



California Institute of Technology

Report of the Visiting Committee for the Division of the Humanities and Social Sciences

May 9-11, 2016

TABLE OF CONTENTS

	<u>Page</u>
Members of the Committee	1
Introduction	2
Section I: President's Charge	3
Section II: Social Sciences	6
Section III: Humanities.....	10

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INTRODUCTION

This report has three sections. The first reviews the questions posed by President Thomas F. Rosenbaum in his charge to the committee and provides initial responses to each. The second and third sections elaborate our responses and present other detailed findings with respect to the Social Sciences and Humanities groups within the Division.

Overall, the committee found that both sides of the Division face similar challenges, rooted in the faculty's small size relative to the wide range of academic disciplines that potentially might be represented. Each has adopted a broadly similar tactic: building bridges to other Divisions on campus, or to external institutions (the Huntington), in order to exploit synergies, foster networking and increase research opportunities. Much of the report considers how best to implement this tactic, whose broad outlines we endorse.

We hope this report will be useful.

SECTION I. PRESIDENT'S CHARGE

President Thomas F. Rosenbaum's Questions for the Visiting Committee, followed by the committee's responses

1. *In the past, HSS focused on a few key areas (e.g., experimental economics, political science, history and philosophy of science, early modern Europe); now we have achieved greater breadth by developing new initiatives and important research collaborations with institutions such as the Huntington Library. Have these efforts caused HSS to over-extend itself? Are we achieving the right balance between our research foci and our teaching missions? Have the new partnerships and collaborations strengthened the division?*

The Visiting Committee believes that the three new research initiatives highlighted in the chair's report have each had important and highly visible payoffs. They have put Caltech on the map as a top-5 center in neuroeconomics (by the IDEAS rankings); helped build a faculty with national research prominence in financial economics, as well as at the interface between the social and computer sciences; and initiated a partnership with the Huntington that promises to create an international research hub in important areas of humanities research.

The long-term payoff from these efforts depends, however, on sustaining the relevant faculty and providing them with the needed resources. Because the challenges are quite different, we discuss them separately in the sections on the Social Sciences and Humanities.

2. *The social sciences faculty has a low rate of offer acceptance (50%) and high turnover (half the faculty are new since the last visiting committee review). Recruiting and retention in the social sciences consume a substantial amount of division resources, both in faculty and staff time and other costs to the division, as well as to the Institute. What strategies might we deploy to reduce turnover?*

The SS faculty's rates of turnover and recruitment failure seem comparable to those in peer economics and political science departments. The payoff from improving those rates is, however, significantly higher for SS than for most peer departments—because the burden of searching falls on a substantially smaller faculty.

There are no magic bullets but the Division might consider the following ideas:

(1) It is harder to judge freshly-minted PhDs, both in terms of their inherent quality and their idiosyncratic fit with the Division and Caltech. That being so, one strategy would be to focus more searches on junior scholars who are approaching their third-year reviews; on mid-career scholars; and on senior scholars. If a good fit with Caltech were found, the next step would be to make a competitive offer which included some sort of golden handcuffs.

(2) Another strategy to deal with the difficulty of judging quality and fit is to use visiting positions. If someone spends a year at Caltech, estimating his/her fit should be easier.

(3) Another strategy, which the Division has effectively been following, is to hire clusters of related faculty sufficient in size to sustain a vibrant subfield.

3. In recent years, we have put more resources into making our accomplishments known both within and beyond Caltech. Are these efforts effective? Are we doing enough?

The Division's upgrade of its web site, as well as its introduction of a newsletter, are visible new efforts to communicate the faculty's accomplishments to the wider world. One way to assess the success of these efforts is to see how the Division does in the Caltech Campaign. The evidence on this score will arrive in due course but the early signs are favorable.

The Division's communication efforts might also be judged in terms of their campus impact. Here, the committee found mixed evidence within the undergraduate population. On the one hand, the undergraduates with whom we met—all Division enthusiasts—felt their peers were ignorant of what HSS had to offer. This ignorance was partly attributed to the sleepy introductory courses offered in economics and political science (on which more below); and partly to insufficient outreach (with one searcher after truth suggesting “pizza seminars for credit”). On the other hand, the fact that undergraduates on average take more HSS courses than the minimum the Institute requires them to take—even excluding the HSS majors and minors—suggests the Division's message is getting out.

