. Susan Greenhalgh writes that transition theory not only played into post-colonial and Cold War anxieties concerning resource shortages and the perceived threat of Communism, it neatly allowed demographers to update their discipline’s relationship to race without necessarily updating the assumptions that underlay their ideas. She writes, “while disavowing the racism of the 1930s eugenics, transition theory embodied and legitimated a smug ethnocentrism, common at the time, that saw Western civilization as superior and

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<sup>232</sup> *Ibid.*, p. 274.

<sup>233</sup> *Ibid.*, p. 273-74.

<sup>234</sup> Bates, 1952, p. 269.

eventually displacing all others.”<sup>235</sup> Bates’ arguments in support of the need by “developing” regions to adopt Western science, and use it to adapt Western technologies to local cultural systems could be characterized as the worst a kind of “enlightened” imperialism. But Bates promotion of the need to develop an ecological conscience to counterbalance the disruptive forces of industrialism on Third World cultures did not so much offer shelter to traditional prejudices concerning race and class as it turned those prejudices into evidence that challenged a progress-oriented view of human biological and cultural development.

While reform eugenicists like Huxley found it difficult to promote a progress-oriented view of evolution without resorting to race- or class-biased arguments, naturalists like Bates faced no such difficulties. Bates’ ideology easily accommodated changing views of race and class. Julian Huxley saw evolution as leading to “greater functional efficiency, higher degrees of organization, more effective adaptation, better self-regulating capacity, and finally more mind.”<sup>236</sup> But Bates and other naturalists saw no such progression. The naturalist’s view of evolution was that it occurred mostly during times of stress and disturbance. It was a terminal process that culminated in climax communities which, when developed, functioned harmoniously and cyclically with little further change. Bates wrote in his summary to the conference volume, *Man’s Role in Changing the Face of the Earth*, “We are impressed everywhere in nature, when we look in a given cross-section of time, with the balances, the buffer mechanisms, the cycles, that maintain equilibriums.”<sup>237</sup> Change, even if it led to more comfort and less suffering in humans, because of its potential to catastrophically disrupt natural equilibriums, was

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<sup>235</sup> Greenhalgh, 1996, pp. 37-38.

<sup>236</sup> Huxley, 1964a, pp. 262-63.

<sup>237</sup> Thomas (ed.), 1956. p. 1137.

not to be celebrated, and certainly not promoted. A fortunate consequence of this perspective was, without the need to describe a “mainline” of evolution leading to “more mind,” the naturalist had no need to rank or categorize human populations relative to one another or against an arbitrary scale of biological progress. Bates took full advantage of his intellectual position relative to the concept of race to press his case for the adoption of an ecological conscience.

Bates understood the impossibility of discussing race without imparting value judgments. He wrote, “We are hardly able to distinguish between this race and that without getting involved with questions as to whether this race is ‘better’ than that – brighter, more advanced, or nearer the angles.”<sup>238</sup> Like Glass, Bates felt increased human mobility would soon lead to a single merged human race. Unlike Carleton Coon, who felt that general mutual disgust would keep the races forever separate (as he thought it had kept them separate since the Pleistocene), Bates expected that physical distinctions, born of the relative isolation of human populations in a pre-technological world, would eventually be erased. He wrote, “I suspect that in the end, what with the promiscuity of the wandering Scandinavians and the low cultural resistance of the blackfellows, human races will disappear.”<sup>239</sup> Though one could criticize Bates for the lingering value judgments apparent in this quote, his greater point, which he made over and over again in his writings, was that there was no credible evidence that behavior or physiology corresponded to racial types, and that “race and culture behave generally as independent variables.”<sup>240</sup> “Our most important classification,” Bates wrote, “is not into whites and blacks, but into English, French, Japanese, Chinese, Americans (in the restricted sense),

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<sup>238</sup> Bates, 1955, p. 46.

<sup>239</sup> Bates, 1952, p. 38.

<sup>240</sup> Bates, 1955, p. 49.

