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Opening Collection 1999

Good evening Haverfordians. I have welcomed the new students on several occasions, but nonetheless, welcome once again to the class of 2003. To all other students, faculty, and staff, welcome back.

The nice thing about opening collection is that there is no agenda. No subject is prescribed. I can talk about anything at all; the only limitation being that it should be something of relevance and interest to this community. Being a college committed to free inquiry and the search for truth, however, means that essentially nothing is excluded.

So tonight I've decided to offer some thoughts on the future of knowledge.

First, though, some introductions. We added seven new regular faculty, a new Vice President, and a new Dean this year:

Rachel Brewster comes to the Biology Department from a postdoctoral position at New York University. She has been pursuing research on the development of the nervous system using African frogs as a particularly adept model system. Her PhD in Biology comes from the University of Michigan, and her BS from the University of Geneva, Switzerland.

Rebecca Compton, newly appointed Assistant Professor of Psychology, also brings postdoctoral experience at the University of Illinois. Her PhD is from the University of Chicago in Psychology; she completed her BA at Vassar College, where she had the highest academic record in her graduating class. She has published several influential papers on neuropsychology and cognitive psychophysiology.

Steven McGovern will be a new Assistant Professor of Political Science who has previous teaching experience at Temple University and at Salem State College, where he also co-directed the Urban Studies Program. His degrees include a PhD and BA in Government from Cornell and a JD from the NYU School of Law. Author of The Politics of Downtown Development: Dynamic Political Cultures in San Francisco and Washington, DC, his current research interests center around urban politics and policies.

Anne Preston joins our Economics Department as an Associate Professor. She has previously taught at the W. Averell Harriman School for Management and Policy at SUNY Stony Brook and at Wellesley College. She holds the PhD in Economics from Harvard and a BA (summa cum laude) from Princeton. Winner of numerous fellowships and awards, she has written widely in several areas, especially the economic behavior and resources of non-profit organizations and the careers of women in science and engineering.

Newly appointed to the History Department, **Bethel Saler** returns to her academic roots in the bi-college community. An alumna of Bryn Mawr College with honors in History, she is completing a PhD in American history at the University of Wisconsin, where she has been awarded several teaching and research fellowships. Her dissertation is entitled Negotiating the Treaty Polity: Gender, Race, and the Transformation of Wisconsin from Indian Country into an American State, 1776-1854.

David Sedley comes to the Bi-college Haverford-Bryn Mawr French Department from the Comparative Literature Department at Princeton, where he is completing a PhD on Sublimity and Skepticism in the Early Modern Period. He earned a BA in Philosophy at Yale (magna cum laude). He has taught French language and literature at Princeton and won a Chateaubriand Fellowship for study in France.

Theresa Tensuan is the newest member of the English Department. She graduated from Haverford with honors in English and a concentration in Women's Studies. She then went on to graduate work at Berkeley where her dissertation was entitled Takin' a Solo: Autobiographies and the Writing of Women of Color. She has taught both writing and literature at Berkeley and Haverford, and has won a number of prestigious fellowships and awards for scholarly achievement.

Jill Sherman is the new Vice President for Institutional Advancement. She succeeds Hogie Hansen who now occupies the position and duties of Secretary of the College. Jill is a graduate of Ursinus College and holds a masters degree in English from Villanova. She taught English at Ursinus and in 1986 was drawn to Advancement positions in annual giving, alumni affairs, and major gifts. This wealth of experience caused her to be recruited by Lehigh where she became Vice President for University Advancement. After an extensive national search this past spring, Jill was selected as Haverford's choice for the critical VP position.

Sunni Green Tolbert joins us as Associate Dean of the College and Director of the Office of Multicultural Affairs. Also the result of a comprehensive national search, Sunni's appointment brings a combination of wide-ranging experience and immense enthusiasm for the tasks at hand. She holds a BA in sociology from Bennett College and an MA in Education from NYU. She comes to us after many years at the American Friend's Service Committee, most recently as director of the institutional program in multiculturalism.

Over the past few days the new students among you have been experiencing some of Haverford's traditions: customs, honor code discussions, sleep deprivation...It is also a tradition at Haverford that the President of Bryn Mawr College is invited to say a few words at opening Collection. Thus, before I offer my thoughts on the future of knowledge, I would like to ask Nancy Vickers to address you.

I'd like to turn now to the main subject of my remarks this evening, namely the future of knowledge. To help me begin thinking about this subject I turned to a thoroughly modern approach; namely, the world wide web. I fired up my browser, launched one of the search engines, typed in the word "knowledge," and was rewarded with 1.1 million hits. Perusing these was time consuming, to say the least, but it quickly became evident that there were scores of references to Knowledge Companies, Knowledge Systems, Knowledge On-line, the Knowledge Environment, the Knowledge Workplace, and other similar descriptions. After some exploration, I came to realize that the word "knowledge" has been thoroughly appropriated by those who would possess, own, buy, sell, or otherwise engage in commerce over knowledge. This may be an accurate reflection of the state of the world wide web–and possibly even of modern society–but it was surely not what I was interested in discussing tonight.