(The faculty's efforts to make their accomplishments known to their academic peers—mostly through ordinary academic networking—are discussed below in connections with proposals to resuscitate the Division's tradition of visiting scholars.)

4. The quality of the educational programs and interaction between faculty and students (both for undergraduates and graduates) are critical to Caltech's success. Are the HSS teaching programs and collection of courses appropriate and of uniform high quality, or are there areas that could be improved?

The committee found the Division's teaching programs to be, for the most part, of high quality. The main exceptions are the introductory courses in political science and economics (the Coursera-based one, which most of the students take). We describe these programs in more detail in the separate sections on the Humanities and the Social Sciences.

5. Increasing diversity in the student, postdoc, and faculty population is a significant goal at Caltech. Is the division making progress in diversifying these populations? Are the efforts of the faculty and the climate of the division appropriate in this regard? How could the division best facilitate an increase in faculty diversity?

With women now constituting 40-45% of the undergraduate population at Caltech, the incentive to achieve a better gender balance within the graduate student, postdoc and faculty populations

has only increased. The committee found that the Division's leadership took this goal seriously; and that the Division as a whole has a culture that should facilitate adding female students and scholars—but of course there is still a ways to go.

As regards diversity more generally, the Division chair has already instituted some promising procedural reforms in faculty hiring. Another procedural reform the Division might consider involves proactively advertising open slots and verifying that the applicant pool is as diverse as would be expected, given the nature of the search, before proceeding to winnow the field.

SECTION II. SOCIAL SCIENCES

The Social Sciences faculty at Caltech contains a number of internationally prominent faculty. The Division has maintained its reputation for first-rate experimental economics, behavioral economics, and economic history. In the decade since the last review, it has established strong reputations in neuroeconomics, financial economics, and the interface between economics and computer science. In political science, prominence has been reacquired or maintained in mathematical theory, voting behavior, and elections. This record speaks to the quality of the Division's leadership, past and present.

In this section we assess in turn some current issues in the Social Sciences that should be addressed in the short to medium run, concerning neuroeconomics, finance, political science, economics and computer science, graduate education, and undergraduate education.

Neuroeconomics

The most problematic of the new research initiatives appears to be neuroeconomics, which faces considerable challenges. Perhaps foremost among them concerns the magnitude of the intellectual payoff the Division can expect from its investment in neuroeconomics. This payoff potentially lies in three areas: (1) the social science fields of psychology and cognitive science; (2) individual behavior in political science and economics; and (3) multi-person behavior in political science and economics (roughly, equilibrium outcomes of many interacting agents). To date, the contributions of neuroeconomics to social science have been primarily in the first area. Almost all the publications in the last decade of the Caltech neuroeconomists have been in general science and neuroscience journals (e.g., *Science*, *Neuron*). The Committee is skeptical that there will be significant payoffs in the study of multi-person behavior in political science and economics (the neuroeconomists themselves say such payoffs may be ten to fifteen years off). It is also true that within the economics and political science professions, the potential value of neuroeconomics is a contentious issue.

A second challenge faced by the neuroeconomics initiative at Caltech is funding. Federal funding, at least at Caltech, has stagnated if not decreased. This poses a problem because neuroeconomics is an expensive endeavor (extremely expensive by HSS standards), requiring very costly machines that apparently become obsolete every five years or so. The real cost at Caltech is made higher by the underutilization of the machines in the CBIC. Several members of the committee felt the Division should consider renting or renting out as a way to reduce costs that the Division can ill afford to bear given other needs. The current financial pressure on the CBIC would, however, be alleviated if it fares well in the Caltech Campaign.

A third challenge faced by neuroeconomics at Caltech is its relationship to the rest of the social sciences in the Division. From talking to faculty, post-docs and graduate students, the Committee formed the impression that there is little interaction and indeed some tension between the neuroeconomists, especially those more squarely in psychology and cognitive science, and the more traditional economists and political scientists. Assuming CBIC succeeds in the Campaign,

we believe attention to integrating neuroeconomics with the rest of SS is warranted. If the traditional strength of the Division as a place where casual conversations across disciplines can turn into collaborative research is to continue, it needs fostering.

