



## The Historical Black Colleges and Universities in Tomorrow's World

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# The HBCU in Tomorrow's World

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A hot phrase today is lack of minorities in the science and engineering pipeline. The phrase is linked to demographic data

that suggest minorities represent a pool from which technical talent can be used more effectively. Reflecting upon my experiences as a minority-scientist, especially an African-American scientist, I have concluded that lack of minority (African-American) scientist is directly linked to a lack of minority (African-American) teachers in Americas elementary and secondary schools.<sup>1-4</sup>

Please forgive me for the personal reference, but it substantiates the point I want to make here. At my high school and at my church, I found an environment that enabled me to build self-esteem and boost my level of confidence around an I Can DO It attitude. With my mother at the front of the line, there were a steady stream of concerned individuals that made personal sacrifices to help me with my education and my spiritual growth and development. Relative to science, my high school chemistry teacher, Mr. Sanders nurtured me and believed in me.

I remember now as if it were just yesterday, when Mr. Sanders secured approval from the State of North Carolina for me to use the schools laboratory after normal school hours to run a distillation experiment using gasoline as part of a science fair project.

Not only did he get the permission, but he returned to the chemistry laboratory day after day, following a full day of teaching and interacting with students, to help me with the experiment. I also remember the smile on his face when the judges placed the first-place ribbon on my project. Mr. Sanders and many other African-American teachers worked hard with us to develop our abilities to the fullest. I do not believe that this kind of environment exists today for minority students.

I would not have pursued chemistry had it not been for Mr. Sanders. The confidence I obtained from my high school and community environment was strengthened when I entered St. Augustines College (Raleigh, North Carolina). Although when I entered college I was blessed to have graduated from an all-Black high school where I took chemistry, physics, algebra, geometry and trigonometry, there was still something lacking. I later recognized that what was lacking was complete confidence, which resulted from a lack of exposure. My stay at St. Augustines and subsequently at Howard University, two of the 114 Historically Black Colleges and Universities (HBCUs), changed this.

During my four years at St. Augustines College (1965-1969), the American scientific community was conducting research in a variety of technical fields. The exciting activity in the fields of medical and health, energy, national security and space research collectively accounted for almost 60% of the national R&D spending.<sup>5</sup> Within the space program, for

example, American scientists and engineers produced the first walk in space and Ranger 9 satellite transmitted the first moon photos for television viewing. When I left St. Augustines College in 1969, the moon had recorded its first human footprints and given-up its first rock samples for scientific investigation.

While a graduate student at Howard University, I witnessed the increased use of digital computers as a calculational tool for solving complex chemical problems and for storing large amounts of scientific data. Within my research, we stretched the range of mass spectroscopy by subjecting high molecular weight compounds to high speed electrons in the gas phase to verify and validate previous data generated in solution by another member of our research group. Along the way, we characterized fragmentation patterns that previously were not well understood nor explained by the scientific community. While the Vietnam conflict and the onset of the energy crisis presented new challenges for America, African-American scientists and engineers were in the midst of these exciting activities.

The HBCUs gave many African-Americans the basic knowledge needed to understand science and paved the way for us to gain full appreciation of the impact of science in a global context. Such preparation enabled us to join the U.S. research community and become part of the ongoing progress of science and technology. I promise not to bore you

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with statistics, but I think this is important in summing-up this part of my talk. According to a national survey, almost a third of the recent Black doctorate recipients in science and engineering earned their baccalaureate degrees at an HBCU.<sup>6</sup> In the field of biological science, 42% of the recent Black doctorate recipients received their baccalaureate education from an HBCU.<sup>7</sup> The empowerment enjoyed by each of us ..., probably is linked inescapably to the HBCU experience. With this record as fact, the HBCU institutions have established their place in American history as important members of the U.S. academic community.

Against the backdrop of this remarkable legacy, a legacy that was carved out under the strain of intense

social and economic pressures, I will share what I view as the HBCU in a changing world. As we move closer to the 21st century, the survival of HBCU institutions hangs in the balance. To continue the grand legacy of serving our people and our communities, I believe that the modern HBCU will emerge victorious provided it shapes its own future today more than it has done in the past. I want to emphasize that a major change in public policy is also required if HBCUs are to meet new challenges they face. I also will speak to this point.

I preface what follows by acknowledging that full citizenship in America and the world is inescapably linked to science and technology. Those in society who are skilled in mathematics, science or engineering, continue to di-

rect the future of those that are unskilled in these technical fields.

### THE MODERN HBCU

From the beginning, science, mathematics and engineering, have been looked upon to thrust the nation to new frontiers. This was true in the days of the steam engine and it is equally true today. Against this reality stands the long experience of American democracy. To appreciate how linked American democracy is to science and technology, I invite everyone present to examine DuPrees exhaustive history, *Science in the Federal Government*.<sup>8</sup> An examination of DuPrees work will serve as a guide to understanding the partnership between the Federal govern-

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## Mankato State University

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**Requirements:** A Ph.D. in Analytical Chemistry and professional experience in teaching and/or research is required; external funding is desirable. Candidates should be able to demonstrate ability to teach effectively and direct independent research at the undergraduate and M.S. level. Please send a letter of intent with resume, graduate and undergraduate transcripts, a research proposal including equipment and laboratory space needs, a statement of teaching interests, and three letters of reference to:

Professor Douglas E. Ralston,  
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ment and the so called top (based on reputational history) U.S. research universities.