Somewhat discouraged, I turned next to a more traditional reference work; namely, the Oxford English Dictionary. Here I was delighted to find over a dozen definitions of knowledge, my favorite of which is: the sum of what is known.

As any user of the OED knows, this work is also accompanied by various pithy quotations containing the

word under study. One that caught my attention under the listing "knowledge" was from a person identified only as Preston, who in 1628 said, "You may have abundance of emptie and unprofitable knowledge without grace." Desirous of grace, I finally concluded that I should organize my remarks around four themes; namely, how knowledge is produced, organized, transmitted, and applied.

The Production of Knowledge

The production of knowledge originates in what we traditionally call research. Unfortunately, the word "research"–at least for some people–connotes only laboratories, white coats, test tubes, bubbling gases, and exotic instrumentation. My own view is that while research certainly includes the scientific endeavors, it is also inclusive of a much wider array of human investigation. Those who write sonatas, invent new political theories, translate ancient texts, or give new meaning to literature, are all engaged in scholarly research.

Research occurs largely in the academy. This is the case because academic institutions are those where the pursuit of knowledge is likely to be a highly held and central value. I recently read a study showing that over half of the basic science research in the United States occurs in colleges and universities (the rest being divided between government and industry laboratories). I could find no comparable figures on the social sciences or the humanities, but my guess is that original research in these areas is also heavily concentrated in academic institutions. It is needlessly constricting, however, to think that research should be confined solely to academic places. Research is really, at its core, about problem solving. Those searching for a cure for cancer or an explanation for the organization of social systems, for example, are surely engaged in problem solving. By the same reasoning, however, the raison d'etre for those who work for insurance companies, ballet troupes, or auto manufacturers is also to solve problems. There are only two prerequisites for research, problem solving, and therefore the production of knowledge, to thrive: (1) the existence of people with curiosity and (2) the presence of institutions that encourage free and unrestricted inquiry. These conditions exist in institutions of higher learning. However, they also exist in many other locations within our society. My advice, particularly to students, is to see to it that the locations in which you end up embody these principles.

The Organization of Knowledge

If you look in an encyclopedia, you will conclude that knowledge is organized alphabetically. If you look in the library, you will conclude that knowledge is organized by subject, generally using the Library of Congress system. If you look on the world wide web, you will conclude that knowledge is organized by hyperlinks. If you look at colleges and universities you will see that knowledge is organized by departments. Which is correct? The answer to such a question surely must be either "all of the above" or "none of the above."

My belief is that the deepest goal of inquiry is to overcome the isolation, dispersion, and fragmentation of knowledge. I do not mean to minimize the importance of the established disciplines, only to emphasize the need to find connections among them. We should constantly seek to alter the contexts in which people view knowledge. And those of us in the academy should welcome the ideas and insights of non-specialists into our often rarefied discourse.

Such talk may evoke a concern for rigor. This is quite proper. It is easily possible in our lust for interdisciplinary thinking to create fields that are little more than a passing fancy with no real intellectual depth. Viagra Studies surely does not need a university department. More topically, Blair Witch deconstruction would not seem to require its own scholarly journal. These examples are, of course, on the ridiculous extreme. I use them solely to provide direct contrast to the fact that it should be possible to interpret, draw together, synthesize, and re-shape among the disciplines, while still maintaining rigor and high standards. The scholarly community has been successful at putting specialized knowledge into larger intellectual patterns with the creation of whole new areas of study that weren't available when I was in college. For example, Women's Studies, Materials Science, and Environmental Studies, to name just a few, are flourishing and rich contributions to the organization of knowledge.

Another fair question to ask is, what role will computers play in organizing and integrating knowledge? It would, indeed, be hard to argue against the central importance of information systems both now and in the future. Artificial intelligence, in particular, appears to me to be on the verge of making very critical and fundamental contributions to the organization of knowledge. As a single example, an AI program entitled MYCIN takes symptoms, clinical observations, local conditions, and physician observations, and synthesizes this information into a diagnosis and prescribed therapy for an infectious disease. MYCIN has been honed and refined over many years of work and is now capable of making more accurate and reliable diagnostic and therapeutic judgments than a typical physician. This is undoubtedly humbling to those in the profession, but it is also an important contribution to public health. I am certain that we will see future such applications of artificial intelligence systems to organize and integrate knowledge. I am not so swept away, however, as to believe that AI systems will ever be fully human. It is possible, and has been done, to create a program that will compose sonnets. I am sure that such output will never rival Shakespeare in depth or power or emotion or the ability to connect to our deepest humanity. Thus, while information systems may be very important in our attempts to integrate and synthesize knowledge, I remain unconvinced that computers will ever surpass humans in our ability to creatively produce new knowledge.

The Transmission of Knowledge

No less an authority than Aristotle once said, "Teaching is the highest form of understanding." This statement is very important because it suggests that teaching is not just about the dissemination of knowledge, but about understanding knowledge. This is made all the more real by the commonly stated view that the best way to understand a subject is to teach it.

