

June 2, 2006

CPEVC Dave Kliger
Chancellor's Office

Re: CPB Response to the Divisional Academic Plans

Dear Dave,

The Committee on Planning and Budget assessed the updated plans of the five academic divisions, looking at each plan separately and at all plans together. Several overarching issues were identified that affect all the plans, irrespective of division and are important for the planning process. We discuss these first, then turn to division-by-division comments and recommendations. In some cases, we believe the plans need considerably more work and refinement, either on the part of you and VPAA Galloway or the Deans. It is unclear to the committee whether this should involve yet another draft of the plans, brief updates on the issues that we (and presumably you and the VPAA) raise, or more careful consideration as the plans move into the implementation phase. In two cases, Humanities and the School of Engineering (SOE), the issues are large enough that we favor revised drafts.

OVERARCHING ISSUES

Campus Priorities

The Chancellor articulated six campus priorities. How do the divisional plans support her goals? In particular, how do the divisional plans help UCSC achieve increased excellence and recognition for its excellence?

Coordination Among Divisions

How will the plans of the separate divisions be coordinated? The demands for resources far exceed the resources available. Looking at the five divisional plans in a concerted way means that sometimes the very good idea of one division must be subsumed by the even better ideas of another division. In the world of limited funds, co-ordination among divisions is extremely desirable if not necessary. Sometimes economies can result from careful orchestration of programs that benefit students and faculties across the campus, and innovations in one division can be enhanced through close co-ordination with one or more of the other divisions.

Recently, some faculty have questioned the proportions of FTE assigned to the different divisions for planning and the processes by which the proportions were determined. CPB agrees that we must strive for divisional balance. We think that divisional proportions should be decided on the basis of qualitative assessments and quantitative data on issues such as: a) fulfillment of the core mission of teaching undergraduate and graduate students; b) excellence in both research and teaching; c) economic factors, including both income and outlay of money; d) historic trajectories, particularly those that make UCSC unique in a positive sense; and e) the relative merits of the plans proposed by different divisions with respect to the points a-d. Based on the academic plans that have been

produced over the past five years (the original 2000-01 submissions and these more recent updates), the proportions among divisions (and more importantly, the actual FTE allocations) seem roughly congruent with divisional aspirations, with overarching campus goals, with the desire for academic balance, and with historical trajectories. We await detailed data, particularly comparative data on workload at other campuses, to enable us to provide a recommendation about the final FTE allocations to different divisions.

Measures

To help coordinate and track the progress of each division, the campus must develop clear measures. For expository clarity, CPB distinguishes between “inputs” and “outputs.” Inputs are the resources that the central administration puts into a division. They can be measured in dollars and/or personnel. Outputs are produced by the divisions. Two possible outputs are: a) students educated (total number taught, majors produced, graduate students produced) and b) research produced. In thinking about the students who are educated, CPB believes that special attention needs to be paid to graduate students. We aspire to have 15% of our student body be graduate students; currently 9% are. In thinking about research outputs, CPB is mindful of quality as well as quantity. Furthermore, as startup packages escalate in the sciences and engineering, and as the desire for graduate students grows across all divisions, one measure of success should be the ability of faculty and divisions to raise external funds. Not all research areas require large grants to do excellent work, but many areas do, and we should be assessing how faculty in those areas are doing relative to their peers. These measures should be developed when the Campus Academic Plan moves into the implementation stage, and they should be used to set mileposts that will guide growth.

Extra-divisional Considerations

While examining the plans of the five divisions, CPB has not lost sight of other extra-divisional developments. On the one hand, CPB is mindful of the movement toward the possible establishment of a School of Management and perhaps other professional schools. On the other hand, CPB thinks it is important to keep in mind the very real possibility that growth in faculty positions at UCSC for the near or mid-range future will be less than anticipated.