Little has changed since this partnership was developed. On the threshold of a new century, active discussion is centered on how the traditional top research universities will meet the new challenges facing the nation. The preamble to the 1986 Report of the White House Science Council Panel on the Health of U.S. Colleges and Universities (U.S. Office of Science and Technology Policy: 1986,1)<sup>9</sup> states, and I quote:

*America has a unique dependence upon its colleges and universities both for new knowledge and for young minds trained to use this knowledge in innovative ways; the excellence of our colleges and universities has been a cornerstone of our economic well-being, our national security, and the health and quality of life of our citizens.*" unquote.

The HBCU academic community was not then, and is not today, a participant in this thriving partnership. A few HBCUs may possess thriving and productive Federally funded programs, but, this does not qualify as full participants in the partnership. An examination of the records on how Federal funds are allocated shows, without question, that the HBCU academic community is not a participant in the partnership described in DuPrees work and elsewhere.

When congress mandated the technical focus toward development of the steam engine, HBCUs were not participants in the partnership. Also today, HBCU academic institutions are not partners in the congressionally mandated human genome, global climate change, cancer, AIDS and the many other national research programs. Federal funds to support outreach activities do not fit the framework of DuPrees partnership model.

What should be done to incorporate HBCU academic institutions into full partnership with the Federal government? The principal driving force for the existing partnership continues to be synergistically linked to the nations economic well-being, national security and the health and quality of life of American citizens. New social priorities suggest the nation is experiencing troublesome times today, much like it did in the early days when the partnership was formed with the traditional top universities. Unemployment among every sector of society, displaced workers with active minds waiting to contribute standing idle, crumbling inner cities with crime that extends to every community, poor educational delivery systems, a homeless population that is on a steady increase, an aging population that is now greater than the 16 - 34 age group and declining competitiveness in global markets, are a few areas presenting new challenges.

With these kinds of critical issues facing the nation, I become disturbed when I look through the pages of the *Chronicles of Higher Education and Black Issues in Higher Education* and see the valuable time HBCUs have to spend on budget crisis and issues secondary to research and teaching. It is especially disturbing when the funds HBCUs are asked to account for are not even a drop-in-the-bucket when compared to the misplaced or funds unaccounted for (FUF) at some of the top academic institutions that have been granted full enfranchisement in the partnership. How can we as a nation continue to promote such double standards, and to do so at a time when the challenges facing us suggest that solutions should be sought from all sectors of society.

Today, I am calling on the National Science Foundation (NSF), National Organization of Black Chemists and Chemical Engineers (NOBCChE), American Association for the Advancement of Science (AAAS), Science and Engineering Alliance (SEA), Science

Consortium, Science and Technology Alliance (STA), National Society of Black Engineers (NSBE), National Association for Equal Opportunity in Higher Education (NAFEO), the National Academy of Sciences (NAS) and other interested parties, to come together in a Summit.

The purpose of the Summit is for the Presidents of some HBCUs to identify a task force charged with the task of drafting a workable plan for incorporating HBCU academic institutions into full partnership with the Federal government. The Plan is to be developed and made available to the presidents for presentation to the Congressional Black Caucus (CBC). The Plan should include specific recommendations for action and specific time frames for feedback from the CBC. Anything short of what is being proposed here is déjà vu.

Emphasis is placed on FULL partnership. For too long, HBCU academic institutions have been asked to do much with little. The surprising fact is, they have done just that. The social agenda suggests that the nation need to make better use of the HBCU in order to address some of the critical challenges ahead.

Simply requesting full partnership does not imply that HBCUs will be successful as a resource for meeting critical national needs. I would offer two suggestions to HBCU leadership for consideration in preparing to participate more fully in the Federal partnership enterprise. First, each HBCU should evaluate its mission statement to assess whether it is in harmony with congressionally mandated programs and the needs of the local communities it is being asked to serve. Secondly, HBCU academic institutions should develop a system of teaching, research, and financial accountability capable of withstanding any audit.

The teaching accountability is constantly reflected through the legacy of HBCU students. The research accountability must include more African-American scientists publishing their

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research products. If existing journals will not publish HBCU research products, one of the respected African-American technical societies should create a quality journal for the expressed purpose of publishing the technical work of HBCU faculty and students. The financial accountability must include development of improved record keeping systems, from purchasing invoice records to travel reimbursement records. It is necessary for the Federal government to provide financial support to HBCUs in order for the accountability infrastructure to be developed and implemented. This does not set a precedence since Federal support has been used in the past to build the infrastructure at the top academic institutions.

### CONCLUSION

The time has come in America when the same kind of concentrated effort and thought that went into developing the existing Federal government and top research university partnership should be turned toward developing a strategy for incorporating HBCUs into this enterprise. There needs to be a national commitment to achieve this goal.

The legacy of HBCUs makes it clear that these institutions have had and continues to have a remarkable impact on transforming African-Americans into productive men and women who become national and international leaders. The challenge in reaching their goals does not come from serving the privileged, but is linked to a tradition of "letting in" and dealing effectively with the under-prepared and under-privileged who would be "left out" of the educational system. The miraculous achievements by these institutions are found in their ability to instill in African-American students the boldness to compete in uncharted territory, and the confidence and skills to succeed once they are there. Today,

like in the beginning, these institutions need help..... financial help like they have never had before. The bottom line is **will these institutions simply attempt to survive, or will the Federal government make HBCU like Alabama A&M, Clark Atlanta, Florida A&M, Hampton, Jackson State, North Carolina A&T, Praire View A&M, Southern University, just to name a few, members of the partnership.** □

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The Energy/Environment Systems Divisions of Oak Ridge Institute for Science and Education, operated under a Department of Energy management and operating contract by Oak Ridge Associated Universities, is seeking an experienced Laboratory Manager. Responsibilities will include managing and directing the laboratory program to ensure production of high quality analytical results for a variety of radionuclides; supervising staff; determining program equipment and procedure requirements; developing QA program, manual of standard analytical procedures; and preparing periodic reports

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