Remarks by Michael S. Gazzaniga

At the Dartmouth dinner for Dartmouth Honorary Degree recipients at 2011 Commencement

There is nothing quite like coming home and what an honor it is for me tonight. I have experienced Dartmouth being my home in many, many ways.

First as a student, then as a parent, then as a faculty member at DMS and finally as a Professor and Dean of the Faculty at the College. Each experience has been meaningful. As I have served Dartmouth, Dartmouth as nourished my family and me.

I have one thought I would like to leave you with tonight. I believe our goal should be to protect our Colleges and Universities from being overwhelmed by the practical problems of the world. College should be protected time. -- a time for envisioning and learning how to think.

Most of our lives are given over to the practical and that is good and necessary. But there has to be a time in our lives where we are exposed to, and learn how, to see and appreciate problems from different perspectives.

Scientists when asked to explain how they came up with such and such idea frequently fall into the trap of claiming how their super rational minds were driven to particular conclusions per force of their data. There has to be some truth in that.

Yet, psychologists who study these matters point out that from Poincare to Watson and Crick, metaphors gained from outside their scientific discipline **when** applied to their problems, sprang open their minds to the data driven truths sitting in front of them. Guttenberg figured out how to print one letter but didn't see its full potential until he saw a grape press one weekend when he visited a country inn.

We live in an age where the overwhelming problems in the world are invading the very time when are one is trying to learn how to think. The problem is, being familiar with problems is one thing. Having the capacity to solve them is quite different. How to think involves the collision of metaphors upon metaphors and that only comes about by getting around, by having a broad liberal arts education.

We hear the call for the practical, for translational research all the time and in doing so we fail to heed the observation of those who came before us like the great physiologist, Hermann von Helmholtz who said:

"Whoever in the pursuit of science, seeks after immediate practical utility, may rest assured that he seeks in vain".

An example comes from brilliant work of Karl Disseroft at Stanford. He was following a charge of Francis Crick that neuroscience must figure out how to turn on and off the neurons of the brain in particular structure and at precise times, if we are to understand how the brain works. No one had the slightest idea how to do that. Then, Disseroft, a psychiatrist, noticed that chemicals crucial in the life of the green algae, *Chlamydomonas reinhardtii*, commonly known as pond scum might be the trick. This Algae contain light-sensitive proteins called opsins that act as tiny gatekeepers, regulating the flow of charged ions across cell membranes. Bingo! He got it. All he has to do is to get those proteins into specific brain cells, turn different color lights on around them and he turns on off discrete parts of the brain.

The result is, and this discovery is only 5 years old, that combining that finding with laser technology find him able to turn never circuits deep in the brain on and off. Parkinson's disease, and a host of other diseases are suddenly approachable. None of this would have happened if someone many years before Diessorft had not followed through on a simple curiosity….an interest in algae. This advance is the hottest discovery in neuroscience.

So it is ideas that matter. It is ideas that open up the dark parts of the world and they come from broad exposure. We need our leading institutions like Dartmouth to continue to nurture how to pursue ideas for their own sake because they are intriguing. More often than not, their utility will come years later and in unexpected ways. It is a tough and expensive assignment. Yet, as we all know, it is ideas that have consequences.

Dartmouth launched me down this path and I am forever grateful. She did it for me for my brother and his sons and my daughters. Stay true to your mission, Dartmouth. Help generate light where there is only darkness. Many, many thanks.