Mexicans, and so forth.”<sup>241</sup> Similarly, Bates’ dismissed class judgments, and the associated fear that differential rates of reproduction between the classes in industrialized societies had a dysgenic effect on the population as a whole. He wrote, “I don’t know of any clear evidence of genetic deterioration in contemporary populations.”<sup>242</sup> Though he accepted studies that purported to show that “in the modern West,” families with higher incomes had fewer children than families with lower incomes,<sup>243</sup> and that the children of these higher income families seemed generally more intelligent on average or at least as then measured, he stated, “this is just as likely (or perhaps more likely) due to the unfavorable environment, in the sense of lessened educational opportunity, lessened parental care and the like, as to unfavorable genetic potentialities.”<sup>244</sup>

After hollowing out arguments supporting a reading of evolutionary history as one of progressive biological progress, Bates took on the notion of cultural progress, particularly as evidenced by technological and scientific advances. Bates conceded that science itself was a progressive activity, and that at least within Western cultures, one that had led to an indisputable increase in human comfort and a lessening of pain. But progress, Bates proposed, was quite possibly a zero-sum game. In a completely interconnected post-World War II world, Bates suggested, one could not measure progress by the relative comfort of a single population in isolation. “Progress in the reduction of pain and fear,” Bates wrote, “cannot be measured in terms of your pains and fears, or mine only; it must be measured in terms of the reduction for all of the millions

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<sup>241</sup> *Ibid.*, p. 50.

<sup>242</sup> *Ibid.*, p. 206.

<sup>243</sup> *Ibid.*, p. 54.

<sup>244</sup> *Ibid.*, p. 210.

of individuals that go to make up our species.”<sup>245</sup> Bates knew that advances in agricultural technology had led to greater agricultural efficiency, but noted that these gains were offset by demands. “The farmer grows four times as much corn from an acre using hybrid seed,” he stated, “but there are four times as many people in the world to be fed.”<sup>246</sup> Despite his stated belief that the human species was a part of, not apart from, nature, Bates shared with progressionists a baseline view of human culture as a unique and dangerous exception to the natural order.

We have, particularly in the last few centuries, escaped from the controls that maintain balance and proportion in the biotic community. We have run wild, like a weed escaped on a new continent. We have retained the birth rate that we acquired during our Pleistocene evolution through savagery, and at the same time radically altered the nature and the incidence of the factors causing death.<sup>247</sup>

But where Huxley, Muller, and Glass’ progress-oriented view of evolution allowed them to frame human population growth as at least providing the seeds for biological progress, Bates perspective provided for no such rationalization or escape. People left free to reproduce would choke the planet if not checked. Long-term survival would require a significant and absolute reduction in the number of humans on the planet. Even at its 1950 level of 2.5 billion, Bates believed the total number of humans alive represented a “density of population that exceeds all reason, all possibility of support.”<sup>248</sup>

In the *Prevalence of People*, Bates made a strong and predictable pitch for birth control. Regarding the impact of medical technology on human survival, he wrote, “It seems to me perfectly plain that this interference with mortality must be balanced by interference with natality, lest we endanger all of the varied social, cultural and technical

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<sup>245</sup> Bates, 1950, p. 249.

<sup>246</sup> Ibid.

<sup>247</sup> Ibid., p. 251.

<sup>248</sup> Bates, 1950, p. 251

gains that have been associated with our control of mortality.”<sup>249</sup> If the numbers of humans on the planet continued to grow, indeed, if current numbers were merely maintained, great future wars over resources were inevitable. Though Bates stated the human species, as a biological entity, was likely to survive into “geological time,” human civilization would not.<sup>250</sup> However, nowhere in his work did Bates ever directly address the consequence of his 1950 statement concerning the impossibility of maintaining the present human population. To square his view of the human species as a part of nature, yet also a dangerous threat to the “life process” of the planet, Bates was left to characterize human population growth as a disease, a cancer that would inevitably kill its host. He wrote, “There is a frightening possibility that man, with his apparently limitless increase in numbers and his increasing power to destroy the rest of nature, may multiply his way to destruction.”<sup>251</sup> It was from this perspective that Bates would lead the development of one of the most popular high school biology textbooks of the 1960s, the BSCS “green” version.<sup>252</sup>

The BSCS had initially planned to produce a single textbook for the secondary school market, as its analog in the physics community, the Physical Science Study Committee (PSSC), had. Though it would later frame the decision to produce three textbooks as evidence of its support of open inquiry, the decision appears to have been more a consequence of an unbridgeable divide between progressionists and naturalists within the biology community. Marston Bates’ distinctive point of view, forceful

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<sup>249</sup> Bates, 1955, p. 109.

