

13 September 1996

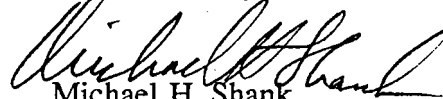
Dean Alexander Nagel
301 South Hall

Dear Alex,

I am very pleased to submit herewith the results of our pilot assessment of the Department of the History of Science. Our department did not treat this assignment perfunctorily, with two notable results: 1) the process took a lot more time than I had anticipated; 2) we learned a lot more than we expected, and almost all of that learning will help to improve what we do.

I hope this report proves useful to you and others.

Yours sincerely,



Michael H. Shank
Chair

Enc.

Department of History of Science

Pilot Assessment of the History of Science Department Fall 1996

Overview of Results

I. Assessment of the undergraduate major (see Appendices 1 and 2 below)

A) Evaluation of Spring 1996 papers for History of Science 555 (required undergraduate seminar in the major)

This evaluation was undertaken by Professors Dan Siegel and Mike Shank, who read all the papers in the seminar with an eye on the main goals for our major, as specified in the assessment plan. The exercise of having faculty who did not participate in the course read the papers of our capstone course was instructive. Such a reading has the advantage of abstracting from the immediacy of the instructor's situation (grading the papers under a deadline, evaluating individuals the instructor has come to know), and allows the reader to focus on the larger picture--overall skills, competencies, thresholds of literacy and historical sophistication, and so on. We recommend this procedure as an excellent way of discovering the strengths and weaknesses of a major.

The results were, on the whole, gratifying. A few problem areas were identified (see Appendix 1 below), and will be discussed at our fall retreat.

B) Survey of undergraduate alumni from last five years

Although statistically insignificant, the results of our survey (which are still coming in despite the 9/6 deadline) confirm our anecdotal evidence of a very successful, small-scale major.

All of our respondents (all four of them) were either in medical school, or working scientists and were appreciative. The survey instrument itself is in principle very useful, in practice disappointing in eliciting the statistically significant information we sought (see Appendix 2 below).

C) Unanticipated result

As a result of the assessment process and our new articulation of our goals for the major, we realize that our undergraduates would also benefit from knowing what we hope that they will achieve. We have therefore decided to give our majors a copy of the Department's statement of our goals and hopes. This step alone may help elicit more direct feedback from our undergraduates.

II. Assessment of the graduate program (see Appendix 3 below)

To assess the research productivity of our Ph.D.s, which we judge to be one important measure of success in a graduate department of a research university, the Department initiated a national survey of book/monograph publication in our field, with data broken down according to the top programs in the field (Professor Ron Numbers deserves credit for the idea, and Dr. Sarah Pfatteicher for implementing the project and organizing the results; see Appendix 3 below).

The results of this national survey of research productivity were gratifying. Here are a few of the highlights:

*UW-Madison Ph.Ds in the History of Science rank first in terms of the total number of grads who have published books (36), 33% more than the closest competitor (Princeton);

*51% of the Ph.D.s from the UW-Madison program have published at least one book, the highest percentage for all programs surveyed;

*63% of the women Ph.D.s from the UW-Madison have published a book (compared to 47% of the men), a rate almost twice that of the closest competitor (Johns Hopkins with 33%).

Although these statistics are not a direct measure of quality, they reveal much about the Department's longstanding ethos of research and its success in training some of the most productive scholars in our field.

For obvious reasons, we recommend such a survey as an excellent tool of assessment.

Appendix 1
Evaluation of Spring 1996 papers for History of Science 555
(required undergraduate seminar)

On the whole, the papers written in History of Science 555 last spring indicate that we are accomplishing most of our goals in bringing our students to a reasonable level of sophistication in dealing with and integrating ideas and materials in the history of science. Two areas, however, stand out as in need of more attention: organization of the papers; and more informative citation of sources.

First, on the positive side, our students are learning how to frame and ask historical questions. This is a reflection of the richness and depth of our curricular offerings, and the modeling provided by Department faculty in the framing of historical questions. By the time our students receive their degrees, they have achieved an appropriate degree of sophistication in this area. They also know how to produce coherent narratives and arguments that begin to provide answers to these questions. The good sense our students have for coherent arguments and narratives comes from the cumulative effect of their exposure in the major to good practices in argument and narrative, from the excellent lectures, discussions, and seminars they have participated in as well as the good historical literature they have read.