We end our discussion of neuroeconomics with an important self-observation: only one of our Committee members has real expertise in neuroscience, and she was unable to attend our visit to the Division. Thus, in order for the Institute to have a credible read on precisely how big the payoff from neuroeconomics has been and is likely to become, we recommend appointing a committee consisting mostly of (a) neuroscientists, both from the social and biological sciences; and (b) political scientists and economists with expertise in behavioral issues. In addition, since Caltech has neuroscientists in three separate divisions that share facilities and research projects, such a committee should also address the interdivisional issues of placement, joint research productivity, cost containment, and equity. (Some of the HSS faculty perceive inequities in how much lab support HSS neuroscientists get from the Institute relative to what their BBE peers receive.)

Finance

The Division has recently achieved a critical mass of finance faculty (Cvitanic, Ewens, Jin, and Roll). The payoffs from doing so are significant, flowing from the popularity of the undergraduate BEM option to the research synergies involving pre-existing faculty in the Division and elsewhere at Caltech. The group spans a wide range of ages and interests, and its research productivity and quality is high. Both education and research in finance at Caltech are enhanced by the presence and support of the Linde Institute.

The most pressing challenge to maintaining the Division's prominence in financial economics will be to attract and retain senior leaders in the future. The Division was very fortunate to hire Richard Roll, but will in the not too distant future face the task of replacing him. Hiring at the senior (and even junior) levels is complicated by the hefty salary premia that finance scholars command. The Institute has decided not to match business school salaries; fair enough. Nonetheless, exactly what is the salary differential that appropriately screens for individuals more interested in research than income; and what is the differential that simply shrinks the set of individuals for whose services the Division can compete?

The Division has wisely focused on subfields of finance that are best fitted to the Division and Institute in general. Other aspects of finance research do not fit as well. For example, the committee does not think the Division should teach entrepreneurship; such an initiative could perhaps be left to visiting lecturers at the Linde Institute.

Political Science

We think the Division has been wise to target specific areas of political science for rebuilding. It has had some success rebuilding in mathematical political theory, by successfully hiring Snowberg, Hirsch and Lopez. However, Snowberg is apparently now leaving. It strikes the Committee as important that he be replaced promptly, ideally at the mid-career level.

Economics and Computer Science

The Committee also regards favorably another initiative of the Division in the last decade, the one to study topics at the interface between computer science and economics. One strength of the initiative is that it is cross-disciplinary, focused on the Social and Information Sciences Laboratory run jointly by the HSS and EAS Divisions. Another is its growth in faculty and topics in recent years, branching out from networks to the study of, e.g., privacy and the complexity of economic institutions. The research productivity of SISL has been impressive, and the Committee advises that this activity continue to receive substantial support.

Graduate Education

The most pressing problem with graduate education in the Division concerns the new PhD option in Behavioral and Social Neuroscience (BSN). The Chair's letter says this program "has not blossomed in the way we had anticipated," with only about one student admitted per year, and many of them transferring to the Social Science PhD option soon after arriving. The Chair discusses possible reasons for BSN's lack of success, and says it will receive further review in AY 2016–17. The Committee feels the problem is well recognized in the Division and has no specific advice to give, especially in light of its lack of expertise in neuroscience. The Committee does feel, however, that the problem with BSN is serious and needs prompt attention.

Another important issue regarding graduate education is funding, as it is in almost all graduate programs in the social sciences. The problem is made worse at Caltech by the fact that because social science classes are relatively undersubscribed, there is no need to employ the armies of graduate student teaching assistants as there is in political science and economics departments at other universities. Funding has become even more of an issue in recent years with the decrease in NSF grants and their support of research assistants in the social sciences. The funding issue is well known to the Division, and the Committee strongly supports its efforts to obtain new fellowship funds.

The remaining problems with graduate education are relatively minor and probably easily remedied. We perceived these problems when we met with a group of graduate students on May 10, and some of these problems were voiced by the students. We mention three of these problems here.

