Celebrating Standish C. Hartman

This special issue of our newsletter is devoted to Professor Standish C. Hartman, who joined the faculty of the Boston University Department of Chemistry in 1968 and retired this year. In his 37 years, he has been educator, scientist, Chairman of the Department, and now, Professor Emeritus. His four decades of experience have given him a perspective that few can match. In the interview that follows, Professor Hartman generously shares his candid views and insights on academic life in a department that has grown and evolved in response to the students and science it serves.

Message from the Dean

I'm happy to make an appearance in the Chemistry Newsletter to pay tribute, on behalf of the College and Graduate School, to a colleague who has long been not only a distinguished teacher and scholar but also an invaluable contributor in service to the Department and to the University in a great variety of important roles: I need not remind anyone who has learned or taught in our Chemistry Department in the last 37 years just how central Stan has been to its impressive development, just as throughout the College we have similarly benefited from his judgment, professionalism, and warm collegiality.

Some colleagues it's simply hard to imagine doing without, and Stan is one of those. Fortunately, promotion to the rank of Emeritus Professor ensures that, for such faculty members, retirement need not end a professorial career and a continued relationship with a colleague who will always have valuable contributions to offer. Promotion to Emeritus is not automatic, but requires the recommendation of the Department, the Dean, and the President, and the endorsement of the Trustees. The qualifications are as our University policy stipulates: "the prefix Emeritus indicates a position of honor and esteem at Boston University." Stan certainly fits this bill, and we wish him the very best as he enters this new stage of his career.

Jeffrey J. Henderson

Dean, College of Arts and Sciences
Interview with Standish C. Hartman: the Perspective of 47 Years

When did you know you wanted to be a scientist?
I think I always knew. I can’t remember a time when I wasn’t interested in knowing how the world worked. As a child I had a chemistry sets in the basement. I did well in my science classes in school, and I was fortunate that my father, an engineer, encouraged me to pursue a scientific career.

You got all your degrees at MIT?
Yes, I got my SM/SB there in 1954 in a 5-year “Chemical Biology” program in the Biology Department. I may have been the only student who ever finished that SM/SB program. The MIT biology department has a reputation now of being one of the best in the country, but in those days it was a minor department, overshadowed by the big engineering departments. Jack Buchanan came to MIT from the University of Pennsylvania and started a new program in biochemistry in 1953. He was working on the biosynthesis of purine nucleotides, precursors of nucleic acids, which was a very hot topic in those days. I was drawn to this research and was fortunate that Jack was willing to take me on as his first new student at MIT. So, he was my research advisor for three years, when I got my PhD, and for a couple of years after that when we taught together and collaborated on writing several papers.

Would you say he was your mentor?
And, role model. You couldn’t have asked for a better mentor and friend. He and Elsa have been our dearest friends, and our families have been close for, now, 52 years. I learned a lot from Jack both as a scientist and how to write grants and scientific papers, which are important skills in their own rights.

After MIT, you went to Harvard Medical School?
Yes, but first I taught a graduate biochemistry course at MIT with Jack for two years. Then I went to Harvard as an Associate in Biological Chemistry in 1959 and was promoted to Assistant Professor in 1964.

What did you do at Harvard?
I continued researching some enzymological aspects of problems that grew out of my PhD work, which led me more and more toward the chemistry side of chemical biology. I taught biochemistry both to first-year medical students and to graduate students in the Medical Sciences program. With another young faculty member, I developed a year-long graduate course in biochemistry, which probably did more to educate me than anything I had done up to that point. I had to teach and, therefore, to really learn, the basics of physical chemistry: thermodynamics, kinetics, spectroscopy, and so forth.

Do you like teaching?
Yes, at Harvard I discovered how much I loved to teach.

You’ve been at it a long time.
Well, if you do the math, 1 year at MIT, 10 at Harvard, and 36 at BU, it’s been 47 years.

That must represent thousands of students. With a five-decade perspective, what can you say about chemistry/biology students? Has student quality changed over the years?
Yes, but not totally for the better. Generally, and I mean generally because there are inspiring exceptions, students today are less motivated to do hard work and less willing to think for themselves — less willing to invest their minds in solving problems.

