Public Universities, the Humanities, and Education in North Carolina
Remarks by Michael Tiemann, 10 October 2015, Chapel Hill NC

"The State that separates its scholars from its warriors will have its thinking done by cowards and its wars fought by fools." If ever there were a single sentence that articulated the importance of a comprehensive humanities curriculum taught to all citizens, not just some, it would be this: "The State that separates its scholars from its warriors will have its thinking done by cowards and its wars fought by fools."

Happily, not all our Universities, nor those who attend them, specialize to such an extreme. But the rhetoric lately directed at our Universities, especially their leadership, priorities, and budgets, calls into question the very role of the Public University, the rightness of its core curriculum, and the resulting value of the education it offers. This debate goes back to at least the time of Adam Smith, who weighed in directly when he wrote Book V of The Wealth of Nations[1], *Of the Revenue of the Sovereign or Commonwealth*.

In the first chapter of that book, *Of the Expences of the Sovereign or Commonwealth*, Smith addresses three and only three subjects as proper to charge to the public's expense: the common defense--the need to properly train and equip the warriors; the administration of justice--the judiciary and law enforcement; and finally, the vital importance of universal public education. Indeed, as I read it, I find both the inspiration for North Carolina's constitutional commitment to public education, as well as the high standards to be expected from such a commitment of public funding. The bumper-sticker version is simple: "If you think education is expensive, try ignorance!" Smith's actual words are more forceful (V.1.189):

> A man without the proper use of the intellectual faculties of a man, is, if possible, more contemptible than even a coward, and seems to be mutilated and deformed in a still more essential part of the character of human nature. Though the state was to derive no advantage from the instruction of the inferior ranks of people, it would still deserve its attention that they should not be altogether uninstructed. The state, however, derives no inconsiderable advantage from their instruction. The more they are instructed the less liable they are to the delusions of enthusiasm and superstition, which, among ignorant nations, frequently occasion the most dreadful disorders. An instructed and intelligent people, besides, are always more decent and orderly than an ignorant and stupid one. They feel themselves, each individually, more respectable and more likely to obtain the respect of their lawful superiors, and they are therefore more disposed to respect those superiors. They are more disposed to examine, and more capable of seeing through, the interested complaints of faction and sedition, and they are, upon that account, less apt to be misled into any wanton or unnecessary opposition to the measures of government. In free countries, where the safety of government depends very much upon the favourable judgment which the people may form of its conduct, it must surely be of the highest importance that they should not be disposed to judge rashly or capriciously concerning it.

But then Smith proceeds in ways I did not expect; ways which have a direct bearing on the specific topics of today's panel discussion. I'll skip a bit here, but he goes on to say (V.1.201) that not only the ignorance of individuals, but more importantly, their actions as a group (which he calls a sect), represent an existential threat to society. He speaks presciently of the challenges that fundamentalists pose at home and abroad (V.1.202):

[1] http://www.econlib.org/library/Smith/smWN20.html#B.V

A man of rank and fortune is by his station the distinguished member of a great society, who attend to every part of his conduct, and who thereby oblige him to attend to every part of it himself. His authority and consideration depend very much upon the respect which this society bears to him. He dare not do anything which would disgrace or discredit him in it, and he is obliged to a very strict observation of that species of morals, whether liberal or austere, which the general consent of this society prescribes to persons of his rank and fortune. A man of low condition, on the contrary, is far from being a distinguished member of any great society. While he remains in a country village his conduct may be attended to, and he may be obliged to attend to it himself. In this situation, and in this situation only, he may have what is called a character to lose. But as soon as he comes into a great city he is sunk in obscurity and darkness. His conduct is observed and attended to by nobody, and he is therefore very likely to neglect it himself, and to abandon himself to every sort of low profligacy and vice. He never emerges so effectually from this obscurity, his conduct never excites so much the attention of any respectable society, as by his becoming the member of a small religious sect. He from that moment acquires a degree of consideration which he never had before. All his brother sectaries are, for the credit of the sect, interested to observe his conduct, and if he gives occasion to any scandal, if he deviates very much from those austere morals which they almost always require of one another, to punish him by what is always a very severe punishment, even where no civil effects attend it, expulsion or excommunication from the sect. In little religious sects, accordingly, the morals of the common people have been almost always remarkably regular and orderly; generally much more so than in the established church. The morals of those little sects, indeed, have frequently been rather disagreeably rigorous and unsocial.

There are two very easy and effectual remedies, however, by whose joint operation the state might, without violence, correct whatever was unsocial or disagreeably rigorous in the morals of all the little sects into which the country was divided.

The first of those remedies is the study of science and philosophy, which the state might render almost universal among all people of middling or more than middling rank and fortune; not by giving salaries to teachers in order to make them negligent and idle, but by instituting some sort of probation, even in the higher and more difficult sciences, to be undergone by every person before he was permitted to exercise any liberal profession, or before he could be received as a candidate for any honourable office of trust or profit. If the state imposed upon this order of men the necessity of learning, it would have no occasion to give itself any trouble about providing them with proper teachers. They would soon find better teachers for themselves than any whom the state could provide for them. Science is the great antidote to the poison of enthusiasm and superstition; and where all the superior ranks of people were secured from it, the inferior ranks could not be much exposed to it.