Another relevant quote, this one from Alfred North Whitehead is: “So far is the mere imparting of information is concerned, no university has had any justification for existence since the popularization of printing in the 15th century.” Teaching is not passive; it's not simply about conveying facts; teaching is really about discovery, generally shared among students and teachers. In fact, this is why teaching and research go together hand-in-hand. The two forms of discovery can only be separated artificially. Where cleavage of teaching and research has been tried–as it has been in many countries–the systems of higher education are much less rich and vibrant than those in the United States, where teaching and research are inextricably linked in all of the best institutions of higher learning.

The management guru Peter Druker wrote an influential article published a couple of years ago in Forbes Magazine, in which he predicted that colleges and universities as we know them today will be gone in thirty years. As wise as he has been on many subjects, Peter Druker seems to miss the point about education. Learning is not simply about the one-way flow of information from teacher to pupil. It is about joint exploration and discovery. The assertion that television, satellite transmissions, two-way interactive classrooms, and other forms of distance education will supplant the traditional college-based higher education is an experiment that has, in fact, already been tried. Have you ever heard of television? When TV first appeared on the scene over five decades ago, columnists and pundits predicted that the new technology would revolutionize education. They were right, of course, but in ways that they did not envision and in ways which did not necessarily enrich our society. And even if technology were to replace the typical classroom of the university or college, the question of who would discover new knowledge would still be open. If universities and colleges did not exist, knowledge would quickly become dry and

dreary as it would not be leavened by new discoveries, fresh insights, and creative research. There is no higher calling than teaching because it insures that we will pass on our legacy to future generations and create new discoveries to be continually passed on.

The Application of Knowledge

This subject is so important at Haverford College that our Statement of Purpose puts considerable emphasis on the uses to which knowledge is put. Perhaps the best way to pose the question is, how do we envision applying knowledge to problems needing solution? Such a question is not meant to minimize the importance of knowledge for its own sake. As John Henry Cardinal Newman said in 1853, “knowledge is capable of being its own end.” At Haverford, we unabashedly ask our students to study for the sheer joy of it. I do also believe, however, that the distinction between basic and applied knowledge is artificial. The acquisition of new knowledge for its own delightful sake is a problem needing solution just as the elimination of hunger on our planet is another type of challenge or problem.

It is quite easy to demonstrate that our society values the acquisition of knowledge. In the name of the American people, the federal government spends about $100 million per year on the National Endowment for the Arts. Likewise, about another $100 million is invested in the National Endowment for the Humanities. However, if the acquisition of basic knowledge were the principal goal, society would invest about $100 million for new discoveries in the sciences. In fact, the federal government spends roughly $75 billion per year in the sciences. Thus it seems clear that while we value deeply the principle of acquiring new knowledge without regard to its purpose, we also value the possibility that the new knowledge might be applied to practical problems that we agree are worthy of solution.

One could reasonably ask whether the investment in the acquisition of new knowledge, particularly scientific knowledge, has paid off for society. Let me explore this question with two pertinent examples. The first is microelectronics. Basic science discoveries in physics have led to the creation of transistors, integrated circuits, and immensely powerful digital electronics. All permeate our daily life. This could never have been predicted by those interested in studying the fundamental properties of silicon, or the flow of electrons in different types of materials, or the creation of algorithms to solve abstract problems. But the discoveries resulting from such studies (and many more) have produced the modern digital society on which we all depend for our livelihoods and, in fact, even for our lives.

A second area is biotechnology. The life sciences—my own discipline-- have undergone an amazingly rapid expansion of understanding in the last three decades. Few can doubt the scope or importance of the multitude of discoveries in cellular and molecular biology. This has led to an immense investment in the application of the new knowledge. Over 1500 biotechnology companies exist with billions of dollars of venture capital standing behind them. This activity has led to a mere handful of products available to the consumer. Thus, one can legitimately conclude that we are much more effective at acquiring knowledge than we are at putting it to use. There is little doubt that the discoveries in the basic life sciences will lead to improvements in health and agriculture and environmental remediation and in other areas, but the pace of discovery in these more applied aspects is much slower than in the basic science aspects. One could even make the case that applied science is a most worthy challenge to our best minds since it is evidently so much more difficult to apply the knowledge than it is to discover it. This is true in other areas besides biology. We understand, for example, much about the sources of conflict, yet we have been unsuccessful in stopping war and strife. We do have considerable knowledge of human diversity, yet still seem unable to live together easily. Thus, knowledge of a subject does not insure our mastery of it.

Returning again on the Oxford English Dictionary, in 1877, E.R. Conder wrote, "We speak of knowledge as stored up in books. But in reality what books contain is not knowledge but only symbols of knowledge." Thus, in the end, our real goal is wisdom, and wisdom consists of knowing the difference between symbols and true knowledge. Achieving this is what Haverford College is here for. Lets go to work.