<sup>250</sup> *Ibid.*, p. 114.

<sup>251</sup> BSCS “green” version., p. 693.

<sup>252</sup> The text cites Alan Gregg, the medical director of the Rockefeller Foundation who, “compared present human population growth within the biosphere to the growth of a cancerous tissue,” BSCS “green” version, p. 692. Bates refers to the “cancerous multiplication of the numbers of men” in Bates, 1960, p. 253.

personality, and ability to manage the editorial process and quickly produce a working draft of his ideas in textbook form, made compromise difficult to impossible. In answer to Muller's criticism that the BSCS textbooks in their first draft form did not emphasize the central importance of the theory of evolution adequately, Bentley Glass admitted that the "Green Version owes very much to the particular point of view of Dr. Bates."<sup>253</sup> The "green" version would remain immune to Muller's demand, voiced at the February 1961 BSCS Steering Committee meeting, that the topic of evolution "come at the beginning, all the way through, and again at the end" of each textbook.<sup>254</sup> In its final form the BSCS "yellow" version, co-authored by Bentley Glass, indexed the word "evolution" 270 times. The "green" version indexed the word "evolution" just once.

Though Marston Bates served as the supervisor of the BSCS "green" version only through the book's initial development and test version phase from 1960 to 1961, his influence on the final text, published in 1963, is clear. The BSCS "green" version describes nature in "Batesian" terms as being in "dynamic equilibrium" and in "a teetering sort of balance."<sup>255</sup> Evolution is described not as an ongoing and progressive process, but as a process that leads to "stability in populations."<sup>256</sup> Glass noted that the "green" version presented "almost exactly a 180 degree reversal of the sequence of the topics" followed by the "yellow" and "blue" versions.<sup>257</sup> But it seems to have been lost on Glass that Bates' textbook was in fact a direct challenge to the progress-oriented conception of evolution he and Muller promoted.

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<sup>253</sup> BSCS, 1961, p. 39.

<sup>254</sup> *Ibid.*, p. 4.

<sup>255</sup> BSCS "green" version, 1963, p. 4. Bates' BSCS "green" version is similar in a great many respects, but particularly in its view of evolution as it relates to the balance of nature, to the textbooks written a generation earlier by fellow naturalist and entomologist Alfred Kinsey. Kinsey would of course gain fame later for his studies of human sexuality. See Kinsey, 1926, esp. p. 234.

<sup>256</sup> *Ibid.*, p. 586.

<sup>257</sup> BSCS, 1961, p. 6.

The BSCS “green” version did not just present the traditional topics of high school biology in reverse order, as Glass had noted, the text represented a radical inversion of the traditional purpose of a biology text. Rather than educating students on how to live healthier lives and how, through a growing understanding of biology, humans had gained control the environment to the species’ advantage, Bates’ text positioned human culture as the destroyer of diversity and a scourge to the planet. Human reproduction is barely mentioned in the text, despite a started desire by the BSCS Steering Committee to feature the topic. Human biology and human evolution, which was traditionally covered in the full last third of textbooks, was not introduced in the “green” version until page 646 of a 697-page main text. When it finally was introduced, under the header, “Man and the Biosphere,” the topic came accompanied by an illustration of a scared rabbit cowering in the woods as a bulldozer and a dump truck in the distance are directed toward its last patch of unspoiled land by a construction worker. Throughout its last section, the “green” version suggested human health was simply not compatible with ecological health. After comparing people to cancer cells, which if asked, “would surely think they were doing fine,” the book, under the subhead “values,” closed by contrasting Alexander Pope’s famous quotation that “the proper study of mankind is man,” with a quote from French zoologist Jean Rostand, who stated that biology, “by taking us out of ourselves, leads us to re-establish a link with nature and to shake ourselves free from our spiritual isolation.”<sup>258</sup> Strangely and incongruously, the “green” version ended with a quote from the final paragraph of Darwin’s *Origin of Species*, which stated in part, “from

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<sup>258</sup> BSCS “green” version, 1963, p. 693.

the war of nature, from famine and death, the most exalted object which we are capable of conceiving, namely, the production of higher animals, directly follows.”<sup>259</sup>

