



A Celebration of Charles M. Vest's Life

The National Academy of Engineering Council and the Vest Family



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NATIONAL ACADEMY OF ENGINEERING

C. D. Mote, Jr.

President, National Academy of Engineering



On this beautiful day, allow me to offer a warm welcome to all who have come to join in this celebration of the life of Chuck Vest, a remarkably talented leader with a deep respect for humanity and a passion for serving the nation. He was just an all-around great guy.

So many important people have made special accommodations to come today. We are touched by your respect and affection for Chuck. I thank you profusely for your participation. Because this is a memorial celebration, and because there are so many important people here, I must limit my introductions to the Vest family members. I will not even introduce the speakers; they are named in the program.

It is my special privilege to welcome Chuck's best friend and childhood sweetheart Becky and their family, who have come to join with us in this celebration: their daughter Kemper and her husband John and their children Mary and Robert; Chuck and Becky's son John and his wife Christina and their children Ameri and Charles; Becky's sister and her husband Carolyn and Bill Mullet; Christina's parents David and Dorothy Weaver; and Chuck's cousins Sally and Carolyn. Thank you all for coming today.

The family's participation today means so much to all of us in these environs where Chuck contributed so greatly and remains so deeply appreciated. We are honored to be hosting this celebration of his life together with you.

I am very pleased to welcome many who started out early this morning and have come from afar to join with us in bidding a hearty "well done!" and "farewell for now" to our truly fine friend. Chuck, you will always be in our hearts and thoughts.

The speakers today will offer us personal views of Chuck, enriching for us an even fuller appreciation of this extraordinary man. Speaking for myself, to this day I am shocked every time a close friend passes away, even if it is not a complete surprise. I have tried to understand why this recurs continually. Is it because emptiness is abruptly created? Or is it that the retrospective view highlights something about that person that was missed earlier? This happened to me with Chuck.



Chuck and I first met about 1990 at the University of Michigan where he was serving as provost and vice president, and I was the mechanical engineering department chair at Berkeley. At a meeting in his office we chatted for more than an hour about various things engineering. Then he recounted for me a chapter of his professional life's story, which was remarkably, even surprisingly, personal. He said that earlier he had really wanted to be the chair of the mechanical engineering department at Michigan, and was quite disappointed that he did not get the job. Instead, as he described it, he was appointed subsequently to be an associate dean of the College of Engineering. But he concluded that the associate dean's job turned out to be much better suited to his interests because of

its broader leadership opportunities and the pathways to other positions that it opened. His message was, his course in professional life took a favorable turn by not getting his cherished position.

Though I have always remembered that discussion clearly, I came to realize only recently that I actually had missed a principal point of that conversation. He was actually telling me that I was not going to get a job offer. But he was also telling me to not worry about it because not getting it can work out for the best anyway. And, as was so often the case, he was correct.

Chuck was so perceptive, so adept at handling people, and so directed by clarity of vision. So, Chuck, we say goodbye for now, but the lessons you taught us are remembered well and will be passed on to others as we professors are wont to do.

Charles O. Holliday, Jr.

Chair, National Academy of Engineering Council



Thank you, Dan, and thank you to Laura and to all the Academy staff who worked so hard to make this a special day for all of us. This celebration is so unique because it is the National Academy, which Chuck loved so much, and most important, it is the Vest family that is here. Becky, this is exactly how Chuck would have liked it that makes it so special to all of us.

As I comment about Chuck today, I would like to do it from three perspectives—as a business leader, as a leader in education, and a leader for our nation.

You might be surprised when I start with business leader because many people don't think about Chuck that way, but that is what comes to mind first for me. I was an employee of the DuPont Company, and Chuck was on our board of directors. Every time I had a problem I would think, 'Which board member do I want to call first?' If it was a financial problem, a technology problem, a personnel problem, it was always Chuck, no matter what the problem was.

I recall one day, it was about 9:00 in the morning, and a big problem comes in. So my first reaction was, "Well, I better call Chuck. In fact this one is so big I better go see Chuck." I call, Chuck answers his cell phone and says, "Well, I am on vacation." I said, "That's nice, but let me tell you about my problem." Now someone else would say, "Call the office and we will schedule something next week or have a phone call." I said, "I need to see you as soon as I can." He said, "We will be home at 4:00—is that soon enough?" Becky, I don't know if you remember, we were sitting on the front porch when you all drove in the driveway and Chuck had the answer, like he normally does.

Some people can see a curve coming in the road. Chuck not only could see the curve but had a way of knowing what was around the curve. Time and time again he knew the right thing to do.

I remember debates at DuPont about the "dotcom era." You remember about 10 years ago "dotcom" was going to come up and eliminate all companies that made products and did research and had manufacturing plants. Chuck was the one voice in the room at DuPont that said, "Don't panic, keep your research going, keep your product development going, don't sell your manufacturing plants, it will turn." Because of his steadfast drive and leadership,

it did turn in a couple of years and companies that stayed the course, as Chuck recommended, really benefitted.

Just in the last couple of years here at the Academies, Chuck had a new idea that will last far, far beyond any of us in this room, and that is the idea of manufacturing being married with design. It is a whole new concept that most of us took a long time understanding, but Chuck saw it so clearly and led it to a great start and it will make a big difference in the world to come.

Second, education leader. There are others talking today who are much more qualified to talk about Chuck as an education leader, but I would like to mention just one aspect. He recruited Jim Duderstadt, me, and a great team to work on American public research universities and research universities in general. Chuck, as you know, did not take the credit for things but he recruited the team, he got the funding, and he participated in every meeting to make sure we stayed on track.

