

# WORKFORCE 2000 AND THE ENGINEERING PROFESSION

by

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Since the publication of Workforce 2000 by the Hudson Institute in 1987, the need for training a diverse workforce to meet the challenges of the new millennium has been expressed increasingly by government, industry and institutions of higher education. Concerned with their own professional development, growing numbers of engineering students are also beginning to express the need for multicultural education and for diversification of faculty, staff and the student population. They are linking culture-inclusive education as a key to leading an active and productive life in the new millennium. While considerable progress has been made in increasing the representation of traditionally underrepresented groups in science and engineering, very little work has been done to increase our understanding of the philosophical aspects for cultural differences and to promote institutional respect for what each ethnic/culture group brings to our respective workplace. We have focused and continue to focus on “the how” and “the what” to do to attract women and “people of color” to our respective institutions without serious institutional commitment to create a lasting environment conducive to cultivating respect for all cultures.

Each semester, I receive between 40 to 50 final papers, from the *Engineering Professional Development (EPD-101)* class, on “Workforce Diversity and the Engineering Profession.” Increasing numbers of engineering students are not only voicing the need for cultural exposure but also are raising fundamental questions concerning the type of education they are receiving. Frustrated with the ongoing debate about campus diversity, one student expressed: “here I sit, 23 years old and about to graduate from college and know very little about other cultures...looking back, I was diversity stupid...Is it really my fault ?” Another student asked: “what good is education if it only shows the student one viewpoint in the multitude of views...if it ignores some people, their ideas, their beliefs, their history, and their culture...and if a student is not introduced to the ideas and thought of a person not like themselves, then how can that individual work and live in a diverse society ?” The views expressed by these two students represent majority of the papers I have been receiving each semester.

We live and work in a world where economic and political borders, to a larger extent, are fading away. Advances in transportation, worldwide computer networks and satellite-based communication have accelerated and continue to accelerate the globalization of business allowing us to transcend geographic boundaries. Marshall McLuhan expressed it eloquently when he described our world as a “global village.” Our success, in this

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highly competitive, border-less and politically tense world, will depend upon how we interact with each other nationally and internationally. Fostering and promoting cultural diversity, therefore, means understanding and accepting the philosophical basis of cultural differences and culture-driven values of our coworkers, teachers, students and individual members of our national and international community. Learning to accept and respect other peoples' cultures and developing genuine cross-cultural communication skills are crucial if we are to continue to prosper as a multiracial, multicultural and multigenerational society.

I am aware of no universal definition for "culture." And yet, most of our actions -- from the way we walk, talk and learn, to the way we sit and eat our food are guided by something we call culture. The manner in which we communicate with each other and how we interpret what has been communicated, or not been communicated, is in part determined by our cultural background. In short, the cliché "what you see is what you get" may not apply in cross-cultural communication. To use Edward Hall's expression, "culture is a mold in which we are all cast, and it controls our daily lives in many unsuspected ways." (The Silent Language, by Edward T. Hall, 1960: 38).

Communication is an art in itself. In cross-cultural communication, what is perceived as rational, reasonable and important to a person from one culture may seem to be irrational, unreasonable and unimportant to a person from another culture. In our "global village" of clashing ideologies fueled by social, economic, racial and religious tension, an innocent remark, or even a complimentary statement by a person from one culture, may be taken as a deliberate insult by a person from another culture. Examples abound to illustrate this assertion. Assessing, therefore, the behaviors or the intentions of individuals from other cultures, as most of us often do, is likely to lead to assessments based on inaccurate assumptions and treatments that are irrelevant and even damaging. Culture has its own code and the code varies greatly from country to country and from culture to culture. The knowledge of and the ability to decode other peoples' cultures will help us to know and appreciate our own cultures better. Improving and increasing cross-cultural communication, in my opinion, is a key to reducing race, gender, and cultural misunderstanding, prejudice and pejorative stereotyping.

We are a nation of diverse people and diverse cultures. When we examine the cultural picture of our society objectively, however, we see a multiracial and multicultural society in appearance with well-oiled and rationalized monocultural institutions in practice. To paraphrase Kevin Harris, education is a "perception altering drug." In the area of culture and race relations, the socialization and the type of education we have received ( reinforced by written and electronic media ) have seriously altered our perceptions of those who do not look like us or talk like us. For years, our public and private institutions have transmitted (and some still do) to the world an assumption of the superiority of European ideas, cultures and civilization over non-Europeans, and a higher esteem for the caucasian race than for non-caucasian. More than 80 years ago, W. B. DuBois wrote:

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“human contact, human acquaintance and human sympathy are the greatest solvents of human problems. Separate school children by wealth and the result is class misunderstanding and hatred. Separate them by race and the result is war. Separate them by color and they will grow up without learning the tremendous truth that it is impossible to judge the mind of a *person* by the color of his or *her* face.” (An ABC of Color, by W.E.B. DuBois, 1963: 39). Most of us grew up without learning the truth about “people of color,” their cultures and their many contributions to our nation and the world. Whether we accept it or not, what we have been taught and socialized to believe in is far from providing us with philosophical and quantifiable reason to change our “mental models” and promote respect for cultures other than our own.

