Value-added animal agriculture: Inclusion of race and gender in the professional formula

M. M. Beck2* and J. C. Swanson3†

*Department of Animal Science, University of Nebraska, Lincoln 68583-0908, and †Department of Animal Sciences and Industry, Kansas State University, Manhattan 66505-0201

ABSTRACT: The Morrill Act establishing the land grant university system created public higher education institutions and paved the way for women and racial minorities to access them. Today women are ∼50% of the undergraduate population in animal science (AS) departments at the original land grant state universities, but racial minorities lag far behind, in part because the schools created under the 1890 legislation provided a diversion away from the state universities. Demographic trends from the U.S. Census and the Bureau of Labor Statistics indicate increasing positive growth in nonwhite workforce participation, with concurrent decreases in non-Hispanic male participation; men and women will be nearly equally represented by early in the 21st Century. In the faculties of AS departments, both women and minorities are seriously under-represented; causative factors underlying this phenomenon are similar. Although, historically, adherence to role stereotypes and divisions of labor explain some of the under-representation, these assumptions do not hold across all economic classes. Other factors contributing to the scarcity of women and faculty of color in AS include assumptions and mechanisms of scientific research itself; the very neutrality and disinterestedness of researchers, inherent in the scientific method, prevent recognition that values and personal biases affect decisions of hiring selections and mentoring effectiveness. We explore the cultural factors that underlie these values and biases that are common not only to agriculture but also to science more broadly.

Key Words: Animal Husbandry, Diversity, Universities


Introduction

The issue of gender (and, by extrapolation, race) in the agricultural sciences can be illustrated by a simple test. Results of the Draw a Scientist Test, created by David Wade Chambers (1983), when administered to almost any group, shows overwhelmingly that our perception of a scientist is a white male wearing a lab coat (Flannery, 1999; Beck and Bolick, unpublished observations). The powerful message evoked by this symbolism is not coincidental or trivial to women and people of racial or ethnic minorities, particularly those with an interest in a scientific career.

What’s wrong with this picture? Where did it come from? Should it be changed, and if so, how? Let us begin by examining the historical questions.

Historical Context

Scientific Origins

Historically, women were systematically excluded from scientific and other careers, largely because of their role in society and the prevailing attitudes toward their abilities. The ancient Greek beliefs that women had a weaker nature than men are still recognizable today in the various sex differences theories (Bleier, 1984; Valian, 1996). Women scientists have endured a long history of “scientific” studies and theories of race or sex differences in intelligence and nature, from the Medieval Doctrine of Humors, through 18th and 19th Century Craniology to theories of primitive evolution of the Social Darwinists of the 19th Century (Schiebinger, 1987; Thomas, 1989). Numerous older studies concluded that Africans and African Americans were inferior to Caucasians and that women were inferior to men (particularly in science and math abilities) (as reviewed by Reid, 1987). Not all studies are ancient history, however; many are recent, and arguably devastating to promoting the accessibility of scientific fields to non-Caucasians and to women.
Among the more recent of the “scientific” arguments used to “prove” women’s inferiority to men in math and science are brain lateralization differences and E. O. Wilson’s sociobiological theories. The former has been used extensively to argue against girls’ ability in mathematics (Benbow and Stanley, 1980; Geschwind and Behan, 1982), which if believed, could decrease their access to all scientific fields (Bleier, 1984; Sadker and Sadker, 1994; Sonnert and Holton, 1996; Valian, 1996). Many proponents of the latter—a direct extrapolation of animal behavior studies to humans—argue that sex differences are biologically universal, fixed, inevitable, and immutable (Thornhill and Thornhill, 1992), and therefore justification for gender-based social inequality (Bleier, 1988; Wayne, 2000). Without attributing motive to Wilson himself (Wilson, 1975; 1978), his theory of human behavior extrapolated from that of ants and other animals is problematic to many feminist scientists (Bleier, 1984; Wayne, 2000) and has been used by biological determinists (Dawkins, 1976; Barash, 1977, 1979; Van Den Berghe and Barash 1977; Thornhill and Thornhill, 1992) to justify particular behaviors that relegate women to subordinate positions, rather than as a theoretical biological basis for explaining gender differences. Using linguistic and semantic tricks, some scientists openly defend the inevitability of rape, sexual double standards, and relegation of women to inferior positions and career paths. The current percentages of women in undergraduate programs may suggest little effect of positions such as these; the numbers, however, are misleading in this context because women are still underrepresented in science generally, and in animal science (AS) graduate programs and faculty ranks.