Borrowing the words of Rockefeller Foundation president Raymond Fosdick, Marston Bates suggested that the “great problems of mankind ... are to determine purpose, to find values, [and] to achieve social wisdom.”<sup>260</sup> But without an associated belief in evolutionary progress, it could be concluded that the only purpose one could derive from the theory of natural selection, to use Bates’ words, was the “rather bleak” purpose of simple survival. Bates admitted that he got “lost in the ethical issues involved in these problems.” He wrote, “Intellectually I sympathize with the teachings of Buddha, that all life is sacred. But practically, I see no way of acting on this.”<sup>261</sup> Without faith in managed evolutionary progress as promoted by Huxley in his 1927 book *Religion Without Revelation*, or the power of the primitive to reinvigorate civilized society as promoted by Coon in his 1954 *The Story of Man*, or the hope that a “mild eugenic effect” would naturally be achieved by the better informed reproductive choices of a population broadly educated in biology to which Glass subscribed, Bates more fundamentalist view of natural selection provided him little with which to construct a rationalization that might counterbalance the dark conclusions of his philosophy. Ultimately, Bates was forced to take a leap of faith.

In a 1962 lecture delivered at Berkeley entitled “The Human Environment,” Bates introduced his audience to an idea he said he had been “turning around” in his mind for a few months, an alternative to anthropologist Peter Murdock’s “supernatural

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<sup>259</sup> Ibid., p. 695.

<sup>260</sup> Bates, 1950, p. 250.

<sup>261</sup> Bates, 1960, p. 256.

environment” that Bates labeled “the conceptual environment.”<sup>262</sup> Without admitting that his view of science as “one of the humanities” placed it on the same continuum as anthropology, psychology, philosophy, and even religion, Bates search for a way past the dark conclusions of a metaphysics based on survival alone led him to the same strange folk-science idea upon which the Catholic priest and biologist so admired by Toynbee and Huxley, Teilhard de Chardin, had built his mystical evolutionary theory,<sup>263</sup> Vladimir I. Vernadsky’s concept of the noosphere. Vernadsky’s ideas in turn were based on the orthogenic evolutionary beliefs of Henri Bergson, the descendants of whom, the “Bergsonians” with their “theories to sell,” Bates so disparaged in *The Nature of Natural History*. In his lecture, after restating his warning that human population growth was analogous “to the growth of malignant tumor cells within an organism,” Bates proposed a surprisingly mystical idea, an idea that provided a way past the “rather bleak” conclusions of a metaphysics based solely on natural selection. Bates suggested that the “man-altered landscape” did not necessarily dictate the end of diversity, but might in fact lead to more diversity, not a noosphere, but a “noosystem,” which Bates described as “an interacting complex like the ecosystem, but with a multiplying series of additional transactions involving that curious conceptual environment of the human species.” Here, by extending the concept of ecological diversity to include the infinite diversity described by the sum of human interactions with the environment, Bates found a way to include his fellow humans in a framework that was also in line with the “teachings of Buddha, that

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<sup>262</sup> Bates, 23 April 1962.

<sup>263</sup> See Chardin, 1959. The text features a long introduction by Julian Huxley and a back jacket blurb by Arnold J. Toynbee who wrote of Chardin, “A great man of science and a great soul. His work gives our generation the comprehensive view it sorely needs.” See also Chardin’s article “The Antiquity and World Expansion of Human Culture,” in *Man’s Role in Changing the Face of the Earth*, edited by Marston Bates among others. Thomas (ed.), 1956, pp. 103-112.

all life is sacred.” In doing so, Bates, consciously or not, closed the gap between his previously held fundamentalist view of the inevitable negative impact of a growing human population on ecological diversity, and Rachel Carson's “other road,” her belief expressed in the last chapter of *Silent Spring* that an accommodation could be reached between *Homo sapiens*, in any number, and the natural world of which they were an evolving part.

### **Conclusion**

The end of World War II saw the restoration of Darwin and his theory of natural selection under the framework of the modern synthesis. Subsequently, the generally held view within the life sciences of Darwin metamorphosed from that of a notable biologist who posited an important but somewhat out of date theory to, in the words of Greene, “a pure scientist uncontaminated by ... ‘social Darwinism’ and completely emancipated from both natural and revealed theology – an atheist or at best an agnostic.”<sup>264</sup> Darwin’s reputation and position as a symbolic figure of pure science would grow through the 1950s.<sup>265</sup>

Unique cultural and historical forces combined at the end of World War II and through the 1950s to greatly magnify the apparent urgency of social problems. The Cold War, and its associated images of mutation-inducing radiation, “crystallized” social systems, suburban monotony, and most importantly, planet-choking population growth, intensified anxieties and served as a bottomless well of metaphors used to support idiosyncratic anthropological and biological theories. Carleton Coon used the rivalry

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<sup>264</sup> Greene, 1999, p. 13.