Beyond attending class and developing a good sense for sophisticated historical discourse, our students exhibit strengths that come from exercising their skills in historical writing. Thus, in the matter of utilizing primary and secondary sources, our students have, on the whole, achieved an appropriate degree of sophistication. This cannot be merely a matter of sitting through enough courses, listening, and watching; our students' work shows the participatory side of scholarship--the experience of using the libraries and other resources, and carrying out research. The written results reveal that they know how to make effective use of the historical literature.

Also, the papers show that our students know, on the whole, how to write introductions and conclusions that establish the significance of their historical exercises. This again derives from their broad exposure to the discipline and the nature of good historical questions and answers. But it also shows that they have had experience in distilling the essence of these historical questions and answers in written form. The occasional mechanical problems remain, of course, but the writing style of our students, at the level of word choice, grammar, sentence construction, etc., is very adequate, reflecting our curriculum and that of the University of Wisconsin generally, but also demonstrating their writing experience in the major.

On the other hand, the large-scale internal organization of the papers is a problem area. None was explicitly sectioned, with section titles, and thus would not be considered for publication by many journals. This is not merely a matter of providing section headings: the papers were, in general, not organized so as to facilitate such

treatment. The final results suggest that most of these papers at best went through a perfunctory outlining phase. The new writing requirements, including both the introductory courses and the writing-intensive courses in the major, will help to remedy this problem. But we will want more explicit emphasis, in the future, on this aspect of written assignments in all of our upper-division courses and the senior seminar.

A final problem, of lesser magnitude, but more pertinent to the major itself, is the question of footnotes (endnotes). Our students write good basic citations, but these do not convey to the reader any feeling for the structure of their dependence on the literature. Thus, we never see notes indicating that certain authorities agree with and support the position being expressed in the paper, while others disagree. We do not see some sources identified as classic, with others characterized as up-to-date or ground-breaking. "Cf.," "e.g.," and the like are not part of their active note vocabulary. Nor are these issues addressed in explicit bibliographical/historiographical notes or essays; this level of discourse is absent in these papers. Such practices represent a relatively high level of sophistication, which might be addressed explicitly in the senior seminar itself and made an explicit requirement in the final paper.

In sum, the undergraduate major is on the whole providing effective preparation for our students, but there are some areas that require our further attention.

Appendix 2

Survey of undergraduate alumni from last five years (under supervision of Prof. Lynn Nyhart, Director of Undergraduate Studies)

We sent the enclosed survey form to all twenty-nine undergraduate alumni of our History of Science major for the last five years. Our deadline for receipt of completed forms was unfortunately very close to the specific deadline for this report. It is therefore difficult to know how effective the survey form is as a tool for the overall assessment of the major. Better and more regular communication with our alumni may help the response rate in the future, a matter that requires more time and effort than we have been able to spare in recent years.

The four responses we received are statistically insignificant, but qualitatively gratifying. Of the four respondents, three are in medical school and the fourth is a working scientist. The responses suggest that our Department has done very well in achieving our goals for our undergraduates, and that the most conscientious of our alumni are all successes who believe that their major has served them well.

Attached are a copy of the survey form and the collated data (with long-hand responses on a few key questions).

History of Science Alumni Questionnaire for Undergraduate Assessment Plan⁷
Results as of 9/10/96

29 questionnaires sent out, 4 responses returned.

[Dealing with goals 2a and c:]

These students all rated their interest level in their courses at a 5, on a scale of 1-5 where 5 was high, and professors' interest and enthusiasm in conveying material a uniform 5 as well).

[Dealing with goal 3a, b:]

Among the numerically rated answers, the key one was number 7:

On a scale of 1 - 5 (where 1 = not at all, 5 = a great deal), please tell us the degree to which your work in the major improved your ability to:

read critically : 5 5 4-5 5
analyze an argument: 4 4 4 4
formulate arguments yourself: 4 3 4 5

Two questions that asked for written responses also yielded informative answers [esp. with regard to goals 2 and 3]:

12. Looking back over your experience as a history of science major, what aspect(s) do you value the most?

*-writing skill development (esp. related to my thesis)
-The humanities/science integration esp. in using literature like novels, journals to explore science
-seminar classes in which we actually voiced ideas*

I think it has helped my critical thinking, about science, scientists, the use of the word "science," and the connections with our culture + events. As a scientist I think it is important to have perspective on how science affects the world, and not just perform in a vacuum.