**Education Access and the Land Grant System**

In addition to the use of “science,” institutional barriers, firmly established and entrenched, continue to discourage or exclude women from scientific careers and by default maintain the status quo. Societal norms reinforce the image of the white male lab-coated scientist; each of these is part of the problem.

In keeping with the English system, early colonists in America restricted education to the elite, with higher education reserved for a minute segment of the population reserved for a minute segment of the population. In America restricted education to the elite, with higher education reserved for a minute segment of the population. Educational access was a preeminent concern and was aimed at ensuring that of children from all walks of life received equal opportunities to education. However, these ideals were not always realized in practice, and gender and race played significant roles in shaping access to education.

### Table 1. Summary of women faculty at Kansas State University (KSU) and the University of Nebraska-Lincoln (UNL): first women hired in any department; first women hired in animal husbandry (staff position) and in animal science; current number of women faculty in animal science.

<table>
<thead>
<tr>
<th>Institution</th>
<th>Charter date</th>
<th>First woman (faculty)</th>
<th>First woman in animal husbandry (staff)</th>
<th>First woman in animal science (faculty)</th>
<th>Current women in animal science (Full/Associate/Assistant)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KSU</td>
<td>1864</td>
<td>1897 Domestic science</td>
<td>1914</td>
<td>1986</td>
<td>3/1/1 (51)</td>
</tr>
<tr>
<td>UNL</td>
<td>1872</td>
<td>1888 Chemistry</td>
<td>—</td>
<td>1980</td>
<td>2/1/2 (34)</td>
</tr>
</tbody>
</table>

The passage above discusses the historical and sociological factors influencing gender representation in science, particularly highlighting the role of sociobiological theories and institutional barriers. It emphasizes the importance of considering the complexities and nuances of gender differences in scientific contexts, rather than attributing them to biological determinism.

The table provides a summary of women faculty at Kansas State University (KSU) and the University of Nebraska-Lincoln (UNL), detailing the first women hired in any department, first women hired in animal husbandry (staff position), and first women in animal science. It also lists the current number of women faculty in animal science, categorized by their rank (Full/Associate/Assistant) in the total faculty in the department.
Native American institutions were given land grant status (NSF, 2000).

**Department Evolution**

Because of the more pragmatic interpretation of the first Morrill Act by western and mid-west colleges, and considering the authors’ locations, two land grant universities of interest were Kansas State University (KSU) and the University of Nebraska (UNL). Table 1 documents the history of women faculty members at both institutions. The first women faculty members were hired in very different fields but at about the same time. Current numbers of women faculty at both KSU and UNL are the same; however, at KSU the 5 women are ~10% of the total, while at UNL the 5 are almost 15%. Given the current economic issues nationwide, with fewer hires anticipated than in the past, this picture will not change appreciably in the near future—in part, of course, because of factors unrelated to either gender or race.

An interesting comparison is that of the experience differentials between poultry science and animal science with regard to women. The first poultry husbandmen were actually women, at least in extension at land grant universities, where poultry husbandry was housed initially in departments of home economics or domestic science. Indeed, women such as Mrs. W.B. Morehouse in Wisconsin in 1892 and others spoke of difficulties convincing men to take poultry seriously as an economic venture and therefore as an academic focus (Florea, 1974). Long the purview of women as their only source of income, poultry was viewed as beneath the dignity of men in business and in academia until it became clear that a great deal of money indeed could be realized from the sale of eggs—then the situation changed (Florea, 1974). Nevertheless, women were present at the creation of the Poultry Science Association (PSA) in 1908, and two women served as heads of the poultry science department at Washington State University from 1912 to 1918 (Florea, 1974). In contrast, the first woman to become a member of the American Society of Animal Science (ASAS) could not be determined from present records and the first woman head of an AS department was hired in 2001. PSA elected its first woman president in 1987, its third in 2002, and will have its fourth in 2004, while ASAS has had only one (1996).