<sup>265</sup> Darwin’s restoration was assisted by the publication of a one-volume reader of his works co-edited by Marston Bates and published in 1956. Bates and Humphrey, 1956.

between the United States and the Soviet Union to defend his ideas of “the universality of natural groupings” as leading to order and stability.<sup>266</sup> Marston Bates suggested that, “with teeming numbers, an ever tighter system of control becomes necessary. Complex organization, totalitarian government, becomes inevitable; the individual man becomes a worker ant, a sterile robot.”<sup>267</sup> And for many scientists, and dramatically for Bentley Glass and Hermann Muller, Trofim Lysenko became a symbol of the need to resist any and all attempts at social or political control of science.

The launch of *Sputnik* in 1957 coincided with a peak in interest in evolutionary biology generated by consolidation of the modern synthesis and a great increase in public and press interest in Darwin during the run-up to the centennial anniversaries of the publication of Darwin and Alfred Russel Wallace’s original papers on natural selection in 1958 and *The Origin of Species* in 1959. Life scientists, prodded by Muller, Huxley, and others, sought to exploit the opportunity presented by late-decade “Darwin-fever” to establish their claim that the evolutionary process was well understood and that it could be managed, indeed must be managed, if Western industrial culture, the most progressed yet most vulnerable product of the process, was to be kept from regression and collapse. Life scientists attempted once again to pitch their understanding of biological evolution as of critical value in the management of cultural evolution, this time consciously working, though not entirely successfully, to avoid reliance on racists proofs. But the forceful reintroduction of evolutionary theory to the public, particularly as promoted by progressionists Julian Huxley, Hermann Muller, and the leadership of the BSCS, triggered a strong cultural backlash that included the reanimation of creationism, a

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<sup>266</sup> Coon, 1946, pp. 163-168.

<sup>267</sup> Bates, 1960, p. 261.

movement that was thought long dead.<sup>268</sup> Reverberations caused by the cultural clash between evolutionary progressionists and religious fundamentalists echo today in American political culture.<sup>269</sup>

Carleton Coon could have credited himself for all but single-handedly rescuing physical anthropology, at least temporarily, from its racist legacy and protecting its relevancy through the 1950s. Coon's 1954 *The Story of Man* served a key source for the central narrative of human progress and the evolution of culture presented in textbooks and other popular science works for more than a decade. But Coon was not content. His competitiveness and irascible personality led him to attempt to position the physical and cultural artifacts collected by archeologists and physical anthropologists as the equal of data collected by geneticists. Unfortunately for Coon, the sum of the data points described by all the flint axes and bone fragments collected worldwide could not match the information contained in one drop of human blood. The modern synthesis required hard numbers, and lots of them. The success of the mathematical models of the modern synthesis meant it was no longer necessary, or tolerable, to rely on educated guesses to fill the gaps in data that was dug from the ground. Coon's speculative history of human evolution, which should be read as a last ditch effort to position physical anthropology as a hard science, was widely interpreted as the product of a racist, and before his *Origin of Races* was published in 1962, Coon was forced to exile himself from the academic community. Physical anthropology of Coon's variety, an anthropology that collected

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<sup>268</sup> See Numbers, 1992; Muller, 1959; Larson, 2003.

<sup>269</sup> Though widely and rightly derided for his "scientific" proofs in support of a literal reading of Genesis – a 6,000 year-old earth, a literal "Noah's flood," etc. – creationist Henry Morris understood better than many scientists and social theorists the challenge and opportunity represented by Huxley and his progressionist philosophy. In *The Twilight of Evolution* Morris wrote, "Liberalism espouses a doctrine of 'progress,' based on man's innate potentialities for development, a doctrine which implicitly denies the fact of man's Fall and basic depravity." Morris, 1963, 19. It is interesting to compare Morris' view of Huxley with that of Bates.

gross physical data and compared racial groups one to the other, limped into the 1970s, but withered under a harsh feminist critique.<sup>270</sup> It finally gave way to cultural anthropology and the “thick descriptions” of Clifford Geertz.<sup>271</sup>