THE ARTS DIVISION

The Arts Division plan finds the EVC’s proposed allocation of 11.1 new FTE in the next five years inadequate, pointing out that divisional workload ratios are above UCSC averages, course load and enrollments are high, six-year graduation rates are exemplary, and retention of Arts majors is relatively good. Moreover, the plan points to longstanding curricular and research trajectories in the Division and proposes to complete these trajectories even with substantially reduced resources. The Division has effectively expanded from five departments to six (now including DANM) over the past few years. While the Digital Arts New Media (DANM) program drew upon some specialties already present in the departments, it also required the hiring of new, specialized faculty, the dedication of substantial numbers of divisional TAs, course relief for the Chair, substantial new teaching and research facilities, etc. The Division undertook this

expansion with the assurance that faculty FTE would be forthcoming such that the creation of a new program would not disable longstanding Divisional plans for departmental graduate programs. It therefore proposes 18 new FTE going forward: 12 regular FTE to support long-planned or existing graduate programs in five departments, 5 TAS FTE to stabilize undergraduate programs and enrollments, one regular FTE - a previously authorized 2005-06 recruitment - also in support of the large undergraduate program in Film and Digital Media.

The plan argues persuasively that with this minimal augmentation of proposed resources the Division could substantially complete development of the graduate programs envisioned in their original ten-year plan. If the additional resources are not forthcoming the Division would be put in the position of mounting new graduate programs on top of underfunded undergraduate programs. The Division would not have the resources, moreover, to expand into collaborative interdivisional ventures such as SOE's proposed Computer Game Design major.

Graduate Programs

We note that apart from the interdisciplinary DANM MFA, the Division proposes to provide access to graduate education primarily by traditional means: departmental graduate programs. It is tempting to counter their proposal with the suggestion that, in place of two or more departmental programs, inter-departmental or interdivisional programs should be developed. Most such alternatives, however, draw upon small subsets of faculty from each of the departments involved (as with DANM, for example). Thus, while such interdisciplinary programs may indeed strengthen and cross-fertilize departmental disciplines, several such programs would be needed to involve most Divisional faculty. It is doubtful that fiscal savings would be realized by this approach.

CPB accepts the plan's argument that the Division must offer TAships (serving undergraduate Arts Division courses and driven by undergraduate enrollments) in order to attract graduate students to the proposed programs. Curtailing undergraduate enrollments in the Arts would ultimately undermine proposed graduate programs as well.

Undergraduate Programs

The Division proposes the equivalent of five FTE in temporary Academic Staffing (TAS) funds. Almost all Divisional departments have expended their TAS reserves (mostly by hardening the TAS into ladder FTEs). There is a substantial deficit in one department (Music). While one of the five FTE proposed would enable the proposed Computer Game Design major, the remaining four would be used to address departmental needs that fall into two general categories: support for small classes required in certain Arts majors (e.g., Studio Arts, Music), which cannot be adequately supported by student fees, and maintenance of current undergraduate enrollments in service courses that provide TAships for the new graduate programs.

Interdivisional and Interdisciplinary Programs

While most of the Division's plans are department-centric, there are two notable new interdivisional and interdisciplinary efforts: the DANM program and a proposed

partnership with Baskin SOE in creating a new major in Computer Game Design. Regarding the latter program, CPB points out that competition in the development of computer games is extremely high, especially from Asia, and that to achieve excellence the UCSC program will have to be particularly adept at attracting first-rate students and faculty and at job placement. Acting Dean Miller also points out in her 2/21/06 letter to VPAA Galloway that “before we can commit to guarantee space in the courses required by Computer Gaming majors, we will need to have resources permanently, not temporarily, allocated.”

Research Funding and Donor Funding

On the issue of hiring new faculty who have fund-raising potential, CPB was reminded by Acting Dean Miller that the Arts must have graduate students in order to attract and efficiently utilize research funding. On the other hand, the Division has been increasingly successful at cultivating private donors and corporate sources (e.g., the Rebele Chair in Art History, support for courses and events representing Indian culture and the Music Department’s elaborate student opera productions, etc.).

Shakespeare Santa Cruz

CPB supports the three-pronged effort by the Hewlett Foundation, University Relations, and the Division to find creative ways to increase ticket sales and donations to Shakespeare Santa Cruz. CPB notes that the Division's plan does not strongly advocate nor highly prioritize Shakespeare Santa Cruz. CPB believes that Shakespeare Santa Cruz may need to be understood as a campus resource — not just a Divisional one — and its funding evaluated accordingly.

The Arts Division’s Role

CEP, in their comments, raised concerns about the place of the Arts Division within the campus mission. While many questions about the place of the Arts at UCSC remain to be answered, CPB notes that the Division has adopted as its top priority UCSC’s commitment to increasing graduate education.