**Current Trends in Science**

To gain perspective on the presence of women and minorities in AS, we can look first at the percent of women receiving university degrees. In 2000, at all levels (BS, MS, and PhD) in all fields at all institutions in the US, women received essentially half (56% of BS degrees, 57% of MS degrees, 44% of PhD degrees) of those awarded (Trower and Chait, 2002). Statistical breakdowns are available for race and sex in the agricultural sciences, but it is difficult to find any statistics on AS alone. Figures 1 and 2 show that between 1980 and 1997, women in agricultural sciences at each degree level came close to the numbers cited for all fields of study (that is, essentially half of the BS and MS degrees, and 40% of the PhD degrees). It should be noted that veterinary degrees are not included in these statistics; the DVM is considered a first-professional degree along with MD and JD and is not included with the earned doctorates by either the NSF or the National Center for Education Statistics. Employment of women in agricultural sciences, however (Figure 3), is skewed differently; women are employed in these fields at around 20%. The situation based on race statistics is even worse. Figures 4 and 5 for 1980 and 1997, respectively, show that Blacks and Hispanics are barely recognizable statistics at all degree levels and in all fields of agricultural sciences employment (Figure 6); it should be noted...
that employment of African Americans and Hispanics in agricultural production jobs would be much higher.

The summary information from these figures is the following: Of full professors in science and engineering (data not available for agricultural sciences alone, much less animal science), 94% are white and 90% are male. Of full-time faculty members, 87% are white, 64% are male; and 76% of male faculty members are tenured compared to 47% of women (NSF, 2000). A comparison of these statistics with those of the students considered earlier shows a serious dichotomy between student and faculty populations.

Why is this an issue? Why, in 2002, are we even talking about issues of race and sex in animal science? Data presented by Johnston and Packer (1987), as cited in Glenn (1996), indicated that by 2000 the cohort of workers entering the workforce for the first time in the U.S. would be close to 90% nonwhite, female, or immigrants. This statistic alone justifies a critical scrutiny of animal science departments (faculty, curricula, etc). Data collected from the last U.S. Census and analyzed by the Bureau of Labor Statistics (Fullerton and Toossi, 2001) indicate that minority participation will continue to show positive growth while non-Hispanic white male share of the labor force slips from 73% (2000) to a projected 69% by 2010. Men and women will share nearly equal portions of entry into the labor force, 49.6% and 50.4% respectively. Blacks will constitute 12% of all new entrants, Hispanics 13.3%, and Asians and other 6%.

If our students are not prepared by example, role models, instruction, and experience to deal with diversity, we have failed them as future citizens. For both women and racial minorities, according to Trower and Chait (2002), the single most important predictor of future success is the percentage of like role models at...
their undergraduate college. As faculties become more diverse, the climate for women and minority faculty and students improves. (Ruskal, 1989; Snively and Cor-sigia, 1997; Milem, 2000). As the curriculum becomes more diverse, it begins to resemble the world outside the very narrow, protected sanctum of (animal) science. Studies (Rosser, 1993; Turner, 2000; AAUP, 2000) have shown conclusively that diversity promotes better teaching and learning through broadened scholarship and teaching methods that may more closely match those of minority cultures and through the removal of subtle biases in teaching materials and styles.

The world is changing; animal science departments, except for women undergraduate enrollment, lag far behind. Of those undergraduate women, one study at Texas A&M (Cleere et al., 2000) indicates that female graduates looked longer for jobs than males and were paid less (both starting and current salaries). At graduation, 39.9% of the women graduating had found employment in their field compared with 61.1% of the men; 74.5% of the women reported starting salaries of <$25,000 compared with 60.7% of the men. Analysis of current salaries showed that 44.1% of women responding still earned <$25,000 compared with only 12.8% of the men responding. In addition, the women students interviewed rated their AS instructors lower than did the men (P = 0.02) and indicated that they had benefited less in areas of critical thinking ability, leadership ability and technical expertise (P < 0.005). These findings (among the only published data available) and observations by others (e.g. Glenn, 1996; Pell, 1996; Harlander, 1996; Schillo, 1998) suggest a disenfranchisement of women (and minorities) in AS departments.