*-discussions on history of medicine
-improving critical reading skills
-555--research experience!*

I took advantage of the history of medicine classes primarily. I appreciated the size of the department compared to other departments at the UW. I felt supported and well supervised--there was always someone to go talk to about specific assignments or about classes or the field in general.

15. Please state any ways in which your experience as a history of science major has shaped, directly or indirectly,

a) your understanding of the nature of science, technology, and/or medicine:

Everything is debatable in one's life context. This is a useful tool to have on the hospital floor.

Helps to realize how the media uses the term "science"/"scientific" rather loosely--there, in reality, is more methodology required to test a theory than the media allows before it jumps on a "discovery."

Major has given me a good basis on which to start my medical career. I have a historical perspective that I think all doctors should have a taste of.

My major shaped my understanding of medicine by putting it in perspective. I was taking science classes and was relieved to find history of science for the context it offered.

b) your view of your own relation to science, technology, and/or medicine:

I like science less and the humanities more.

As a scientist, one cannot, or rather should not, lose touch with the larger ramifications of one's studies, theories, discoveries, applications... that to do something "in the name of science or knowledge" though it may cause harm to many people, is not enough (etc.)

I understand the issues around changing American medical care. I have formulated my opinions w/ help of UW Hist. of Science classes.

In the drama of my med school essay I wrote that in studying history of medicine I realized that I wanted to be a physician "impacting history." I'm also thinking of studying history again with the experience of medical school behind me.

c) your post-college life:

made me stop and really think about what kind of scientist I want to be.

I think that the knowledge I gained not only helped me get into med school, but will help me in my career....

I wrote my med-school application essay all about how happy I was to change my major and how important history of medicine is to me and my interest in medicine.

Dear History of Science Department Alumnus/a:

Greetings to all of you! As part of a plan designed to improve our undergraduate program, we are asking all of you who completed the History of Science major in the last five years to answer this brief questionnaire and return it to us, if at all possible, by FRIDAY, SEPTEMBER 6, 1996 (later responses will also be helpful if you cannot complete it by this date). Your answers will help us make the major even better for future history of science undergraduates, so please take the few minutes necessary to fill this out NOW. Enclosed is a stamped return envelope for your convenience.

With best regards and fond memories,

Lynn K. Nyhart
Lynn K. Nyhart
Undergraduate Chair

1. How many years ago did you graduate from the University of Wisconsin--Madison? 1 2 3 4 5 I did not graduate

2. What is your current occupation (check as many as apply)?

- employed full-time (how?) _____
- employed part-time (how?) _____
- unemployed
- medical school (where?) _____
- graduate school (what field?) _____
- other professional school (what field?) _____

3. How did you find out about the history of science major?

- Bulletin/Catalogue
- Timetable
- Advisor (check one):
 - Cross-College Advising Service
 - Faculty Advising Service
 - Center for Biology Education Advisor
 - Athletics Advisor
 - Advisor in another Major
 - other: _____
- Friend
- Took a History of Science course (which one?) _____
- Took an ILS course (which one?) _____
- Other: _____

4. Did you double major? Yes No

If yes, please list other major _____

5. How many semesters did you attend the UW-Madison? Full-time _____
Part-time _____

6. On a scale of 1-5, where 1 = low and 5 = high, rate your overall experience taking history of science courses with regard to the following:

- Reading load (as compared with courses in other departments)
- Writing load
- Your interest level
- Professors' interest and enthusiasm in conveying material
- Professors' accessibility
- TA's competence (for courses with TA's)

7. On a scale of 1-5 (where 1 = not at all, 5 = a great deal) please tell us the degree to which your work in the major improved your ability to:

- read critically
- analyze an argument
- formulate arguments yourself

8. History of Science 555 (Capstone Seminar) is the one course that all history of science majors are required to take. Please evaluate your experience in 555. On a scale of 1-5 (where 1 = not at all and 5 = a great deal), to what degree did this course help you learn to:

- use the campus libraries for research
- use computers for database searching
- gain access to off-campus resources through the Internet
- read primary and secondary literature critically
- assemble an argument
- improve the mechanics of your writing

9. Does one history of science course stand out in your memory (as good or bad)? Which course? Why?

10. On a scale of 1 to 5, rate the advising you experienced within the major (where 1 = very unsatisfactory, 5 = excellent)

- during the major overall
- in connection with fulfilling graduation requirements
- relating to post-college plans

Comments:

11. It has been customary for students to check in with their advisor every semester in this major. I found this (circle one):

valuable okay but not especially helpful a waste of time

12. Looking back over your experience as a history of science major, what aspect(s) do you value the most?

13. What would you like to see changed about the way we teach and administer this major?

14. What would you like to see changed about the major's requirements?

15. Please state any ways in which your experience as a history of science major has shaped, directly or indirectly,

a) your understanding of the nature of science, technology, and/or medicine:

b) your view of your own relation to science, technology, and/or medicine:

c) your post-college life:

FURTHER COMMENTS:

(optional, for future mailings) MY RETURN ADDRESS IS:

PLEASE RETURN BY FRIDAY, SEPTEMBER 6, 1996, TO:

Department of the History of Science
7143 Social Science Building
University of Wisconsin
1180 Observatory Drive
Madison, WI 53706-1393

AND THANKS AGAIN!

Appendix 3

**Report on Publication Records of
North American History of Science Ph.D. Programs**

September 5, 1996

Prepared for

**The Department of the History of Science
University of Wisconsin-Madison
Michael Shank, Chair**

by

Sarah K.A. Pfatteicher, Ph.D.

Dr. Sarah K.A. Pfatteicher is a UW History of Science Department graduate who is currently an education reform evaluator with the Learning through Evaluation, Adaptation, and Dissemination (LEAD) Center at the UW.

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This work was supported by the UW-Madison History of Science Department.

OBJECTIVES

The objective of this assessment was to measure the success of the UW History of Science Department's Ph.D. program in relation to other major history of science Ph.D. programs in the United States and Canada in training scholars to become productive and successful members of their discipline.

METHODS

Selection of Programs and Graduates:

The twelve programs initially included in this study were selected on the basis of their number of graduates and on the program's reputation in the history of science community as "major" programs. Eleven of the twelve programs selected provided data; a list of these programs is attached. The University of Chicago program agreed to participate, but has not yet provided data. Some, but not all, of the units in this study are departments, the remainder are programs within other departments, usually history. All are referred to hereafter as "programs."

Programs were asked to provide lists of their Ph.D. graduates for as many years as possible prior to 1995. For those programs in which students are not formally identified as historians of science, all Ph.D. graduates who had studied under a major professor identified by his/her department as a historian or philosopher of science were included as history of science graduates.

Criteria for Success:

The eleven programs were evaluated for publication record of graduates and for gender equity. The intent was to assess the quality of the dissertations produced by students in each program by tracking how many theses were published, but this presented several problems. First, from book and dissertation titles alone it was difficult to judge which books were drawn directly from dissertations. Second, there is no easy way to distinguish among books that varied only slightly from the dissertation (but which may have had entirely new titles), books that varied substantially from the dissertation (but which may have retained the thesis title), and books on entirely different topics. For the purposes of this study, then, a publication was defined as a published book, excluding co-authored volumes, edited volumes, bibliographies, and standard exhibit guides. Various databases were used to locate publications, including but not limited to the UW electronic library catalog (Madcat), the American Association of University Presses' web site, and Books in Print. Information was sought only on the first of an authors' books. We also tracked the sex of both graduates and published scholars. It would be instructive to know how many history of science Ph.D.s are awarded to members of groups identified in the UW's anti-discrimination language and what their publication record is, but none of the programs included in this study keep records on their graduates with respect to these categories.

Limitations of the Method:

There are a number of limitations to the method used in this assessment, most related to the lack

of resources available with which to conduct the evaluation. In particular, the method used here is admittedly biased against philosophers of science, whose reputations depend more on articles than on books; museum and library workers, who generally publish catalogs and bibliographies; and graduates who have chosen to work in journalism or other fields in which the primary product is something other than a book. However, by using the same criteria for all of the programs in this study, any category of successful scholars not counted in one program is not counted in any other program.