Bentley Glass’ belief in the need to broadly educate the public in science and human biology manifested itself in the programs of the BSCS, including its influential “blue,” “yellow,” and “green” textbook versions. Glass would leave the BSCS in 1965 to take a position at the State University of New York at Stony Brook. From there he would edit books and write articles mostly dedicated to placing the eugenic legacy of he and his fellow progressionists in context.<sup>272</sup> Analysis of the relative success or failure of his efforts awaits the work of future historians. Glass’ BSCS managed to survive a strong cultural backlash in the 1970s, and is today the only Cold War era curriculum development program still in operation.

Arnold Grobman, who served as the BSCS’ first director, and who succeeded Bentley Glass as its chairman in 1965, suggested that it was no coincidence that the rise in awareness of environmental issues followed the publication of the popular BSCS “green” version. The “green” version, a strong reflection of Marston Bates’ personal vision, was certainly an important part of a movement, driven also by the popular works of Barry Commoner, Rachel Carson and others, that led to the establishment of the Environmental Protection Agency under Richard Nixon and the first Earth Day in 1970.<sup>273</sup> But the darker side of Bates’ ideology emerged in Paul Ehrlich’s *The Population Bomb*. Ehrlich’s work, like Coon’s, has of late begun to suffer a strong and sustained

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<sup>270</sup> Bleier, 1984.

<sup>271</sup> See Sewell, 1997, pp. 35-55.

<sup>272</sup> See Glass, 1981, pp. 357-367; Glass and Stein, 1986, pp. 413-421; Glass, 1990, pp. 130-154.

<sup>273</sup> See Coglianese, 2001.

critique from feminist scholars. Though it is perhaps unfair to link Bates too closely with Ehrlich, as Ehrlich's ideology owes as much if not more to the blatantly anti-religious, and specifically anti-Catholic, rhetoric of Karl Sax than it does to the work of Bates, it is interesting to compare the two entomologist's common experiences and reaction to population growth in the emerging world. Ehrlich opened Chapter 1 of *The Population Bomb* with this description of a taxi ride he and his family took through the slums of Delhi:

The streets seemed alive with people. People eating, people washing. People sleeping. People visiting, arguing, and screaming. People thrusting their hands through the taxi window, begging. People defecating and urinating. People clinging to buses. People herding animals. People, people, people, people.<sup>274</sup>

Two decades earlier, Marston Bates' wife, Nancy Bell Bates, described the couple's similar experience in Cairo in her memoir, *East of the Andes and West of Nowhere*:

There were so many people ... We could never get away from them. On drives outside the city, they would pop up from nowhere the minute we stopped the car. When we sat in the privacy of the garden, brown faces peered through the hedge. The thought of so many human beings was depressing.<sup>275</sup>

Longino asks, "to what extent do or should scientific theories shape moral and social values?" and, "to what extent do social and moral values shape scientific theories?" In his 1999 book *Debating Darwin*, John C. Greene compares the many attempts by life scientists in the United States and Europe in the mid-twentieth century to "erect a new vision of human duty and destiny on the basis of a supposedly value-free neo-Darwinian biology" to the Bridgewater treatises of the nineteenth century in which scientists attempted to use science to prove the existence of God. He suggests that, "in both cases science was only a tool, a weapon, in defense of positions that were essentially religious

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<sup>274</sup> Ehrlich, 1968, p. 15

<sup>275</sup> Bates, (Nancy Bell), 1947, p. 18.

and philosophical.”<sup>276</sup> Denial of that reality according to Greene opened a door to great danger. Green writes that without “religious affirmation concerning the meaning and value of human existence ... science becomes pointless and even destructive.”<sup>277</sup>