Understanding and Tackling Diversity

Diversity is a problematic topic in science, and presumably in AS as well, in part because it is assumed to benefit only those in the underrepresented groups by giving them access to the privileges enjoyed by the majority (Milem, 2000). In reality, the benefit to those belonging to the status quo of an enriched, diversified environment is at least as great (Milem, 2000). It is assumed by many that affirmative action has leveled the playing field and is therefore no longer needed (Milem, 2000); although for women undergraduates the ratio is about equal with men, the racial and ethnic minorities lag far behind (Trower and Chait, 2002; NSF 2000). A standard excuse for the under representation of women and racial minorities in science is what is known as the Pipeline Problem, of which there are two sub-aspects: first, that there are not enough women and minorities in the pipeline in the first place; and second, that the pipeline leaks (Pell, 1996). Trower and Chait (2002) suggest that the pipeline problem is not satisfactory as the sole reason for the scarcity of women in science faculties; if it were, 30 yr of affirmative action and the requisite good-faith efforts would have been effective. For racial minorities, however, the preponderance of African Americans who attend one of the Historically Black Colleges and Universities (NSF 2000) may well not feed into the mainstream AS pipeline. The use of the pipeline metaphor, according to Chubin and Malcom (1996) obscures the other part of the issue, which is that women and people of color “in the science pipeline” need to have a destination—an environment in which jobs are available to them as to white males; lacking this, the face of science remains white and male. Mentoring, an important element of success for women (Chubin and Malcom, 1996; Glenn, 1996; Harlander, 1996; Pell, 1996), is in and of itself too simplistic a solution. As Schillo (1998) points out, forcing women (and by extension, people of color) into the prevailing cultural molds may cause self-betrayal. In addition, making everyone conform to the status quo pattern does nothing for actual diversification of the discipline.

Qualification

Diversity is often regarded as an agenda to undermine the discipline and lower the standards so that poorly qualified students or faculty can be admitted, and affirmative action has become synonymous for many with reverse discrimination (Smith, 2000). In reality the intent of Affirmative Action is to increase the opportunity for equally qualified (Chubin and Malcom, 1996) underrepresented candidates; it should combine quality screening with collective characteristics. The problem lies in the definition of “qualified,” in which the assumption is of a “neutral” [therefore presumably “fair” (Milem, 2000)] approach based on “objective,” “quantifiable” measures of quality such as ACT/SAT scores, GRE scores, certain grades obtained in certain undergraduate courses, numbers of publications and grants, etc. Reliance on measures such as these achieves two things: First, students measured exclusively by these standards are valued more for their contributions to the institutional reputation rather than as the recipients of the best education possible (Milem, 2000). Second, racism and sexism continue to present a problem in our society, and a policy of race-(or gender-) neutrality will more likely reinforce than change the status quo (Milem, 2000). Often women and minorities who lack the mentoring and opportunities that almost automatically enrich the male academic experience are “not qualified” by these standards.

Norms of Excellence

To some, race and gender are nonissues, irrelevant to the discipline, not to be considered in student, faculty or staff recruitment and retention. A widespread belief is that, if (traditional) animal scientists pursue (traditional) science, then by definition the outcome will be one of excellence and by its nature justify the belief in the excellence, indeed infallibility, of the system. Because of the “objective” nature of science, scientists
assume that the “most qualified” individual will always be hired or admitted; typically those who can document (traditional) educational or career paths can succeed. The problem with this, of course, is that it is circular and turns on the definitions of excellence of those who established the criteria of excellence and therefore define as excellent only those who exactly match the criteria so established. This model works well for those who created it, but in reality it reflects the patriarchal, hierarchical model established for us by Francis Bacon, in which the authority to decide who will do science and thus what science will be done rests with those who keep the gate (Rose, 2002).

The hurdles still firmly in place for women and people of color who aspire to careers in animal science have several layers (Sonnert, 1996). Recall the Draw a Scientist Test and the image of the white, middle-class male scientist raised and trained in the Judeo-Christian tradition, mostly heterosexual (in fact or assumption), who believes in and defends the scientific method (which isn’t bad, except as it applies to the inability to broaden the definitions of quality) of neutrality and objectivity (Rosser, 1993) and whose value system is based on numbers and competition. This masculine approach to science (Chubin and Malcom, 1996) worked well at one time—when all scientists were men, and science was primarily based on mastering nature and controlling the universe (Chubin and Malcom, 1996). This culture (Trower and Chait, 2002) shapes the way in which university business (not only science but governance) is conducted according to well-controlled but unwritten rules based on these unwritten norms. Within that culture, socialization of graduate students and young faculty occurs, which of course helps ensure success in the academy but also tends to marginalize women and people of color. Subtler norms less conducive to diversity are hierarchical order of disciplines, gender and race stereotypes, single-mindedness in pursuit of science, and relative importance of assignment (teaching vs. research vs. extension; applied vs. basic research; refereed vs. nonrefereed or electronic vs. print outlets) (Trower and Chait, 2002). Collegiality, allegiance to discipline, faculty autonomy, and principles of academic freedom—all so critical to the academy, and rightfully so, can also serve as barriers to change (Trower and Chait, 2002).