The second of those remedies is the frequency and gaiety of public diversions. The state, by encouraging, that is by giving entire liberty to all those who for their own interest would attempt without scandal or indecency, to amuse and divert the people by painting, poetry, music, dancing; by all sorts of dramatic representations and exhibitions, would easily dissipate, in the greater part of them, that melancholy and gloomy humour which is almost always the nurse of popular superstition and enthusiasm. Public diversions have always been the objects of dread and hatred to all the fanatical promoters of those popular frenzies. The gaiety and good humour which those diversions inspire were altogether inconsistent with that temper of mind which was fittest for their purpose, or which they could best work upon. Dramatic representations, besides, frequently exposing their

> artifices to public ridicule, and sometimes even to public execration, were upon that account, more than all other diversions, the objects of their peculiar abhorrence.

Smith elaborates on this latter point, but George Bernard Shaw says it better: "The theatre should be a factory of thought, a prompter of conscience, an elucidator of social conduct, an armory against despair and dullness, and a temple to the Ascent of Man." Taking this one step further, playwright Edward Albee admonishes: "[T]heatre should be useful and if it does bring people into greater contact with each other, whether it's friendly contact or not, it doesn't matter. As long as people are put into greater contact with each other, then the play has accomplished something useful, which is what I keep saying the arts must do."[2]. If UNC is looking for a safer, more useful contact sport, Coach Kang and Carolina Performing Arts could be our newest championship team.

But enough of Adam Smith, at least for now. I have my own arts and sciences epiphanies to relate. With both a BS CSE from the University of Pennsylvania and having dropped out of Stanford University's PhD program in Electrical Engineering, I'm a poster child for both STEM education and for Unschooling. I wrote the GNU C++ compiler and contributed to many other fundamental open source software projects, which earned me some respect in the technical community. I benefited from two liberal arts educations--one in high school, due to the fact that I finished its science and math curriculum a year before graduating, and one in college, due to my desire to meet and talk with non CS students. Those educations gave me the intellectual capacity to synthesize a new truth from two seemingly incompatible teachings: Richard Stallman's *GNU Manifesto*, which argued that software should be freely shared because proprietary software is immoral, and *The Wealth of Nations*, previously mentioned. Again, I don't have time to explain the details now (though I have explained them when I've lectured at Kenan-Flagler). Plus, I promised to shift away from Adam Smith, at least for now. Suffice it to say, that synthesis inspired me to co-found the world's first company to commercialize free software, later known as open source. I became Red Hat's CTO in 2000 when Red Hat acquired the company I helped to found and lead, and our family moved to Chapel Hill later that year.

The impact of open source software on the overall software industry has been profound. Software you can download for free today is estimated to represent $50B worth of development effort[3]; it works so well that even Microsoft has shifted to Linux for their Cloud offerings[4] and Apple has adopted our virtualization technologies; From 1999 to 2013, scientific supercomputing has shifted from 96% proprietary software to 96% open source[5]. Open source opened the door to major scientific advances and achievements, ranging from the sequencing of the human genome to the discovery of the Higgs boson. It has inspired others, such as the Public Library of Science, the Creative Commons, and data.gov. Founders of Google, Facebook, Twitter, and others representing more than a trillion dollars in market capitalization acknowledge that they could not have started their companies or scaled them so rapidly without open source software[6,7]. I am proud of both the concrete market value open source has helped create, and I am proud of the many intangible ways open source has brought value to society. But it wasn't just technology that got us there.

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[2] http://thedianerehmshow.org/shows/2011-03-14/edward-albee-molly-smith
[3] http://www.linuxfoundation.org/sites/main/files/publications/estimatinglinux.html, extrapolated to > 1B source lines of code represented by Debian's "sid" release
[4] http://www.wired.com/2015/09/microsoft-using-linux-run-cloud/
[5] http://www.zdnet.com/article/20-great-years-of-linux-and-supercomputers/
[6] http://www.zdnet.com/article/red-hat-ceo-google-facebook-owe-it-all-to-linux-open-source/
[7] http://todogroup.org/

In 2005 I found myself more interested in maximizing the impact of open source software rather than following its technological arc. I shifted to a new role, Vice President of Open Source Affairs, and I joined the Brand+Design team, working for a manager who was not to a Ph.D from MIT, an MBA from Harvard, nor a VC from Silicon Valley, but to an BFA from NCSU. He taught us about Design Thinking, and suddenly I saw it everywhere, including in Bruss Nussbaum's column in Business Week. In 2005 Nussbaum wrote[8]:

> If you're a manager at a company that's going to compete globally by playing the innovation game, you're going to have to learn how to innovate. Don't kid yourself about learning all you need to know about innovation in B-school. You didn't. When people talked about innovation in the '90s, they really meant technology. When people talk about innovation in this decade, they really mean design.