It is rather uncomfortable to confront the possibility that the rationalizations and defenses Coon, Glass, and Bates, along with Muller, Huxley, Vogt, Brown, and so many other scientists and social theorists constructed in order to position their personal ideas and those of their respective disciplines as relevant and true in the years between the end of World War II and the early 1960s were based on nothing more than a host of *a priori* and logically unsupportable beliefs in progress or stability or beauty or the innate depravity of the human species; on nothing more than their own personal culturally-inspired *faith*. It is interesting to note that the only subject of this study to profess a strong religious affiliation, the Southern Baptist and Sunday School teacher Bentley Glass, was the one most sure that science had dictated a change in the relationship of humanity to the unknown and unknowable, to see science as a complement, but a step beyond, religion. He wrote, “We cannot turn the clock back. We cannot regain the Garden of Eden or recapture our lost innocence. From now on we are responsible for the welfare of all living things, and what we do will mold or shatter our own heart’s desire.”<sup>278</sup> Julian Huxley on the other hand saw science as a full replacement for religion, yet could sound like a Catholic mystic in his promotion and defense of his concept of psychosocial evolution.<sup>279</sup> And one could be forgiven for mistaking Marston Bates for a fundamentalist preacher

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<sup>276</sup> Green 1999, p. 17.

<sup>277</sup> *Ibid.*, p. 9.

<sup>278</sup> Carlson, 1973, p. xxi.

<sup>279</sup> See Huxley’s introduction to Teilhard de Chardin’s *The Phenomenon of Man*. Chardin, 1959, pp. 11-28.

based on his sermons denouncing the building of “an arrogantly selfish, man-centered, artificial world.”<sup>280</sup>

Perhaps the answer to Longino’s questions is dependant on scale. Moral and social values certainly framed the kinds of scientific questions Coon, Glass, and Bates thought to ask. But there is a significant difference between describing the distribution of a certain style of flint axe, the frequency of a specific genetic allele, or the life cycle of a mosquito and developing and defending grand theories of culture or history. Carleton Coon, Bentley Glass, and Marston Bates’ personal and social concerns were closely parallel to one another, and entirely relative to the assumptions of the common culture and times the three were born into. Coon positioned anthropology as a source of the “primitive” spirit necessary to reinvigorate domesticated culture. Glass promoted science as the continuation of humanity’s mystical quest, placing himself in the role of minister and guide. Bates positioned science as a search, “though a queer sort of search,” that could not promise a Holy Grail, but could restore mystery and an appreciation of the infinite.<sup>281</sup> It is not hard to read into the writings of Coon, Glass, and Bates a desire to retain a youthful vigor by pushing back against the dispiriting demands, limits, and disappointments of adult life in a complicated and shrinking world. In 1960, Glass wrote, “The western frontier that once challenged adventurous and imaginative youth exists no longer, the frontier of today and tomorrow is that of science.”<sup>282</sup> In 1971, a wearier Glass simply said, “man requires a challenge and a quest if he is to avoid boredom.”<sup>283</sup> This desire to seek adventure did lead Coon, Glass, and Bates to produce strong works of

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<sup>280</sup> Bates, 1960, p. 262.

<sup>281</sup> Bates, 1950, p. 269.

<sup>282</sup> Glass, 1960, p. 61.

<sup>283</sup> Glass, 1971, p. 29.

science – Coon’s cataloging and ordering of archeological artifacts, Glass’ mathematical analysis of the effects of genetic drift within discrete human populations, and Bates’ study of the life cycle of mosquitoes, were all considered strong and valuable contributions to their respective sciences. It would be unfair to say that life scientists exploited the opportunity presented by Cold War social anxieties to position themselves and their disciplines favorably simply as a selfish act of politics. It would also be unfair to say that the challenging ideas of Coon, Glass, and Bates, or the great organizational effort of the BSCS and other Cold War era educational initiatives, had no positive cultural impact. However, the profound implications of the worldviews held by Coon, Glass, and Bates suggest one should proceed with caution when presenting or consuming dramatically framed beliefs regarding the nature of human behavior. Scientists, or anyone “with theories to sell,” would be wise to keep their minds open to alternate, even alien, points of view, and moderate or disclaim their demands for change knowing that their ideas are, like everyone’s, ultimately based on relative and often ephemeral cultural beliefs, never on absolute truths. As Greene states in the closing of his 1959 book *The Death of Adam*, each of us is “the creature and creator of history, a moral being whose every intellectual triumph is at once a temptation to evil and a power for good.”<sup>284</sup>

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<sup>284</sup> Greene, 1959, p. 332. Glass wrote of Greene’s 1959 book, *The Death of Adam*, “Neo-Darwinians and eugenists (sic), who see only a roseate future of human evolutionary progress, will not be pleased at this ending,” yet added, “To this historian and humanist we owe an undying debt.” Glass, 1961, p. 278.

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