Barriers

A cut above departmental norms are the institutional barriers to success in science for women and people of color (Hu-DeHart, 2000). The climate is aided and abetted by the management of diversity by institutions of higher education (Hu-DeHart, 2000). In this corporate model, diversity becomes synonymous with differences, and whitewashed out of existence under the guise of politeness and civility (Hu-DeHart, 2000). In the best of all possible worlds, acceptance could be based solely on individual strengths and talents. However, socially and historically constructed biases have served to exclude on the basis of sex and race—characteristics that are unrelated to actual qualifications. Instead of recognizing this, and that real issues of power and privilege accrue to those in senior positions, the prevailing attitude is to place the burden solely on the individual and for the institution to duck its own responsibility (Hu-DeHart, 2000). University leadership is heavily invested in this corporate model. Thus, women and people of color become socially isolated in lower-ranking positions that preclude any real possibility to leverage for change. The status quo persists. (Valian, 1999; Hu-DeHart, 2000).

Societal barriers, of course, also contribute to the scarcity of women in science. In American culture, our socialization from birth on (Valian, 1999) and our language use (Frank and Treichler, 1989; Gilligan 1982) support the beliefs espoused by the “scientific” arguments of women’s inferiority in certain areas. Societal norms create expectations for girls and boys that do much to create the double standards in both behavior and ultimate career choice (Davis and Rosser, 1996). The assumptions of “feminine” and “masculine” are indiscriminately applied in our society, and although women of course ultimately make their own choices (that is, they are not explicitly denied scientific careers), it is not an easy thing to prevail against the powerful norms established by society. Hard data support the assertion that women and racial minorities are disproportionately excluded from scientific careers (Figures 1 through 6), although women, at least, are now >50% of veterinary medical student populations. The anecdotal record of climate factors that deter women and minorities from scientific careers, within which these numbers are embedded (Vetter, 1996) is well documented and well understood by most women scientists. However, this anecdotal record is also less tangible (i.e. less “provable”) and therefore less readily accepted than the theories of innate sex differences in ability that are so pervasive.

We are all socialized to the expected gender norms by the time we reach puberty. “Masculine” becomes synonymous with “success,” “assertiveness,” “tough,” and “powerful”; “feminine,” with “soft,” “sweet,” “nurturing,” and “caring.” The spoken and unspoken messages to young girls and boys are very clear. To go against the norms established by society is difficult indeed. It requires a girl to not mind risking violation of the “feminine” code and for a boy to risk violation of the “masculine” code (for example, by choosing nursing or day care provider as a career). Both are difficult. Our English language does little to ameliorate the rigors of the gender norms. Linguistically, women are not allowed to grow up or to assume positions parallel with those of men (Gilligan, 1982).

In addition to the obvious societal constructs, there is another, darker, aspect of our society that works against women perhaps choosing a career in animal science, and that is the issue of meat itself. Some femi-
nist writers (e.g. Adams, 2002) have described the sexual connotations of meat with regard to women. Advertisements use sexually suggestive animals (hogs, chicks, cows) to entice (presumably male) consumers to buy particular products (Adams, 2002). Whether or not these issues influence female animal science students negatively with regard to subsequent career choice is not clear.

Social Inequities and Animal Agriculture

With regard to minorities in agricultural sciences, the situation is rigorously marked by historical class and social inequities. Black Americans, whose beginnings in this country were rooted in slavery and continued in sharecropper subsistence (Hunte, 1992; Rogers, 1995), have historically held a position in agriculture characterized not only by poor working conditions, but also by very low prestige. For them, and for other racial/ethnic groups employed in agriculture, permanent marks on the national memory continue to create barriers to progress in education and advancement. The image of agriculture is not that of a friendly place to be, but rather one of oppression, low wages, and high turnover. Undoubtedly well meaning in its inception, the Second Morrill Act, which attempted to extend higher education in agriculture to Black Americans, unfortunately was passed during a time of intense discrimination, and in fact was allowed to serve to create a second and unequal system of land grant universities (Harris and Deo, 1991).