I remember at one meeting we were frustrated because we knew the issue about the funding for public universities and how critical it was. At about 3:00 in the afternoon, Chuck just stopped everything and he said, "Public universities and this country are a unique American invention and nobody can take it away from us. We could destroy it ourselves if we let it decay."



It was that sudden realization as I looked over to him, this wasn't the president of the National Academy talking, this wasn't the president of MIT talking, this was a boy from West Virginia who knew what a difference these universities made and what a difference it had made in his life and to his West Virginia friends. That is the Chuck who is very special to us.

Last, national leader. Chuck was 20 years old when President Kennedy challenged the country to put a man on the moon safely by the end of the decade and bring him back safely. I don't know if that moved Chuck to focus on the Fourteen Grand Challenges of Engineering or it was just in his DNA, but if you look at the Fourteen Grand Challenges that Chuck championed so well, any one of those can compare to the challenge that President Kennedy gave us. Chuck had this way of knowing which issues were important to our country and would make a difference.

I was sitting in this building just outside those doors a few weeks ago with Dan Goldin—he was the administrator of NASA, head of NASA—and those of you who know Dan, he can get a little bit excited. He was really excited because, he said, without Chuck Vest we wouldn't have the International Space Station. Dan knew the NASA plan was not robust enough, and as a result of a presidential appointment, Chuck would fly down to Washington, stay late at night, fly back to MIT, and he made a big difference in the Space Station's success.

When you think about Chuck's broad reach internationally for engineering and technology, that international space station going around up there today is one good example of what Chuck accomplished for the country and the world.

In closing, the thing that stands out to me most, Chuck was a person who realized there is no limit to what you can achieve if you don't care who gets the credit. And Chuck would never take the credit but always give it to everyone else.



John D. Rockefeller IV

United States Senator

I am honored to be with you today to honor the life and work of Dr. Charles M. Vest. Chuck was a dear friend. I relied on him often, and trusted his wisdom and advice totally.

His intelligence, compassion, and commitment to science made him a force. While many people possess one or possibly two of these qualities, Chuck possessed all three.

What Chuck accomplished was extraordinary. He transformed our world for the better, through his incredible leadership in research and education. Chuck inspired a generation of individuals to pursue science and engineering careers. And he was dedicated to creating opportunities for the next generation of young Americans.

In his 14 years at the helm of MIT, Chuck worked tirelessly to expand opportunities for anyone with the desire to work hard. Under his leadership, MIT launched its OpenCourseWare initiative, which provided educational resources to 100 million users in its first decade, and aspires to reach a billion people by 2021.

When he arrived at the National Academy of Engineering, Chuck continued to advocate for education. In 2013, eight universities honored his commitment by establishing the Vest International Scholarship program. I can think of no better way to honor his legacy.

The son of a West Virginia University professor and a WVU graduate himself, Chuck understood the importance of having a top research university in our state. After joining WVU's board of governors, Chuck said that he could not "think of another university that is as critically important to the state in which it resides," and he praised WVU's goal of providing accessible education.

What set Chuck apart, though, was that while he understood the newest and most complex technologies, he made others—including senators like me—feel very comfortable when discussing highly technical topics.

Chuck had a low-key, approachable personality that made his voice all the more powerful and that inspired others. But what really stays with me is that, as a human being, Chuck Vest was one of the finest people I have ever met.

Chuck was also relentless in his pursuit of federal funding for science, technology, engineering, and math programs. In fact, there are reports that he came to Washington more than 100 times to advocate for these causes.



Back in the 1990s, Chuck and I worked with a bipartisan group of senators to bring attention to the need for increased science and engineering research funding, which later became known as STEM. Chuck never let up on that issue. When we set out to pass the America COMPETES Act of 2007 to double funding for critically important scientific and technological pursuits, Chuck, as NAE president, was instrumental in getting it passed. When it came time in 2010 to reauthorize the COMPETES Act and to reinforce our nation's dedication to basic scientific research, education, and technological innovation, Chuck again stepped forward. And last spring Chuck, and a handful of his esteemed colleagues, sent a letter to me outlining a

vision for the next version of COMPETES, which I hope to get through Congress this year. While I won't have Chuck helping me personally this time around, I know that the many people he inspired will help push this forward.

Chuck Vest was a remarkable leader. His passion for helping others—whether as an educator, an engineer, or as a friend—will continue to inspire countless lives.

To my friend, Dr. Charles M. Vest, it is my honor to commemorate your enormous contributions to science, engineering, and education. Your legacy as one of our country's most respected citizens is certain.

To Chuck's wife, Becky, and all of his family, please accept both my condolences and heartfelt thanks for sharing with us the life and accomplishments of a truly great American.



Alec N. Broers

House of Lords

Vice Chancellor Emeritus, Cambridge University

President Emeritus, Royal Academy of Engineering

I would like to thank Dan Mote and the National Academy for inviting me to participate in this memorial. It is a great privilege.

Chuck Vest was a warm friend and a very special person who did a great deal to build and cement transatlantic friendship and understanding. We celebrated his achievements in Cambridge in 2006 when the chancellor of the university, the Duke of Edinburgh, presented him with an honorary degree. This happy photograph was taken on the Senate House lawn after the ceremony and captures so well how much fun it was to be with Chuck.

It is more than twenty years ago that Sir William Hawthorne took me aside in Churchill College, Cambridge, and told me that there was someone I really had to meet. This person, he said, was important and was going to become even more important. Will Hawthorne was himself the ultimate transatlantic academic. He simultaneously held two of the largest positions in the old Cambridge—head of the Engineering Department and master of Churchill College—and at the same time enjoyed a full professorship in the new Cambridge, at MIT. The person he wanted me to meet was, of course, Dr. Charles Vest, who a few years earlier had become president of MIT, and who, in Sir William's opinion, was destined to become the most influential engineer in the United States—a prediction that turned out to be accurate, although Chuck would have been uncomfortable with the description. Chuck wanted to accomplish a great deal, but for society, for the USA, even for the world, rather than for himself.