That’s a little discouraging. Why do you think that is?
There are many reasons, but high among them are reliance on standardized testing in pre-college education, in my opinion. Less real thinking is expected from students because teachers must “teach to the test.” The test scores are used to rate teachers as well as students, so the damage is self-perpetuating. Science labs are being dropped from high school curricula because of budget cuts and liability issues. But chemistry is experimentation. That is why undergrad research is so important in our department. I also feel that TV has contributed. Students expect to be entertained: they are too much passive agents in their own educations, and resentful if we try to stretch their brains.

So how did you come to BU in 1968?
As best as I can recall, I met Rich Laursen at a seminar and he told me about a faculty opening in Chemistry for a card-carrying biochemist. It sounded like the right kind of position for me.

What was the Chemistry Department like 37 years ago?
For one thing, we were in the Stone Science Building [685 Comm Ave]. It was a crowded, dingy place. It had no air conditioning and the windows couldn’t be closed fully to keep the dirt out. But I also remember the good camaraderie. We had about 40 graduate students in those days. I had a good-sized group — about 4 graduate students, a postdoctoral fellow or two, and some undergraduate researchers.

I understand that you started a BA/MA program in biotechnology in the late 1980’s. Actually, it was Gil Jones who initiated the idea of an interdepartmental masters program in biotechnology involving chemistry, biology, and physics in the late 1980’s. In part responding to Dennis Berkey’s encouragement of BA/MA programs in the University, we later devised an undergraduate component called “Biochemistry and Molecular Biology” (BMB) and pitched it as a program students could complete with a masters degree in 5 years or less.

Was this the first inter-departmental program with Chemistry involvement?
No, an interdepartmental biochemistry (IBC) graduate program with the medical school and the biology department existed when I joined the BU faculty. The Charles River departments were a little bit the “tail on the dog” because it was mainly run at the Medical School. To try to bring us more actively into the program, it was agreed that the administrative center would rotate, and I took over as IBC chairman for about four years. I had some IBC doctoral candidates in my lab, in addition to those in the Chemistry program. Eventually the problems with communication between the two campuses became a burden, and we went our separate ways. Also, the biochemistry wing of the Chemistry Department was becoming strong enough to stand on its own legs.
Why was the BA/MA in biotechnology formed?
It had a different priority from the graduate (PhD) program. Its goal initially was to prepare students for careers in industry. They needed, among other things, intensive laboratory experience. That has continued to be one of its functions, but the BMB has become a very popular program at BU for pre-med preparation as well as for students wanting to go on to PhD work in biochemistry, molecular biology, and related fields. I was the chairman of the BMB/Biotechnology program in the formative years, from about 1990 until 1995, and of the MA end of it until my retirement last year.

Have there been many changes in the chemistry curriculum since you started at BU?
Well, a certain amount of the chemistry curriculum changes very slowly because of the conservatism of the ACS accreditation requirements. However, courses are defined and developed by faculty who are invested in what they teach. They have significant control over content and style. For example, when I came to BU, I took on a biochemistry course that was begun by my predecessor, but I changed it considerably according to my background and interests. Over the years I adapted it to keep it current with advances in the field, as we all do. But, looking at our curriculum in the 60’s as compared to today, there have been many changes, particularly in our upper level and graduate courses, reflecting the growth and diversity of our faculty. We now have two strong tracks of core undergraduate courses, tailored to the special needs of majors and non-majors, and we teach service courses for SAR and ENG students.

You developed the “Recombinant DNA” course (CH522) after you came back from sabbatical at the Whitehead Institute for Biomedical Research in 1984, just after it was founded. How did that come about?
Well, I was looking for a sabbatical opportunity in the Boston area because I had young family and I did not want to disrupt their schooling. On Jack Buchanan’s recommendation, I went to work at MIT’s Cancer Research Center with Richard Mulligan, who was working on retroviral vectors as gene transfer agents, using recombinant DNA techniques. I moved with him to the Whitehead Institute when it opened in 1984. It was a great experience, working with these very bright young scientists. When I came back to BU, I incorporated what I had learned in my research work and also developed upper-level lecture/lab course based on recombinant DNA techniques. This had a big 8-hour lab, and since I was almost the only person at BU at the time with experience in this area, it was very labor-intensive for me. I tried to rework the course annually to keep it current with new developments in the RDNA field. I wrote the lab manual and made a point of being present during all lab periods. In short order, our faculty, especially in Biology, grew to include many specialists in these forefront areas, but I take pride in knowing that many undergrad and grad students in Biology, Chemistry, and the Biotechnology Program were first exposed to RDNA techniques in this course. It helped to launch the new Biotechnology program, and later, it was a key course in the Biochemistry and Molecular Biology major. I taught the recombinant DNA course from 1986 to 1999, when Tom Gilmore took it over.