Latino workers comprise the fastest-growing group in agriculture in rural America but earn only 60% of the amount paid to nonfarm workers (Rochin, 1997), resulting in rural communities with increased poverty, truancy, pregnancy, and gang development, along with serious housing and other social issues (Rochin, 1997). Other groups of workers drawn to agriculture through employment in the meatpacking industry, and for whom conditions are poor, are Asian refugees, Mexican immigrants, and native-born migrants (Stanley, 1990). Is it any wonder that our classrooms do not overflow with racially diverse faces? In our recruiting efforts, is it any wonder that a phalanx of white faces, representing historical prestige, privilege, and power, does not result in a storming of the doors by young people from groups that have been historically and continue to be underprivileged and powerless in the very system we are touting? Where can they hang their aspirations, recognizing themselves among our ranks (Jones and Larke, 2001)?

Potential Solutions

How should the system change? A number of approaches could be considered. Trower and Chait (2002) have proposed that tenure considerations be based on a revised set of assumptions and criteria that would recognize the contributions of men, women and faculty of color. They suggest that tenure considerations be made more transparent, that cooperation in academic endeavors outweigh competitiveness, that research be organized around problems rather than disciplines, and that excellence in teaching and advising be rewarded. Linda Wilson (1994), while president of Radcliff College, suggested that, in order to eliminate barriers, faculties must change their role from one of gatekeeper to architect and that self-critical assessment is necessary if change is to occur. Standards of accountability and reward (or not) must be set up. More fundamentally, faculties must seriously question assumptions on which they base decisions regarding acceptance into graduate school or a faculty position. Accountability at all levels—individual, departmental, collegiate, institutional, and extra-institutional (e.g., funding entities) must be established and seriously adhered to (Hollenshead et al., 1996). Can we bring ourselves to move away from assertiveness and competitiveness as hallmarks of successful scientists to recognition that intellectual curiosity and thoughtfulness are more important (Georgi, 2000)? Can we come to value dedication and perseverance above single-mindedness? Can we address our cultural biases and overcome our preconceived ideas about progress toward a degree or toward tenure, recognizing that women and racial minorities often have truly extenuating circumstances to surmount (Trower and Chait, 2002)? Can we define our searches broadly to avoid having to create a single list of candidates based on a very narrow set of criteria? Can we expand the search committees to provide better total assessment of candidates? (Georgi, 2000; Trower and Chait, 2002)

What would progress toward true diversification of the AS faculty look like? Rosser (1993) has provided a 7-stage model of change. The first stage (status quo) was presented earlier as the current state of the profession. In stage 2, Rosser proposes, AS departments would have a few more women faculty, with some awareness but no real understanding of differences in approach to science or in student concerns. No substantive changes in curriculum would have occurred. Stage 3 would be characterized by discussions of barriers to advancement. People would recognize an androcentric bias and that knowledge is socially constructed. The curriculum would have begun to change. Faculties in stage 4 would be actively aware of flaws in science such as the exclusion of women as experimental subjects and that women scientists and their contributions (e.g. Rosalind Franklin and many others) have been largely excluded from scientific accounting. Stage 4 faculty would be aware that their own values make it difficult to detect bias because of the assumption that their values are synonymous with objective. By the time a faculty has reached stage 5, there would actually be a few women in leadership positions. By stage 6, more scientists would be people of color, and from other classes, ethnicities, and sexual orientation, in addition to women. Finally, in stage 7, diversity within the pool of scientists would be proportional to diversity of the
population and scientific leadership would reflect that diversity. The curriculum would be inclusive and based on an interdisciplinary approach.

**Final Thoughts**

The path to diversity is difficult, and contains observations that are a challenge to grasp. Do we believe the system to be inherently evil? No, nor are its individual members. But the system is, in our opinion, based on deeply rooted habits that define a culture. Historically, these habits developed when discrimination against women and people of color was overt. Within the current culture of science, objectivity is assumed to be unassailable. Scientists apply this assumption to their value systems. Any deviation from those values, by definition, is inferior.

**Implications**

The system must change if animal science is to be effective in meeting the global challenges of the future, many of which will involve and directly affect people who are not mostly white or male. Heterosis, or hybrid vigor, is desirable in animal breeding programs to enhance performance; why not apply that concept to science itself and to the faculty that do the science?

**Literature Cited**