Sir William arranged the meeting only a few weeks later when my wife Mary and I were going to be at our home in Jamestown, Rhode Island. I well remember that visit, my first to the MIT president's office. Those of you who have been there will know that it is large and impressive, potentially forbidding, but not so while Chuck was in residence as he and Laura and his staff were so welcoming and friendly that I immediately felt comfortable.



I recall that our conversation soon turned to a common theme: the pressures we were facing in justifying the level of fees that students had to pay to gain the education provided by our world-leading institutions. In Cambridge, and in Oxford, we were struggling to justify the extra fees charged by our colleges that admit, house, and tutor our students. In the United States, there were accusations that the top universities, including MIT, were colluding in setting fees. The Old and the New World were having, quite rightly, to justify what they were doing. Typically, Chuck was not just making the case for MIT but facing the broader challenge of representing the leading universities. He was as ever to be found not only looking after his own institution, let alone himself, but tackling the larger challenge of doing what he could for everyone.

Fast forward several years, and the good fortune of my having met Chuck came to fruition. The British—or to be more specific Scottish—politician Gordon Brown, later to become prime minister, was holidaying on Cape Cod when he learned that Nick Negroponte had opened a branch of the MIT Media Lab in Dublin and decided that MIT should also be asked to open a campus in the UK. The story immediately became very complicated, involving Larry Bacow and many others, but long-standing collaborators in Cambridge and MIT, especially the biologists and engineers, began talking, and MIT decided that, while it did not want to establish a new campus in the UK, it would like to join in a collaboration with Cambridge that would embrace research and teaching. Chuck and I were in resonance on this proposal, and in the next two years this dream became a reality, with the help of \$135 million from Gordon Brown. Today, more than ten years later, the lessons learned from this large and influential collaboration are still bearing fruit. The special relationship between the USA and the UK was enhanced, and Chuck's leadership was key to this success.



I recall with happiness an occasion early on when Chuck was to be in London and we were to meet with the prime minister about CMI. I thought that this would be a brief and formal visit with no souvenirs such as photographs allowed, but this was to ignore Chuck's charm and that he brought Ken Campbell with him. Chuck had been surprised that Ken had forgotten to bring a camera on this trip, so dispatched him to buy a disposable camera that was then used to take a picture of us knocking on the door of 10 Downing Street. We were then admitted and shown to a waiting room. Soon an official came to usher Chuck and me into the PM's office, and Ken was asked to wait for us in the waiting room. Ken gently protested saying that he had to stay with his president, his camera hot in his hand. The official turned to Chuck who, with a captivating smile, jokingly agreed and said that he really did need Ken at his side. The official promptly melted and all three of us marched in to meet Tony Blair, who was

extremely enthusiastic about the new collaboration. The ban of photos was swept aside, and the result is the picture you see here with Tony Blair in shirtsleeves and Chuck and me with huge smiles on our faces. A happy day indeed. Another pillar for the transatlantic bridge.

Then there were the Grand Challenges for Engineering and the summits. I was lucky enough to be a member of the first panel that chose the fourteen grand challenges and then watched with admiration Chuck's leadership pick up from

Bill Wulf and drive the US summits and finally the first global summit, held in London last year.



Most recently, I mention the success of the new international Queen Elizabeth Prize for Engineering launched by Prime Minister David Cameron and to which the Queen gave her name. Chuck was a strong supporter of this prize from the beginning, and when we set out to bring together the international panel of judges, he became, quite anonymously, our guide and counsel. His advice, as always, was full of wisdom, breadth, and generosity. Tragically his illness prevented his continuing as a judge, but Dan Mote stepped in brilliantly in his place.

All of this is about Chuck's professional life. There was also the joy and privilege of being amongst Chuck and Becky's friends. Their sense of fun and enthusiasm for everything they did made them great company.

I particularly remember when we visited their lovely home beside Lake Winnepesaukee, and when they joined us in Jamestown for a couple of days a few years ago and we all went sailing out of Newport.

Looking back I realize how perceptive William Hawthorne had been in predicting the importance of the role that Chuck would play in the USA; we have heard a lot about this today, but even Will could not have foreseen how important Chuck would become internationally. He achieved so much, and it is up to us to follow his example, but in his absence this is not going to be easy. We will miss him terribly.

Ralph J. Cicerone

President, National Academy of Sciences



I appreciate that the Vest family and the National Academy of Engineering have brought us together today to remember and to celebrate Chuck Vest's life. It is an honor to be able to add some thoughts about Chuck.

As I look around our auditorium today, I am struck by how many distinguished, wonderful people are here. People here worked with Chuck and knew him in so many different activities; the audience makes an impressive statement about Chuck's many activities and achievements and how he attracted people.

However, I also know that it would be easy to assemble other great groups of people with very similar characteristics around our country—for example, in Ann Arbor, Michigan; in Cambridge, Massachusetts; in Morgantown, West Virginia; and on the West Coast. In fact, the Vest family has graciously accepted some of the invitations to do so. Whether each city convenes especially to remember and to celebrate Chuck or not, there will be uniform respect and affection felt everywhere.

Time at the University of Michigan in Ann Arbor was especially good and important for the Vests, as many of you know. Although my wife, Carol, and I were there for eight years in the 1970s, we did not get to know Chuck and Becky there. I knew only of Chuck's reputation.