First, students complained that feedback on their progress in the program was sometimes hard to decipher; and that help with their professional (as opposed to scholarly) development was lacking. For example, some felt that the current system—with a proseminar and a practice job talk before the faculty—was not preparing them enough to go on the job market and give polished presentations. The Committee views this as an issue that should be addressed; other departments it is familiar with do more to prepare their graduate students for the market, including multiple practice presentations, videotaping, professional presentation consulting, and mock interviews, all starting in early spring of the year before the market.

Second, students complained that the process of assigning TAs to courses has problems. For example, the process seems to gather insufficient information from the TAs about their interests:

some are assigned to courses about which they know nothing, even when there are other graduate students who are knowledgeable about the topic who could have received those assignments instead. The process also seems to gather insufficient information from the faculty: the assignment rule seems to be a rigid formula of one TA per 25 students, despite the fact that TA duties can be much more time consuming in some courses (those with unusually frequent essays, problem sets, or exams to grade) than in others.

Undergraduate education

The committee found the Division's teaching programs to be, for the most part, of high quality. We discuss here three issues that came up in our discussion with a group of undergraduates.

First, several undergraduates said that the introductory courses in economics and political science were too simple and boring. They felt that the more advanced courses were substantially more interesting and challenging. One student said that she thought her friend, a mathematics major, would really like economics, but she was too embarrassed about the economic principles course to advise her friend to take it. The Committee feels the Division is missing an opportunity to excite Caltech undergrads about economics and political science by teaching introductory courses that do not challenge and do not convey the true flavor of the disciplines.

Second, the Division should consider improving curricular coordination. For example, several undergraduates complained that they got the same set piece on the prisoner's dilemma in multiple courses, delaying the point at which they reached more advanced topics. The same issue was flagged in the 2005 visiting report and the remedies suggested therein might still apply. Students also complained that course offerings were announced just one term ahead, rather than a year in advance, which makes it hard for them to plot their trajectory through Caltech (made challenging by the common practice of doing two options). The same issue was reported in the previous report.

Third, course availability seems to be a problem: some of the most popular larger classes close out. Wait lists are apparently not kept by the Registrar, but haphazardly by instructors. Complications arise due to the activities of what might be called "class trolls," students who over-register for courses merely to give themselves the option of dropping courses later. Some students even reported that sometimes (but rarely), a troll will time his/her exit from a class list strategically in order to somehow ensure that a friend wishing to get into the class can take their place. Perhaps the Division has some expertise in how best to structure this emerging market that they could share with the Registrar.

SECTION III. HUMANITIES

The Humanities at Caltech are a small and thriving faculty with interests and skills across literature, history of science, history, and philosophy. Rightly, Caltech has focused strength on these four areas, since trying to “cover” all of the humanities would be impossible given the size of the faculty. We found that the faculty feel (and are) somewhat isolated from the larger academic world by the lack of a graduate program and a serious research library, as well as by the distinctive STEM profile of the Institute. While the faculty are on the whole highly productive, they need special support if they are to achieve the visibility, research strength, and institutional connections in their fields that a Humanities faculty at a major research university should enjoy. To achieve this integration we recommend strengthening the Humanities at Caltech in three ways.

First: Huntington Collaborations: We strongly support the new Caltech-Huntington Collaborations in the Humanities and in the History of Science and Technology: indeed, we think these collaborations are long overdue. They will significantly enhance the uniqueness as well as the visibility of the Humanities at Caltech.

The format for both sets of collaborations seems well-planned. It would be ideal, in our view, for a collaborative project to culminate in a conference, so that the achievements of the project could be advertised to the larger academic world. For the History of Science Collaboration, the Huntington’s own Dibner program contains funding for one two-day conference each year. The broader CHHC program, however, provides funding only for shorter (one-day) workshops, and it may be desirable to enhance its programmatic ambitions by providing resources for a capstone conference at the end of every two-year CHHC cycle.

