

Statement on SEAS at the FASS meeting on October 15

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I feel compelled to speak a few words on Engineering since Meg Urry and Howard Bloch elaborated on the need of the sciences to recoup lost ground at a time when the competition to hire talents is restricted to the few universities that can afford it. This applies perhaps even more to the School of Engineering and Applied Science (SEAS) for which the talent pool might even be larger in view of the concomitant slump in industry hiring.

SEAS has about a hundred faculty members, including the recent return of Applied Physics. This is about one third of the size of FAS devoted to science and engineering. As a result, any reinvigorating action on SEAS will impact a sizeable fraction of FAS directly.

I will focus briefly on the tortured history of Engineering at Yale. It all started with the establishment of the Sheffield Scientific School (SSS) that initially covered chemistry and civil engineering. J. Willard Gibbs received the first Ph.D.'s in engineering in the US from SSS for a thesis on the design of gearing, a quintessential topic in mechanical engineering. Eventually he left his mark in thermodynamics and statistical mechanics and became the preeminent scientist of the nineteenth century. Fast forward a century, to the late 70s and 80s, when John Fenn, a professor of chemical engineering, was working on his development of electrospray ionization that revolutionized the field of mass spectrometry, and ultimately lead to his 2002 Nobel Prize in Chemistry. It was the first Nobel prize awarded for work in an engineering department!

While Fenn's work of the '70s and 80s received accolades everywhere, Yale President Benno Schmidt, to save money for building upkeep, proposed a reduction in FAS faculty in the early '90s that would have resulted in the shutting down of Engineering and Applied Science. This was the most striking example of the dissonance between perception of Yale administrators and the reality on the ground. The proposal was rejected by the faculty and both President and Provost stepped down from their positions in short order. Some of us on the Senate were at Yale at the time, and we vividly remember those turbulent days.

The truth of the matter is that no administration has ever resolved its ambivalence towards engineering, from the days of President Griswold in the '50s to the present time. Griswold did not like Science, and Engineering even less, and he did not encourage any kind of government money. So, Yale lost ground with respect to the competition, as our peer institutions received lavish support from the government and expanded science and engineering programs in the transformation of funding of scientific research that took place after WWII. It is difficult to play catch up with a 70 years handicap!

A brief "renaissance" took place with the Levin's administration when Allan Bromley, a physicist and chemical engineer by undergraduate training, was appointed Dean. Through the sheer force of personality, Bromley managed to establish a new department of Biomedical Engineering and a program in Environmental Engineering, both of which are thriving. Engineering was not labeled a School until 2007, but it remained a school in name only, without either financial or hiring independence and the administrative awkwardness of a school (SEAS) within a school (FAS) was not resolved. Traditional engineering departments have not grown: Mechanical Engineering, for example, has stagnated at its pathetic level for roughly 30 years, even though enrollment has tripled in the same period and department research productivity has grown, with citations figures comparable to those of the top engineering schools.

Even now, the Science Initiative has been largely "silent about engineering" in the words of Provost Strobel. As to the recurring aspiration to higher ranking, it can't be realized without providing resources and space to flourish. There is, in fact, a clear correlation between size and ranking, as the recent climb in the ranking of Columbia, Penn and Johns Hopkins show. Being the smallest engineering departments in the country flies in the face of any ambition to better ranking.

In conclusion, there is plenty to recriminate about. To remedy the mistakes of the past, we should seize the moment and kickstart a substantial growth of engineering and applied science befitting a premiere educational institution like Yale. Timing is of the essence!