Years later (June 1990) when I attended my only MIT alumni event, it was announced that Chuck would be the new president of MIT. Amongst knowledgeable people, the announcement was greeted with enthusiasm. In the program for today, I offer a brief comment about Chuck's subsequent inspired leadership of MIT.

Still later, in 1998, Carol and I began to attend semiannual meetings of the AAU (American Association of Universities, a consortium of America's research universities) where Chuck and Becky represented MIT and we represented the University of California, Irvine. The AAU encouraged collaborations and

furnished support for campus leaders. During their first years, new members are provided extra hospitality and mentorship by senior members; Chuck and Becky volunteered to provide such friendship for Carol and me.

In early 2007, when Chuck was preparing to move here to take over the presidency of the National Academy of Engineering, he visited a couple of times to talk over the issues of the times and how the NAE, the NAS, and the IOM might be able to make a difference. I recall that he was well aware of all of the major national and international issues and that he was also interested in the details of our structure and procedures. He was hoping that we, at the three academies, could weigh in at appropriate times, but he was also very aware that we always have to be careful to be based firmly on as much fact as is available at all times.

After he arrived here, we began to get together irregularly but often. We had many wide-ranging chats and meetings on virtually every topic. Early on, Chuck was full of MIT stories and how they linked or shed light on all of our other topics. I was still wearing my MIT class ring then; it might have had the effect of inducing Chuck to tell more such stories. I decided to test this conjecture by placing this large item (over-sized “Brass Rat”) on a table in a prominent place. It didn’t seem to make a difference—he told the same number of MIT stories!

Chuck focused greatly on the NAE and also engaged progressively and intensively with the National Research Council, through which the NAS and NAE do much of our most influential work and which we govern jointly, along with the Institute of Medicine. He worked on some very notable projects as if he were one of the regular committee members, including the NAE/NRC report on the *Deepwater Horizon* explosion in the Gulf of Mexico, the *Research Universities* report, as well as important follow-up work on *Rising Above the Gathering Storm* with Norm Augustine. As you know, Norm carried the messages and recommendations from that report far and wide and on a few occasions he took others along to help. Chuck also pitched in importantly on the America’s Energy Future project which I wanted to launch.

He saw that the NAS, NAE, and IOM enjoy special privileges and responsibilities in our role of providing analyses and advice through the NRC to the federal government. Virtually every day he worked on the entire life cycle of each project: responding to requests for studies, scoping out each project and task, selecting committee members, meeting with committees, being available to help during external reviews of reports, and helping to summarize and disseminate reports. Chuck contributed greatly to quality control at all stages—for example, by helping to attract leaders to these pro bono tasks.

Each day I also watched how Chuck dealt with people at all levels of our organization. He treated them with respect and cordiality, and he respected their contributions. His prior reputation for fairness certainly developed anew here. He had big ideas and principles: that the US has great ideals and that we should continue progress toward them; that education, opportunity, and science and technology are essential; and that international friendship is extremely valuable. He opposed unnecessary rules, fences, and borders and he knew where a few are necessary. Consequently, everyone here valued his advice and his direct participation in our activities.

Simultaneously, Chuck continued his work on behalf of several important organizations: educational and business groups, philanthropic foundations, and individuals in Congress and the administration. He received new invitations from such groups every week.

Chuck Vest earned and received friendship, admiration, and respect from a huge number of discerning individuals in the US and around the world. Your thoughts today and those expressed by today’s speakers are shared across the US and around the world.



Harvey V. Fineberg

President, Institute of Medicine



When Chuck first learned of his diagnosis, he telephoned and told me that he had cancer of the pancreas. "I know it is a very harsh diagnosis, I know there are going to be hard times ahead," he said. "But I have had a good life."

When Chuck said, "I have had a good life," what he meant, I believe, was how blessed he was to spend his life with Becky and how fortunate he felt to have children and grandchildren whom he loved and who he knew adored him. He was grateful for all the advantages that he had been given in life—growing up in a warm and loving family, attending West Virginia University, being part of Michigan, and then MIT and the National Academy of Engineering.

Chuck was thinking of all the good things that had come to him. But truly, Chuck had a good life also because of all the good he did for the rest of us, for the nation, and for the world.

Chuck Vest was renowned for doing the right thing, in the right way, at the right time, and the right place. If it was right, Chuck was there.

One such occasion was the Overlap Case. This was something that arose very shortly after Chuck became president of MIT in 1990. It was a case about financial aid to students. The Justice Department had brought suit against the eight Ivy League institutions and MIT because they colluded in discussing jointly admitted students' financial aid packages.

The District Court that heard the case found in favor of the Justice Department in a very superficial review. The Justice Department then asked all of these nine institutions to concede the case, to enter into a consent agreement to stop comparing financial aid packages. Brown University agreed, Cornell agreed, Pennsylvania agreed, Columbia agreed, Dartmouth agreed, Yale agreed, Princeton agreed, and Harvard agreed. All eight Ivy institutions signed the consent agreement. One institution did not: MIT. Chuck said it is not right. We need to do this to give students an opportunity and universities an opportunity to compete on quality, not on financial packages. Yes, they have to be adequate to the needs, but we have to be able to admit every student on an equal basis.

The Circuit Court found in favor of MIT. The Justice Department then entered into a settlement with MIT that liberated all of the institutions to enter into a practice, which has continued, of fairness, with adequate financial aid for every student and allowing jointly admitted students to choose the university that best meets their educational needs.

A different president, a different time, a different sense of what is right, and we would have had a different result.

When the women of MIT came to Chuck Vest, as president, and said here is the evidence that we are not being treated fairly, not equally, Chuck looked at the evidence. He said, "I have always felt that the differences between the way men and women are treated was partly perception and partly reality, and now I am convinced by far the greater proportion is the reality." He changed the way MIT dealt with women. By that example he changed the way women had opportunity in universities, and I daresay workplaces, all across the country.