For the next several years, Nussbaum wrote and blogged almost daily about the ways in which D-school (Design school), not B-school (Business school), was reshaping the way companies compete and businesses operate. Technology is important--stuff has to work, but more important is the way technology meets human needs. And there's nothing like studying the humanities to understand better the human side of the equation. Companies that get this right win big. Indeed, stocks in the DMI (Design Market Index) have outperformed the S&P by 228% from 2004 to 2014[9]. That's about 10x the overperformance of the S&P Tech Index vs. the S&P 500 over the same period. If you came here looking for a macro investment thesis, you are welcome for that suggestion.

Design is a discipline heavily influenced by the arts, particularly the creative process, which is different than the scientific process. The scientific process is a reductive process that helps reveal the truth by eliminating all things that are not true. Scientific acceptance comes from repeatability of the process. The artistic process creates possibilities which, in a somewhat organic and magical way, lead to the discovery of things entirely unknown, but which can be tested for validity once imagined. And though it rarely works the same way twice, it works. If I were explaining this to Adam Smith, I would say "science is the process by which the self understands the Universe, and art is the process by which we express ourselves to the Universe." And he would immediately concur that if one is denied the opportunity to understand the world (or merely told "stuff happens--deal with it"), and/or if one is denied the ability to express oneself, it would be no surprise that one might become "disagreeably rigorous and unsocial." In other words, an enemy of the state. Teaching sciences and the humanities together neutralizes the threats in both directions, giving the individual a better understanding of the world and a better ability to actually *be* in that world. The joint operation of science and the arts keeps us in balance. And it helps us make connections we could never make in a segregated, isolated, overly specialized world. UNCSA Chancellor Lindsay Bierman is completely correct when he says that whenever we talk about STEM education, we should recognize and correct the error by adding an A for Arts to spell STEAM.

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[8] "Getting Schooled in Design", Business Week, Jan 3, 2005, http://businessweek.com/bwdaily/dnflash/jan2005/nf2005013_8303.htm

[9] http://www.dmi.org/blogpost/1093220/182956/Design-Driven-Companies-Outperform-S-P-by-228-Over-Ten-Years--The-DMI-Design-Value-Index

Red Hat CEO Jim Whitehurst recently published *The Open Organization: how to build enduring companies in a world of dynamic, accelerating change*. At Red Hat, we celebrate the individual in the way we state our values: freedom, courage, commitment, and accountability. Adam Smith would be proud! But we also honor the importance of communication, coordination, and collaboration, which, along with diversity of participation (or as we like to call it, inclusivity), you might recognize as the underlying design revealed in James Surowiecki's *The Wisdom of Crowds: why the many are smarter than the few and how collective wisdom shapes business, economies, societies and nations*. That sounds a bit like Adam Smith, too! Where these two concepts come together is optimizing the balance between the genius of the individual and the wisdom of the group. Of course Red Hat has some people who are better at programming than they are at writing marketing copy, and of course we have people who are better at writing a sales proposal than they are at programming. But what best connects us and makes us most productive in our respective disciplines are the people who have a broad-based education that can cross boundaries productively. The greater the breadth of knowledge, the greater that person's organizational valence, the more that person can translate specific insights to general solutions and applications, the more effectively we can adapt to rapid and accelerating change. We recognize this, and we hire accordingly. By combining subject matter experts and generalists, we create the organizational DNA that gives us the ability to thrive on change rather than fear it or try to avoid it.

Let me conclude with this conclusion by Adam Smith (V.1.239):

> The expence of the institutions for education and religious instruction is likewise, no doubt, beneficial to the whole society, and may, therefore, without injustice, be defrayed by the general contribution of the whole society. This expence, however, might perhaps with equal propriety, and even with some advantage, be defrayed altogether by those who receive the immediate benefit of such education and instruction, or by the voluntary contribution of those who think they have occasion for either the one or the other.

As he said back then, and as we see today, there are many ways we can choose to pay for education. But we should never lose sight of the fact that the goal is not, in and of itself, to be happiest about they way we pay for it. The goal is the general benefit that education confers to the whole of society. To jeopardize that goal in the name of fiscal dogma is to fundamentally misunderstand the final conclusion of the final chapter of the final book of the Wealth of Nations. That would be a level of intelligence none of us would be proud to advertise, let alone support or accept.

"The State that separates its scholars from its warriors will have its thinking done by cowards and its wars fought by fools." Whether the battlefield is in Syria, Afghanistan, or the South China Sea, but also whether it is the front lines of cloud computing, cancer research, renewable energy, or agriculture, we cannot afford to segregate our warriors from our scholars. And neither can we afford to separate science and technology from the arts and humanities. Thankfully, UNC Chapel Hill has a College of Arts and Sciences, and as long as it remains an inclusive forum for inquiry and ideation, implementation, and improvisation, then innovation and entrepreneurship will not only endure, but it will prevail.