RESULTS

Attached is a chart summarizing the information gathered during the spring of 1996. Graphs and other supporting data for each of the eleven schools are available through the UW History of Science Department.

DISCUSSION

From the information reproduced on the attached chart and according to the criteria listed above, the UW History of Science Department is one of the most successful programs in North America. Key observations include:

1. The UW History of Science Department is the third most productive program in terms of number of graduates, with 71 graduates.
2. The UW department is not exceptional in having a larger percentage of male graduates than female graduates (77% male, 23% female).
3. The graduates of this department have produced more published first books than any of the other programs in the study, including those with more graduates. UW history of science doctorates have published 36 first books in all. The next closest program has 24.
4. The percentage of published graduates from the UW is also higher than in any other program; 51% of the UW graduates have published at least one book.
5. Strikingly, the UW History of Science Department is one of only three programs whose female graduates have a higher publication percentage than the male graduates (63% of women vs. 47% of men), suggesting that although the number of women in the program could be increased, the ones who have completed the program are of top quality.
6. The UW department tied for number three ranking in the lowest number of years between graduation and publication of first book. UW graduates averaged 6.6 years, other programs' averages ranged from 6 years to 15.3 years.

PROGRAMS PROVIDING DATA FOR THIS ASSESSMENT

University of California, Berkeley
Department of History, Office for History of Science & Technology
Berkeley, California

Harvard University
Department of the History of Science
Cambridge, Massachusetts

Indiana University
Department of History and Philosophy of Science
Bloomington, Indiana

Johns Hopkins University
Department of the History of Science
Baltimore, Maryland

Johns Hopkins University
Institute of the History of Medicine
Baltimore, Maryland

University of Minnesota
Program in the History of Science and Technology
Minneapolis, Minnesota

University of Oklahoma
Department of the History of Science
Norman, Oklahoma

University of Pennsylvania
Department of History and Sociology of Science
Philadelphia, Pennsylvania

Princeton University
Program in History of Science
Princeton, New Jersey

University of Toronto
Institute for the History & Philosophy of Science & Technology
Toronto, Ontario, CANADA

University of Wisconsin-Madison
Department of History of Science

	Berkeley	Chicago	Harvard	Indiana	Hopkins-Sci	Hopkins-Med	Minnesota	Oklahoma	Penn	Princeton	Toronto	Wisconsin
Years Included	1961-95	1975-95	1964-95	1968-95	1980-95	1982-95	1960-95	1979-95	1985-95	1971-94	1970-95	
# of PhD Grads	31	77	92	53	4	10	24	55	71	38	71	
# of Male Grads	25	41	74	34	1	7	19	35	61	28	55	
# of Female Grads	6	32	18	19	3	3	5	20	10	10	16	
% of Grads-Male	81%	53%	80%	64%	25%	70%	79%	64%	86%	74%	77%	
% of Grads-Female	19%	42%	20%	36%	75%	30%	21%	36%	14%	26%	23%	
# Published Grads	14	21	15	13	1	1	2	14	24	10	36	
% Published	45%	27%	16%	25%	25%	10%	8%	25%	34%	26%	51%	
# Men Published	13	12	13	9	0	1	1	9	22	7	26	
# Women Published	1	9	2	4	1	0	1	5	2	3	10	
% Men Published	52%	29%	18%	26%	0%	14%	5%	26%	36%	25%	47%	
% Women Published	17%	28%	11%	21%	33%	0%	20%	25%	20%	30%	63%	
Yrs to Publ-Avg	6.6	6.2	11.6	7.9	19	6	11	7.4	15.3	7.6	6.6	
Yrs to Publ-High	14	15	26	14	19	6	16	13	28	16	17	
Yrs to Publ-Low	2	1	2	4	19	6	6	3	2	2	1	
% Pub/Diss by Men	93%	57%	87%	69%	0%	100%	50%	64%	92%	70%	72%	
% Pub/Diss by Wom.	7%	43%	13%	31%	100%	0%	50%	36%	8%	30%	28%	