When Chuck Vest decided that it was the right time for open courseware—to take the work of MIT and make it available to any student, any individual anywhere in the world who had access to a computer—he did not wait until he had a \$25 million grant from a foundation he could convince that his vision was right. Chuck made the commitment—and by the way, the foundations then started to call and said what can we do to help?

Chuck took the lead. Chuck did the right thing. Chuck did it in the right way.

In my position I have had the opportunity to call many individuals at happy times when they have been recognized for one award or another. I had a similar opportunity when it was announced that Chuck Vest was to receive the National Medal of Technology in 2006, awarded by President Bush. In all those calls, I have never had anyone say to me what Chuck Vest said immediately as I called to offer

congratulations. He said, “You know I really don’t deserve this. I haven’t done anything to deserve this.” And I started to recount the things even I was aware of that more than justified the award. Finally Chuck said, “They told me it was for my educational reform above other things, and maybe that justifies it.” I thought. This is the most extraordinary National Medal of Technology winner of the year, perhaps of any year, we are likely to see.

Chuck did not have an inflated view of himself. He had an inflated view of others. He had a very high and lofty aspiration for everyone that he interacted with, whether it was a Fellow at the Academies or a student or a colleague or fellow university president or the president. He always thought of ways that he could make it better for them, better for our world.

Chuck Vest did have a good life. His goodness was not only because of what he received and what he enjoyed, but his goodness is in what he gave to everyone who ever had the privilege to interact with him.

Alice P. Gast

President, Lehigh University



I am honored and privileged to be with you today to celebrate the life of this great man. It was my good fortune to know Chuck Vest and to be his friend.

Chuck’s tremendous impact and influence in the world are felt far and wide. He contributed to many areas—online learning, immigration policy, affirmative action, export controls, intellectual property, women in science, international collaboration, government support of research, to name a few. His quiet, reasoned, and persistent work shaped the higher education and research landscape in important and lasting ways.

Yet his achievements and contributions to society are only part of what made him great. He didn’t just improve people’s lives through his work on important national and international issues. He also touched people’s lives in more direct and personal ways. He was a leader, a team member, a mentor, and a friend. Those of us who worked with Chuck loved being near him. He had a special blend of wisdom and kindness, of intelligence and caring, of seriousness and humor.

Chuck made us better people.

As a member of MIT’s Academic Council from 2001 to 2006, I remember the many hours spent around that large wooden table discussing plans, budgets, promotion dossiers, and policy issues. We each had our own perspectives, our quirks, and our unique ways of working. Chuck molded us into a team. We shared a wonderful camaraderie and mutual respect that made it one of the great periods in all of our lives.



Some of the best times at an Academic Council meeting were when Chuck had returned from a trip. He always had a story that he told with a smile and that little tilt to his head. The story could be about a person or a place, about a big thing or a small observation. Chuck told wonderful stories; they were always interesting, often taught a lesson, and usually made us laugh—often the laughs were on him. Ever the humble, self-effacing engineer, Chuck brought out the humor in even sticky and challenging situations.

Chuck was perceptive and understood people. He gave us great insights into the way important people thought and acted. He would describe the way George Bush and Bill Clinton engaged with PCAST, or the reception he received from princes, sultans, or heads of state. He enlightened us about places around the world and the people he met, connected with, and cared about.

I still remember Chuck’s childlike excitement when he was to be a guest conductor at the Boston Pops in 2004. Knowing Chuck, I think he probably studied for it. You can see a video of him conducting *Stars and Stripes Forever*;

he employed a technique best described as enthusiastic, he grinned the entire time. After the performance, he talked about how well the orchestra played—and how little they needed his baton.

When I think of Chuck, I often picture him with his chin cupped in his hand as you see in the lovely picture on the program. He is smiling, attentive but resting his chin. He was at ease like this. I guess maybe a few times he caught a few winks in that way that all academics have learned to sneak in a short nap.

Perhaps the best tribute and a lasting legacy for me is how often I find myself thinking of Chuck. Many times, when faced with a decision, I find myself asking “what would Chuck do?” I usually think of how Chuck would always rely on his values, always believe the best in others, and work to find a middle ground. Chuck used to talk about “navigating the shoals,” he occasionally referred to “tough sledding.” But he was always optimistic.

He was a problem solver. And he excelled at it. Few things vexed Chuck. When he was especially concerned, he furrowed his brow, pursed his lips, and carefully chose his words. And his words always pointed to the right way forward.

One thing that would replace the smile with a furrowed brow was the phrase “sensitive but unclassified.” Chuck battled this fuzziness and graying of the boundaries between secret and open, between classified and freely shared.

I remember his distress when we had to turn back funding and give up a project. He knew that the researchers would be very disappointed. He knew it was in the best interest for the United States, in fact, to do the research at MIT. He also knew that he could not compromise on one contract, that he needed to uphold the incredibly important value of openness. Chuck always spoke of the need to draw a bright line (open or classified), or he talked about creating high fences around small areas, or, after evaluating the circumstances and knowing the players, he wanted to institutionalize the dialogue.

Chuck always advocated to keep talking, to keep working on the tough issues, to never give up.

Perhaps this is one reason that his battle with pancreatic cancer has been so hard for all of us who are Chuck’s friends. We know that he tackled hard problems, we know that he dealt with difficult issues, and we know that he never gave up.

We owe it to Chuck to never give up these fights—for quality research, for access to education, for openness. We owe it to Chuck to look for the goodness in other people.

What would Chuck do? He would keep on navigating the shoals and making the world a better place. And that is what we should do.