Educational institutions, private or public, ancient or modern, do not exist in a vacuum. They are created deliberately to transmit and perpetuate certain cultures, values, patterns of desirable behavior, and visions of the society in which they are to function. Fichte, a German philosopher who wished to mold Germans into a corporate body, viewed education as the instrument of a “reliable and deliberate art for fashioning in man *and woman* a stable and infallible good will.” (Nationalism by Kedourie Elie, 1962: 83). Lester F. Ward saw “education as the first and final remedy for the evils of society is not only *our* deadliest weapon against dogma or reaction, but also the strongest instrument for the reconstruction of society.” (Lester F. Ward: The American Aristotle, 1939:459). The task ahead of us, therefore, will not be accomplished without collective efforts in developing meaningful and self-empowering education for all our citizens regardless of race, gender and socio-economic background. If we are to succeed in addressing the cultural diversity issues facing our society today, our attitudes toward the education of women and “students of color” need to change from “we have to” to “we want to.” Our public and private institutions and their leading representatives need to engage in creating a multilayered and self-reinforcing strategy and action on the national and international levels.

Describing the importance of a culture-inclusive education, Alfred N. Whitehead once said: “Culture is activity of thought, and receptiveness to beauty and humane feeling. Scraps of information have nothing to do with it. A merely well-educated *person* is the most useless bore on God’s earth. What we should aim at producing is men *and women* who possess both culture and expert knowledge in some special direction. Their expert knowledge will give them the ground to start from, and their culture will lead them as deep as philosophy and as high as art.” (The Aims of Education, by Alfred North Whitehead, 1929: 13).

There is no denying that most of our industry, educational institutions and some individuals are consciously trying to uncover their own biases and perceptual filters that hinder their ability to accept and respect our nation’s diversity. Nor can we deny the existence of other voices telling us that learning and teaching the cultures and the contributions of men and women of color “will unglue America” and that multicultural

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education presents a threat to our national unity. Knowledge based recognition and respect for all cultures, in my view, will strengthen our national unity and help us to gain world-wide respect and genuine cooperation.

“Unity” as Antonia Hernandez noted, “is the completed puzzle and diversity *represents* the pieces of the puzzle. And until we recognize every piece of the puzzle, we cannot have true unity.” ( Time, July 1991:19). Individual and institutional racism and cultural biases have been and continue to be the most powerful roadblock to national unity, international cooperation and to creating a culture-inclusive education. Developing and promoting multicultural education calls for the rejection of all forms of institutional and individual racism, sexism and for modification of our curriculum. It calls for education that reflects our society and the world in which we are expected to function.

America is built by men and women of all races with vision for equality and justice for all. The flow of new immigrants from all over the world combined with well-established and diverse racial, ethnic, and cultural groups, to use the late John F. Kennedy's expression, “has enriched and strengthened the fabric of American life.” ( A Nation of Immigrants, by John F. Kennedy, 1964: 3). The contributions of these diverse racio-ethnic and cultural groups in the fields of science and technology, and in the areas of social, economic, and political philosophies are well documented.

Ironically, the contributions of “people of color” and women, even though well-documented, remain largely hidden from most of our citizens, especially from our children. The call for a diverse workforce must be combined with the strongest call for teaching our youth the truth about African, African- American, Asian, Latino/a and Native-American people's culture, history and their role in our social, economic and political development including their contributions to science and technology--without excluding Europeans or Euro-Americans. We must commit our intellectual energy and material resources to developing and promoting education aimed at changing our “mental models” concerning race, gender and cultures other than our own.

If we are to continue advancing our economic and technological position in the world, we must commit ourselves to developing our human capital and to preparing a diverse workforce with shared vision. Our public and private institutions must shift their framework from one that focuses primarily on recruiting traditionally underrepresented groups to a transformational approach that is designed to create an environment conducive for the social, academic and professional development for the recruited and would be recruited. Understanding, recognizing and respecting culture with all its peculiarities and idiosyncrasies is the key to attaining universal harmony in the new millennium and beyond.

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