Are there other teaching roles that are particularly memorable?
One that I enjoyed greatly was the CAS Core Curriculum, which was coordinated by Brian Jorgenson for many years. The Core was instituted in the late 80’s under Dennis Berkey’s deanship as an innovative way of satisfying the CAS general education requirements. Core students take 8 courses in the humanities, natural sciences, and social sciences in their first two years. I taught in the natural sciences part of the program for 8 years. It went through many iterations during those years, but my contribution mainly was on connections between the life sciences and the physical sciences — which is what biochemistry is about, after all.

What was it you liked about the Core Curriculum?
I very much enjoyed teaching scientific concepts to a “general audience.” I believe strongly that science should be part of every student’s education regardless of his or her major. The theme of the part that I was involved in was evolution of life and intelligence, which to me was very exciting because it brought together faculty from Biology, Math, Computer Science, and Anthropology, in addition to Chemistry. We learned a great deal from each other, some of which we had reason to believe also spilled over to the students. As faculty, we tried to get across something of the “philosophy” of science; that is, the perspective that science brings to a person’s worldview and what it contributes to the humanistic tradition. In that, I’m not sure we were too successful, but the chance to preach a bit is probably what got faculty to volunteer to teach science to these sometimes reluctant students.

You had several NSF grants related to education, including one on how to teach undergraduate laboratory in biotechnology.
This was a six-week workshop in the summers of 1991 – 1993 in which I trained 20 college teachers from around the country in biotechnology techniques each year. It was based on my RDNA course and aimed to prepare the teachers to take this type of lab work back to their home campuses. Since I’ve heard from many of the participants after they left the program, I can say that it successfully met its goals. Now, everyone does this stuff, even in high school.

How has your scientific field changed over the years and where do you think it is going?
That’s not an easy question. Many would say that “biochemistry” does not exist as an area of research any more. Like thermodynamics, it’s a body of knowledge that students have to learn from their courses, but they won’t do research in “biochemistry” in their careers. We now have a dozen disciplines in its place, which says that at least it was prolific. As for the biosciences in general, the trend has been towards big science — big groups, big projects, with individuals, especially students, becoming increasingly specialized; learning more and more about less and less, as the expression goes. Students are less connected with knowing what goes on inside the instruments they are using, or what’s the fundamental science underlying the system they are studying. If you need the sequence of your gene, you send it out to the core facility, you don’t do it yourself.
The technology of bioscience has made amazing advances in the last 10 – 15 years, which has allowed even academic science to be much more driven than it ever used to be to commercializable results. At least, that’s my take on it, and while I personally enjoyed doing hands-on “small” science, troubleshooting, and being involved in details, I know that to be a player in these days of fast science, these are luxuries that don’t offer much survival advantage. To put this nostalgia in context, however, I can recall similar “complaints” being expressed by my senior colleagues when I was a young faculty member just starting out, so you can take it for what it’s worth. Where things will be 25 years hence is something I would not even risk predicting, but I hope there will still be room in “research” for human beings to be intellectually engaged and physically doing something other than pushing buttons. But now as a retiree and an observer of science rather than as a participant, I find fast science very exciting because I can enjoy watching many fields in which I am interested actually developing in real time instead of in slow motion!

How do you think BU has responded to this changing landscape? BU has done a commendable job in finding a healthy balance between enhancing its research profile and fulfilling its educational mission of teaching and developing students into scientists. Certain universities, which shall remain nameless (although some of them might be located across the Charles River) have become what I consider “postdoc mills.” BU faculty take their teaching obligations seriously, and that takes time and energy. Being faculty here, especially young faculty, is especially challenging. The pressure is very strong to bring in grant money and to compete with the best in forefront research, and at the same time they must carry heavy teaching loads, advise students, help with departmental chores, and so forth. I think it takes a greater toll on people’s personal lives than it did 30 years ago. Of course, one consequence of this more difficult set of challenges is a much stronger faculty.

Sounds like you have a lot of sympathy for faculty at the start of their careers here?