And in doing that we will honor and celebrate the life of this great man, Chuck Vest.



Norman R. Augustine

Retired Chairman and CEO, Lockheed Martin Corporation

Chuck and I were friends for some 30 years. I have had the good fortune in my life to have known many fine people, but none finer than he.

We of course are here to celebrate a remarkable life, not to lament its loss. But I cannot help but recall the words of John Donne: “never send to know for whom the bell tolls; it tolls for thee.” Seldom have those words rung more true.

Chuck and I served together in seemingly innumerable undertakings, including 16 years on the President’s Council of Advisors on Science and Technology where the two of us were the only survivors of a change of administration from D to R. To this day, I don’t know what was Chuck’s political persuasion—he was simply committed to doing what he viewed to be the right thing.

We served together on the Board of the National Math and Science Initiative, the Gathering Storm Committee of the National Academies, and I was a member of the board of MIT during his leadership of that great institution. But more importantly, Chuck was simply my friend.

Whenever the nation confronted a major challenge within Chuck's sphere of competence—and that includes virtually everything—he was always available to take a leading role in finding a solution.

I am reminded of an incident a friend shared with me recently about his teenage grandson who had just received his driver's license and celebrated with a little 90 mph sprint down the highway. His escapade was interrupted by a state trooper who finally caught up with him and said, "Son, I've been waiting for you all day." The grandson responded, "Well, I got here as fast as I could."

That was the way with Chuck, whether it was chairing a task force for the Department of Energy, leading a White House nanotechnology planning effort, or chairing a commission on the redesign of the International Space Station. Chuck always got there as fast as he could.



Curiously, I don't ever recall Chuck telling a joke, but he had a wonderful sense of humor and an infectious smile. There was the occasion when several of us were waiting at the gate of the White House to be cleared for entry when my daughter, who worked there at the time, happened to be entering. Seeing me, she came over and gave me a kiss and went on into the building. Noting the smile on everyone's face, I blurted out, "My daughter, she's my daughter!" Chuck's response, with a twinkle in his eye as everyone laughed, was, "Sure, Norm, sure!"

Chuck was of course the consummate engineer. He used to correct me when I spoke of "science and technology," saying I should speak of "science and engineering." When I would respond, "OK, Chuck, why don't you change the name of MIT to MIE?" he would simply laugh. But it did bother both of us that when engineers put twelve men on the moon we were known as "rocket scientists," and when some nefarious characters on

Wall Street cooked the books, they became "financial engineers"!

In the British Officers' Cemetery at Normandy there is a tombstone that bears the inscription "Leadership is wisdom and courage and carelessness of self." This summarizes Chuck's leadership style perfectly, particularly if you were to add the word "integrity." I have never met a more wise, decent, selfless, and courageous man.

Some years ago the federal government was using the antitrust laws to attack our nation's finest universities, saying that their efforts to ensure that all meritorious young people have the opportunity to receive a quality university education were illegal. Only one university had the courage to take its largest source of research funding to court. That was MIT, under Chuck's leadership. MIT's argument prevailed and today many universities and young people owe him a debt of gratitude.

A champion of "the little guy," Chuck took the lead in placing course materials on the web for use by anyone, anywhere, at no cost—and in so doing triggered a revolution in the pedagogy of higher education.

Many in this room may not be aware of what were probably the darkest days in our Academy's history when some years ago our membership found it necessary to impeach our then president. It was largely the subsequent leadership of Bill Wulf and Chuck Vest that restored to our Academy the prestige it enjoys today.

Migrating from Morgantown, West Virginia, to the nation's capital, Chuck has held what are arguably the two most prestigious positions in our profession: president of MIT and president of the National Academy of Engineering. But one sees a lot more of Morgantown than Boston or Washington in Chuck's demeanor. We once had the occasion to travel to West Virginia together and it was evident that the devotion he held for his native state was exceeded only by the devotion it held for him.

I never, ever heard Chuck speak of any personal accomplishment, but the pride he held in his family—Becky, their children and grandchildren—was always evident.

Then one day a year or so ago Chuck told me that he had pancreatic cancer. He spoke about it as matter-of-factly as if he were reporting the results of a research project. In the ensuing months his life changed precipitously; but he did not seem to change at all, courageously continuing his many activities as if nothing were happening.

Now, whenever I hit the “V” button in the directory on my iPhone the first name to pop up is Chuck Vest. I’m not sure why—alphabetically he is not the first; I guess my iPhone just thinks that’s where he belongs. I haven’t had the heart to delete it. In fact, I’ve decided to leave it there, as a reminder of what it means to be the consummate gentleman—and a true friend.

James J. Duderstadt

President Emeritus, University of Michigan



Earlier speakers at this tribute to Chuck Vest have provided eloquent testimony to his leadership as president of MIT, president of the National Academy of Engineering, and one of the true leaders of American science and technology over the past 25 years. Hence it is most appropriate for me to comment on his early career during the 27 years he and his family spent in Ann Arbor and at the University of Michigan.

Actually, both Chuck and I orbited about each other for almost 50 years, but this began in 1967 when we both were appointed as young assistant professors of engineering at Michigan. We later became members of a group of restless young engineering faculty members who launched a revolution to take over the college in 1980.

Since no good deed goes unpunished, I ended up sentenced as the new dean (Chuck was on the search committee). But I was able to get even, convincing Chuck to become my senior associate dean and later successor as Dean of Engineering at Michigan. In these roles Chuck deserves great credit as the key to the move of the College of Engineering to the North Campus.

