“What I have been thinking about ....”

C. D. Mote Jr.

President’s Remarks
Annual Meeting
National Academy of Engineering
October 5, 2013
Speak on two matters today –

1. Strategic Issues for engineering

2. NAE 50th Anniversary Year Celebration 1964 to 2014
Strategic Issues for engineering –

- Talent in the engineering workforce
- Globalization and the global role of the NAE
- Visibility and understanding of engineering
Talent in the Engineering Workforce

- Workforce preparedness - talent not mentioned
- Numbers of engineers used as surrogates for talent
- No noticeable priority attention given to talent
Talent in the Engineering Workforce

- Percentage of U.S. engineering graduates 4%
  - Among the lowest in the world
  - 1/3 European country average; 1/6 Asian country average
- Talent is the coin of the global engineering realm
- Hu Jintao, former pres. of PRC, October 2007

“The worldwide competition of overall national strength is actually a competition for talents, especially innovative talents.”
McKinsey Global Institute projected by 2020

- China will experience a **25-million person shortfall in high-skilled** employee talent
- Creates **“a demand for global talent that the world has never seen before.”**
- Creates a 2 - 4 % GDP problem for China
- What steps will China take?
- What are the implications to U.S. engineering?
- What should the NAE do?
Globalization and NAE’s role

- The elephant in the room
- The foundation for global policies is unsteady
- The NAE is expanding its global perspective
- This world is globalized
- Two NAE programs push the Academy globally
  1. Frontiers of Engineering
  2. Global Grand Challenges
Frontiers of Engineering

- Bilateral, Frontiers of Engineering Symposia with Germany, Japan, China, India & EU Brazil in 2014

- Total FOE alumni is about 4,000

- NAE building relationships with the global engineering leadership of tomorrow.
Global Grand Challenges

  - Royal Academy of Engineering, host
  - Chinese Academy of Engineering
  - U. S. National Academy of Engineering

- “Charles M. Vest NAE Grand Challenges for Engineering International Scholarships” for study in the U.S.

- Leading the global reach of the Academy
Globally connected challenging issues

- Climate change, pandemics, food and water, environmental degradation, affordable and sustainable energy, . . . .

- Countries organize to serve their national engineering needs.

- Who is responsible for engineering between and across countries where these challenges are occurring?

- The national academies are well positioned for this role.

- If not they, who would you wish to do it?
Visibility and Understanding of Engineering

- National Academy of Engineering not “of Engineers”
  Distinction with a difference!
  Engineering is defined; engineers self-identify

- The essence of engineering is “creation.”
  Von Karman: “engineering creates what never was”

- When public asks “what is engineering”
  Answer usually illustrates common practice, like designing airplanes but does not emphasize the essence of engineering => creation
Engineering is too ubiquitous to be seen

- How can engineering be everywhere and invisible?
  But apparently, it is.

- Representing the essence of engineering as “things”, rather than “creation” maintains, even nourishes, a public confusion.

- The value proposition for engineering is in its creative contributions serving the welfare of humanity and the needs of society.”

This is fundamental to public understanding of engineering.
The point and the problem:

- The value of engineering lies in its creations serving humanity and society.
- The “things” we often speak about, and lots of them, lie within those creations.
- When speaking about things
  
  “We show the trees and hide the forest.”
Global Engineering Prizes recognize engineering contributions to humanity (not things)

- “Charles Stark Draper Prize for Engineering” of the NAE is given for “contributions to the well-being and freedom of humanity.”

- “Millennium Technology Prize” presented by the King of Finland for “technological contributions to improve quality of human life, encourage sustainable development and a humanitarian focus.”

- “Queen Elizabeth Prize for Engineering” is awarded for the “demonstrated impact of engineering on a significant fraction of the world’s humanity.”
NAE Semi Centennial Year Celebration

- Purpose: Celebrate the “value of engineering creations to the welfare of people and the needs of society.”

- Examine the nexus of engineering creations to people and society over a century from 1964 to 2064.

- Highlight this nexus through essays and a nationwide video competition.
Essays on nexus of engineering to people and society

- Examine the nexus of engineering to people and society over a century from 1964 to 2014, and then into the future from 2014 to 2064.

- Divide century into 25 year intervals:

- Five essays are written, one around each of the above years, that examine the nexus around that year.

- Essays will illustrate how engineering creations contribute to ongoing advancement of humanity and society.

- Essays may provide a new point of reference, a new story, for describing the value of engineering to the public.
Video competition on nexus of engineering to people and society

- National, video competition asks each contestant to highlight the nexus of engineering to people and society during any period within the century in less than 2 minutes.

- Rules, criteria, prizes et alia found at www.e4uvideocontest.org

- There are six contestant groups:
  1. Primary school students grades 6 to 8
  2. Secondary school students grades 9 to 12
  3. Tertiary school students
  4. Frontiers of Engineering & FOEE participants/alumni
  5. NAE Members and Foreign Associates
  6. General Public
Video competition on nexus of engineering to people and society

- Attractiveness of the video and relevance to the goal are valued highly
- A grand prize of $25,000 will be awarded for the best overall video selected by a panel of judges
- Best video in each group eligible for up to a $5,000 award
- “People’s choice” award of $5,000 identified by viewer popularity
- Videos will be shown and winners will receive their awards at the 2014 Annual Meeting
The year ahead provides an opportunity to highlight how the quality of life of all Americans and the needs of American society depend on engineering creations.

The future of engineering depends on the public understanding this point.

As Abraham Lincoln said, “Public sentiment is everything. With public sentiment, nothing can fail; without it, nothing can succeed.”

Engineering needs public sentiment.

Engineering must carry this message to the public.

Who else will do it?
THANK YOU FOR YOUR ATTENTION!