I have great sympathy. I think the BU tenure track process is enormously convoluted and energy-draining, to the point of actually being detrimental to the careers of our tenure candidates. A new faculty member, in reality, has about four and a half years to gain a national reputation, which means he/she has to establish a lab, attract students (who are often inexperienced), succeed in getting increasingly competitive grants, and become known through talks and publications. At the same time, they have to teach a full load of courses. A good piece of one year of that short period is given over to doing the pre-tenure paperwork tango. That’s real down time. At BU, the tenure process requires serious, not pro forma, review by the Department, the APC, the UPC, dean, provost, president, and trustees. I think much more weight should be given to departmental evaluation in the tenure review process. It is the only group within the University with a first-hand professional knowledge of the candidate and the research field, and it should be given much more trust in the process of tenure review.

What do you think about the changes in the Department of Chemistry? Our Department has become much stronger over the decades that I have been here. We owe a great deal to the administration, under John Silber and Jon Westling, for their commitment to elevating the sciences at BU, and to the unwavering support of the Department by Dennis Berkey, as Dean and Provost, and by Dean Jeff Henderson. As a former chairman, I know how vital this support has been. I look at the strength of our faculty, many of whom have national ranking and are among international leaders in their fields, and at the quality of our graduate students, who are now coming from strong domestic colleges, and I am very proud of the progress we have made. In comparison with the Chemistry Department I joined in 1968, we have made enormous gains in every respect — not just in faculty and students, but also in our physical plant. It can’t be denied that upgrading our research and teaching space in 590 Comm Ave. is still unfinished, but you’d have to know what life was like in the old Stone Science building in 1982 to appreciate that we’ve come a long way. I am especially happy that our teaching labs are in the process of being beautifully renovated and soon will be facilities we can take great pride in.

Does it surprise you that nearly half of our chemistry undergraduate and graduate students are women? It doesn’t surprise me and I think it is great. I think women have every bit as much potential for becoming scientists as men do. In fact, it is almost to be expected given that young women as a group probably mature socially and intellectually earlier than those of the Y chromosome persuasion (sexist remark if ever there was one). However, I think women scientists still face challenges that men do not, for cultural reasons, and I admire those that have not been discouraged from following their interests. But, I think the weather change has already occurred; many talented women who have succeeded in academic science are there as role models, which will make it easier for subsequent generations of women.

In your career, you did a great deal of university service, serving twice on the APT, twice on the UPT, and the CAS academic policy committee, among others. You were also Chairman of the Department from 1993 to 1997 and then Associate Chairman until your retirement. Can you speak to these experiences? My college and university service was very instructive and valuable in spite of the time it took. It allowed me to get to know faculty with diverse interests, to see how other departments functioned, to understand the issues facing CAS and BU, and to influence policies that I had a strong feeling about. And when one gets to a certain stage of academic longevity, one is expected to do more of the scutwork that has to be done by faculty, sparing younger faculty who have their own important bits to contribute in research and teaching. I found being a department chairman was rewarding and challenging. It is at its core a management job; almost by definition faculty are difficult to manage, even on the good days. Faculty are very much individuals, selected in a Darwinian sense for being independent achievers, successful at attaining ambitious goals, and used to being the boss. They are not intrinsically team players. At the same time, I found that we shared a commitment to the well-being of the department and school.
If you allow these folks enough independence and let them know you’re working hard to equalize the pain (and sharing it with them), then things work out. If you look at the progress that has been made since I’ve been at BU, the Department, whoever the chair has been, has made steady progress in strengthening its faculty, its research reputation, and the quality of its graduate and undergraduate students.

You seem very committed to the NSF Planning Program in undergraduate chemistry research grant that you brought in last year. It’s an exciting project and I am committed to completing the planning phase of this joint program with Roxbury Community College. The grant will support 8 first or second year students from BU and RCC for 8 weeks of intensive research experience this summer. We were aiming to submit a proposal for a full five-year award this fall, but NSF moved the proposal cycle forward and we did not feel our project was quite ready for the heavy competition. So in the next few weeks we will be looking for alternative funding to expand our network to include several other local community colleges and to carry us through until next spring, when we should be ready to submit a full center proposal.

But you seem to think it is a very worthwhile project.
I do. I think it allows us to reach “underrepresented” groups of students and expose them to the idea of science as a career option. I think it is a win-win program for all concerned, although not without challenges. A full center will require an administrative structure well beyond what has been needed for the pilot program. The center, which we are calling the Boston Undergraduate Research Center, is worth pursuing because it will give the chemistry department the opportunity to influence young people who are capable, but who otherwise would not have entertained the thought of a career in scientific research.