In our deals with the central administration and later barhopping with legislators in Lansing to get the funding for the key new buildings, we played the good cop bad/cop game...and guess who was the good cop? Chuck’s people skills were truly immense, and his ability to understand, communicate with, and persuade people had extraordinary impact throughout his career.

When I became president, one of my first challenges was to find a new provost. Since I was a gear head myself, the first engineering faculty member to become

president of the university, I felt we really needed a humanist in that role. With this intent, I asked the chair of our English Department to chair a search committee composed mostly of arts and humanities faculty. They soon came back to me with a single candidate: Chuck Vest! The search committee explained that they viewed Chuck as actually a true humanist in understanding the most important values of the university and its people. Of course, when this appointment was announced, the *Michigan Daily* came out with a great cartoon depicting us as Tweedle Dee and Tweedle Dum (as I recall, Chuck was Dee and I was Dum).

In the brief time Chuck served in the role of our chief academic officer, he continued to have great impact,

building a strong team with the deans, making outstanding appointments, handling complex policy problems with great wisdom and sensitivity...and, unfortunately, rapidly becoming so visible as a leader in higher education that MIT came calling.

Although he felt awkward about leaving Michigan, I made the case that the MIT president was really a call to national service since it gave him a remarkable opportunity to become a leader not only in higher education but in American science and engineering more broadly.



When his appointment was announced, one of our most distinguished faculty members, Paul McCracken, sent him a one-sentence letter: “Boy from West Virginia becomes President of MIT: The American Dream!!”

Of course, we had to make certain he remembered his Michigan roots, and at his inauguration, emblazoned across the front of one of the major buildings on the MIT campus was a banner reading “The University of Michigan in Cambridge!”

As others have mentioned, Chuck had a truly remarkable career as president of MIT, not only providing strong leadership for that institution but providing leadership for our nation’s research universities. His leadership of American science and engineering continued in recent years with his presidency of the National Academy of Engineering.

Many of us will always remember and miss Chuck Vest as a dear friend and a valued colleague. None more deeply than George Springer, one of his closest friends over the past 50 years, member of the Academy, and former chair of Aerospace Engineering at Stanford. George picked up a bit of a health problem while visiting his granddaughter at Michigan late last fall and still isn’t able to travel, but he wanted me to convey his great fondness and respect for Chuck and his sympathies to his family.

Throughout this nation and around the world, Chuck Vest was viewed as one of the great leaders of American higher education and national science policy.

Yet over the years Chuck’s loyalty to Michigan remained strong. I could tell, since within five minutes after every football game I would receive a brief email message such as Go Blue!, Bravo, or more recently Ouch or Good Grief (to which I replied by sending an image of Charlie Brown).

Chuck, Becky, and their family will always remain in our thoughts, an important part of our family at the University of Michigan.

While others may claim him—as a West Virginia boy, as president of MIT, as leader of the National Academy of Engineering, or even as a leader of American science and engineering—to us in Ann Arbor, Chuck Vest will always be remembered as a true Michigan man. But also as a man providing leadership for our times, and visions for our future. In fact, we will always remember Chuck as a Michigan man in the truest sense!



Kemper Vest Gay

Daughter

Death is Nothing at All

by Henry Scott Holland

Death is nothing at all.
I have only slipped away to the next room.
I am I and you are you.
Whatever we were to each other,
That, we still are.

Call me by my old familiar name.
Speak to me in the easy way
which you always used.
Put no difference into your tone.
Wear no forced air of solemnity or sorrow.

Laugh as we always laughed
at the little jokes we enjoyed together.
Play, smile, think of me. Pray for me.
Let my name be ever the household word
that it always was.
Let it be spoken without effect.
Without the trace of a shadow on it.

Life means all that it ever meant.
It is the same that it ever was.
There is absolute unbroken continuity.
Why should I be out of mind
because I am out of sight?

I am but waiting for you.
For an interval.
Somewhere. Very near.
Just around the corner.
All is well.

I can imagine my father charging us to heed these words. He would not want us solemn and sad but would want us to remember, laugh, share irreverent stories, pour a glass of good wine, take comfort in the company of friends, and then look toward the future.

This poem also asks us to “Call me by my old familiar name.” This line resonated with me, and I started thinking about the different names that each of us might use when speaking of him.



Charles
Chuck
Tuffy
Student
Professor
Doctor
Dean
Provost
President
Mentor
Son
Brother
Husband
Father
Uncle
Grandfather
Friend

The list goes on. What I find notable is that while each of us may call him by a different name and have a unique relationship with him, we all know the same man—warm, honest, caring, quick with a smile, and a twinkle in his eye. His clothes might vary—from his ancient brown plaid wool shirt he wore hiking to a tailored suit and silk tie—but the character of the man they covered did not waver.

Dad collected these names and titles as he moved through a remarkable journey that took him from his birth in Morgantown, West Virginia, to his death in Washington, DC. Along the way he forged friendships, loved my mother, taught students, raised a family, led a university, hiked mountains, welcomed grandchildren, saw the world, met a cast of characters, and touched countless lives.

As condolences have come from around the world, some of the most surprising and touching have come from friends who had not seen him for many years or perhaps never knew him well to begin with—a note via Facebook from one of my elementary school classmates recalling a long ago visit when Dad set up a laser and holography demonstration, a note from a college friend who remembers him moving me into the dorm and setting up an uncooperative loft in our room. There are cards from dear friends and tweets and blogs from people we will never know, but what is most comforting to me is they all remember Dad not just for what he accomplished but for his small actions, humanity, fairness, decency, and kindness. I take great pride in what he accomplished but an even greater pride in who he was as a person.

I had the privilege of joining Dad on part of his journey as his daughter. I was born on Father's Day and my relationship with Dad followed the expected arc from believing that he could do anything, to thinking he knew next to nothing, and finally to a place of deep appreciation for all that he and my mother provided and taught me.