HSS could further strengthen its ties with the Huntington through a new appointment in the visual arts, with the new faculty member benefitting from access to the Huntington’s extensive collections in British and American art; from the expertise of Huntington art curators and conservators; and from interacting with the large number of research fellows with interest in the history of visual culture who come through the Huntington program each year. The Humanities Faculty informed us that they have voted in favor of such an appointment, which we strongly endorse.

Faculty who will not be participating in the formal Huntington collaborations should not miss the opportunity to engage with the two hundred Fellows a year that the Huntington brings to its collections. Some other mechanisms for more informal collaboration might include a quarterly luncheon or dinner for all the Humanities faculty and a subset of the Huntington Fellows in which the Fellows briefly discuss their current research.

Second, Visiting Faculty, Postdocs, Graduate Students: In the past, a regular Visitors program was a great strength of the Humanities at Caltech. It brought intellectual energy to the campus while enhancing the faculty’s visibility and interconnectedness with the larger academic world. As we noted earlier, visiting appointments might also serve as a form of prospective recruitment. Likely candidates for these appointments would be highly regarded junior faculty and midcareer senior faculty: the effects of their visits would be felt in the field for decades to come. In the

past, we were told, HSS budgeted for nine terms of Visitors annually. Whether or not this precise number is accurate, we believe that the Institute should now make a similarly intensive commitment to a Visitor program.

Some of the faculty we interviewed worried that there might not be enough space in Dabney to accommodate Visitors, but the Vice Provost assured us that space would not be a problem.

A complementary project would be increasing the number of postdoctoral scholars and advanced graduate students in the Humanities. We were highly impressed with the caliber of the postdocs we met, although we do note that only two of the fifteen postdocs in HSS are women. We can easily imagine, just for example, that advanced graduate students working on the history and philosophy of science might find it tremendously helpful to come to the Einstein Project.

Third, Research Materials Access. Perhaps the most widely shared concern among the Humanities faculty was the difficulty they experienced in accessing important books, articles, and databases in their fields. We understand that digital access can be expensive, but they are increasingly the primary sources for research materials in the Humanities, and the Institute needs to find a way to make them accessible to the faculty. We recommend that the Administration consult with the General Counsel to devise strategies for negotiating costs with the database publishers or for affiliating faculty with other institutions that might share licenses with Caltech. It is important, too, to take a closer look at interlibrary loan arrangements, faculty must have the physical books and articles they need in time to complete their teaching and research. Finally, we heard too from the faculty that there are certain bare minimum requirements for the functioning of the library that ought to be attended to with some urgency: for example, it is now (according to the faculty) possible to leave the library with arbitrary numbers of books and no security.

OTHER ISSUES

Curriculum: The Humanities curriculum is distinctive for its open-endedness. There are no specific course requirements. The faculty made clear to us that they greatly value their autonomy in choosing their courses, and, given the small size of the Humanities at Caltech, we agree that a model of curricular coverage is inappropriate for them. Consequently, we endorse the recent reform of Freshman offerings in English, which has discarded the apparently unpopular introductory survey courses that English had adopted in pursuit of a more structured curriculum. The new plan of special-topic courses will certainly add dynamism to the curriculum where it is most important: at the introductory level.

Nonetheless, there is always a danger that the faculty's autonomy in choosing courses might degenerate into curricular incoherence or confusion. While the undergraduates we met were extremely enthusiastic about the Humanities courses they have taken, they did point out several problems of coordination in the curriculum. Course schedules, we were told, were published at the start of the term only, which strikes us as unacceptably short notice for students attempting to plan their own schedules. Several courses repeated the same introductory material. And no sequential courses were offered. We strongly recommend that the faculty meet at least once a

year to discuss the courses they plan to teach, to coordinate these offerings, and to contemplate ways in which the curriculum might be strengthened or expanded.

Public Relations: The Institute should make a more concerted effort at advertising the strengths and the uniqueness of the Humanities at Caltech, not only to the larger world but also on campus.

One suggestion: the Institute might track the post-graduate success of students who have double-optioned or taken a Humanities minor and compare that rate of success to students who single-optioned in a STEM field alone.

HSS Chair: The faculty informed us that it has been 36 years since a Humanities faculty member chaired HSS. Whatever the reasons for this extraordinary hiatus, there must be a change when the next Chair is appointed.