So, what about the bicycling? Is it true you bicycled back and forth from your home in Lexington to Boston University every day? That’s what, about 18 miles?

Up until 4 years ago I bicycled in most days. When I started this (age 40), it was only 13 miles, but as time went on it became closer to 18.

Whatever the weather?
Pretty much.

Ever calculate the number of miles?
Nope.

OK. One last question, and I realize that it is a hard one. If a young biochemist came to you today and asked if he/she should consider pursuing a career in academia, what would you advise?
The easy answer is that there aren’t any young biochemists anymore (see above). But, for young faculty, in general: Your first (professional) priority is to do what it takes to be around here after the next six years are over. The Rules of the Game say that you must establish a record of success in research, teaching, and “service to academia,” as if these were categories with sharp boundaries between them. In reality, the percentage weightings applied in the calculation of success is something like 70:25:5; some would say it’s more like 120:40:10, but that’s because they are in the midst of the process and are feeling a bit stressed. It’s really a shame that your early years in the career that you’ve aimed for so long are so frustrating and, often, full of disappointment. To make it worse, your personal life seems in competition with the professional demands, stretching you even thinner.

Whatever must give way, the central factor in your professional success strategy is the research card. You know that. And that boils down to grant money, preferably from a major agency. One of these in the first three years and you’re in pretty good shape. But getting to that point is not easy. You need at least one excellent project idea to begin with: novel, consequential, and achievable with your own hands and those of a few green students whom you must teach everything they need to know. Preferably a “sure thing” so you don’t spend four years spinning your wheels. Your Ph.D. or post-doc advisor may be helpful in developing your thoughts, if you are lucky, and your colleagues in the department are good to talk to about your ideas. It may be attractive to collaborate to get things going initially, but when the chips are down people value accomplishments that are clearly yours, individually. Good start-up funding, which is always available these days, is critical to getting your operation off the ground without delay. Make contacts with uncommitted first year grad students as soon as you arrive, possibly by teaching a grad course in your special area. Finally — and this is very important — writing a grant proposal that is likely to be successful takes more than a good idea and some preliminary results. It’s an art. Fortunately, we have some excellent support personnel in our department who can help you polish that idea into a convincing proposal. Plus, save you a lot of time and frustration.

One more thing: “group development” is vital to a successful research operation. There is a delicate line between encouraging the best work from your research students and flogging them into a state of resentful servitude. Faculty who lose the respect of their students lose them, or fail to attract new ones, and without a healthy group the means to achieving the goals of the program are lost. It happens more often than I care to say. So, remember your days as a grad student and treat your people the way you would like to have been treated (the Aurum Rulum as we say in chemistry).

Don’t forget, you gotta teach, and do a decent job of it. That’s not too hard. You can rely on senior faculty for advice on organizing and presenting your courses. We have a Center for Teaching Excellence at BU for those who feel they need coaching. To employ your creativity most usefully, my advice is to reserve it for your research and worry about the innovative teaching stuff later in your career, unless you are one of those multi-talented natural-born teachers. And, let the old folks do the heavy lifting in the area of “service”. Few brownie points there.

Congratulations on your promotion to Professor Emeritus. It’s great having you stay connected with us. Thank you.
Message from the Chair

I think Stan’s interview demonstrates why we regard him so highly, not only in the Department but in the College and University as well. Stan served as Associate Chair throughout my Chairmanship until his retirement. I have valued his advice and appreciated beyond words his dedication and service to the Department, especially his tireless efforts to modernize our teaching laboratories and classrooms in the last two years. The current physical upgrade of our teaching resources will be just one of his many legacies to us.

In considering ways to honor him, we asked Stan what he would like us to do. With typical modesty, he has requested that any donations in his name be made to the Julius Feldman Fund. This fund has been an invaluable resource for the Department of Chemistry that allows us to support talented graduate students and underwrite students to travel to conferences to present their work and meet with fellow scientists. The encouragement of young scientists is a cause dear to Stan’s heart.

It has been our great privilege to dedicate this issue of the Department newsletter to our Professor Emeritus, Standish C. Hartman, one of the most valued members our chemistry community.

Thomas D. Tullius
Professor and Chairman

Standish C. Hartman
Professor Emeritus

To Make a Contribution

If you would like to make a contribution in Professor Hartman’s honor, please make check payable to:

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