He taught not through lectures but by example. He taught me the value of a dollar, the importance of hard work, the importance of love and commitment to family.

I learned to believe in the magic of Christmas; to have great pride in my community and country; to love books, art, and history; to appreciate beauty in the world; that good wine and good food are to be shared with others.

And I had to learn the final, hardest lesson of all: that it is the quality not the quantity of one's life that counts.

Dad was not perfect. He could be impatient, short with his temper, forgetful, and could let loose with all sorts of inappropriate language when attempting home repairs or navigating a highway. And he certainly, no matter how hard he tried, could not tell a joke without laughing before the punch line.

There are so many things that I miss about Dad, but the thing I miss the most is simply knowing that he is there—knowing that he is at his desk working, knowing that he is on the couch sleeping, knowing that he is at his beloved house in New Hampshire, knowing that he is on a grand adventure somewhere, and most of all knowing that he is by my mother's side where he was for 50 years.

The morning after Dad's death I awoke early in my parents' home and watched the sun rise over the bare winter trees. The top of the Washington monument visible in the distance, the unending rows of Arlington Cemetery's white headstones stretching to my right. I felt a brief moment of peace when, despite my deep grief, I knew that everything would be all right. The sun was still rising, birds were still flying, and the city was awakening for another day.

Dad, I will continue to look for that peace and certainty. I will continue to move onward and upward as you asked all of us to when you were diagnosed with cancer. I will do my best.

Daddy, you lived with warmth, love, integrity, and purpose—a life well lived. Your death leaves a hole that can never be filled but I will hold you in my heart forever.



John Vest

Son

Now cracks a noble heart. Good night sweet prince:
And flights of angels sing thee to thy rest!
– William Shakespeare, from *Hamlet*

Trying to find my own words for these comments of remembrance was truly a tall order, and a task for which I have undoubtedly fallen short. How can words adequately honor a man so honorable or express feelings and gratitude for someone I loved so deeply and admired so endlessly?

"Life is a journey." In a life full of great but quiet wisdom, I will remember these words as the last profound thought that my dad left me with. Quietly and unexpectedly offered, out of the blue, unprompted, at the end of a routine phone conversation toward the end of his life.

After my dad's death, with these words indelibly etched in my mind, I was looking through transcripts of his old speeches and essays and I found a passage where indeed he described his own life as a journey. In his words, "A journey that began in a warm family in a small town in West Virginia."

From the time Kemper and I were small children and throughout our lives, the stories my dad would tell of his childhood, his wonderfully simple upbringing, the adventures he had, and the lessons he learned from his parents are among our family's most treasured memories. In a note that he wrote to me shortly after

stepping down from his post at MIT, he reflected that it was clear to him that the vast majority of success he enjoyed in life should be credited to the lessons instilled in him as a boy growing up in Morgantown: the simple values, the emphasis on integrity and decency, and the extraordinary importance of family and friends.

In thinking about the way in which my dad was so firmly guided by these principles, I was struck by the analogy to the navigational concept of True North. True North, which is the exact direction along the earth's surface that leads to the North Pole, has been used for centuries by mariners and explorers to chart

the course of their journeys. The beauty and simplicity of True North is that it can reliably be determined by the stars at night or the path of the sun across the sky, objects in nature that can be seen from anywhere—unwavering, never changing. It represents an ever-present guidepost and beacon to navigate sailors to far-off destinations but, most importantly, to lead them safely home again.

I believe that my father's upbringing and the values he learned as a child provided him with his own True North, which always guided him, keeping him on course through his life's journey—always leading him to what was right and decent, never steering him astray to what was convenient or self-serving—always reliable, always honest, steadfast.

My dad went on to travel far and wide. He touched many lives and without a doubt he left the world a better place.

As we celebrate my dad's life, I am grateful for so many things: for all that he taught me, for the example he set, for his kind heart and humility, for summers at the beach, for a blessed childhood in Ann Arbor, for our many camping trips in Michigan and Canada, for countless wonderful times at Lake Winnepesaukee, for Christmas eves by the warm fireplace, for our quiet snowy midnight walks in New Hampshire, for the comfort it always brought me to see him reading in his special chair, and, above all, for the warm and loving home that he and my mom provided.

With my mom's permission I will share a parting comment that he made to her after 50 years of love and marriage, at the very end of his life. He said to her, "Becky, we've had quite an adventure." And indeed they did—a life so well lived.

No family could be luckier, no son could be prouder. He was my hero and my True North. And although my heart is broken, I take great comfort in thinking that while this journey has come to an end, perhaps his pursuit of the endless frontier has just begun. And in knowing that he will be with me in my heart—a steady hand on the tiller every day of my life.

Until we meet again, Godspeed, old man.





Take Me Home, Country Roads

by John Denver

Almost heaven, West Virginia, Blue Ridge Mountains, Shenandoah River.

Life is old there, older than the trees, younger than the mountains, blowing like a breeze.

Country roads, take me home to the place I belong.

West Virginia, mountain momma, take me home, country roads.

All my memories gather round her, miner's lady, stranger to blue water.

Dark and dusty, painted on the sky, misty taste of moonshine, teardrop in my eye.

Country roads, take me home to the place I belong.

West Virginia, mountain momma, take me home, country roads.

I hear her voice in the morning hour she calls me, the radio reminds me of my home far away.

And driving down the road I get a feeling that I should have been home yesterday, yesterday.

Country roads, take me home to the place I belong.

West Virginia, mountain momma, take me home, country roads.

Country roads, take me home to the place I belong.

West Virginia, mountain momma, take me home, country roads.

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