CPB Recommendations for Arts

1. The allocation of the 12 regular FTE to develop graduate programs across the departments appears necessary to provide Arts faculty access to graduate students. We note, however, that because one or two of the Division’s graduate program proposals are in preliminary stages of development, the Division's estimate of resources required for successful implementation of these programs remains in doubt. If these graduate proposals cannot be successfully developed, the Division should be asked to provide rationales for FTEs related directly to them (e.g., Theater Arts M.F.A. or M.A./Ph.D. and Art M.F.A.).
2. The distribution of 4 TAS FTE also appears to be reasonable and justified to stabilize existing undergraduate programs, to support undergraduate enrollments at current levels while the departments develop graduate programs, and to support TAships for the proposed graduate programs.

3. The allocation of 1 TAS FTE for the Computer Game Design major with SOE needs to include evidence that the program may reasonably be expected to be competitive in the global market.
4. The Division needs to clarify under what conditions an interdisciplinary and interdivisional model for graduate programs makes sense and when a primarily disciplinary model should be promoted. In our consultation with the Acting Dean it appeared that she believed that the disciplinary model was in need of protection from diverse campus pressures.
5. The development of cross-divisional synergies in cultural diversity with LALS, History, and Literature could be advantageous. CPB notes that the Division's hesitation about pursuing interdivisional coordination appears to arise from its desire to protect nascent graduate programs whose resources are perceived as limited.
6. As CEP suggests, the Arts Division should be encouraged to articulate a vision of itself on campus.
7. The development of new graduate programs will probably require more active shaping by the Dean than is reflected in the Division's plan. That is, departmental prerogatives to fashion these programs must be informed and influenced by Divisional perspectives. The Division's plan does not attempt to make a case for the overall excellence of the Division. Nor does the plan identify areas of comparative excellence within each department nor within the Division as a whole.

THE HUMANITIES DIVISION

Interim Dean Lease presents the academic plan for the Humanities as a draft, and one that views survival of the Humanities in a world of slow growth as its primary objective. The Interim Dean views the chief challenges facing the Division as "the need to live within its allocated resources, the demand to resolve the funding of the Writing and Language Programs, the vision of access to graduate work for all faculty and the goal of preserving the highest level of quality in its strongest programs." The plan views the Division's departments and programs as falling into four categories: 1. A high quality department, Linguistics, that should be able to maintain its status with minimal FTE support. 2. Three departments that form the traditional core of the Humanities (History, Literature and Philosophy) that are too small to meet all their curricular and research needs. 3. Two programs that serve the entire campus (Writing and Languages) and are largely staffed by lecturers.¹ Because merit increases for lecturers are not provided by the center (as is the case for ladder faculty), the growing costs of these programs are slowly draining the Division's coffers. 4. Small interdisciplinary departments (History of Consciousness, American Studies, Feminist Studies), each of which faces considerable challenges

¹ While we have not gathered data on the subject, we believe this is unlike the situation at some universities, where senior graduate students offer instruction, thereby providing a source of graduate support that is largely precluded at UCSC.

(faculty turnover, lack of resources to mount graduate programs). The plan proposes to decentralize all new FTE to departments to give them flexibility in launching their curricula. It offers small FTE increments to most departments, it suggests that the only path that will allow survival of all the small interdisciplinary departments is some sort of alliance, and it pleads for a reassessment of funding for Languages and Writing.

As the Humanities Division has a new permanent dean who will bring the Academic Plan from a work in progress to a finished document, CPB will comment on issues that should be addressed in a final plan, which it would expect to receive in early fall. The committee hopes that with new leadership the Division will at last be able to articulate a coherent plan that achieves broad consensus. Some of the issues we raise will need to be addressed by the central administration working in concert with the Division. The planned recruitments for next year are minimal. We will comment on the FTE requests for 06-07 separately, and believe we can do so absent the final divisional plan.

CPB Recommendations for Humanities

1. The conditions that should prevail for Writing to succeed are that the Division should not feel beleaguered by the presence of the program, that Writing faculty should not be treated as a burden to the Division, and that the EVC should protect the quality and quantity of instruction to ensure that provincial concerns do not interfere with the delivery of this campus curriculum. We recommend that the incoming Dean should, in consultation with the central administration, determine what resources will be needed and what instruction can be delivered. The report from CPB 2004-2005 on the funding of the Writing curriculum would be a good starting point for the new Dean to read to get some perspective on the issues. The resource formula should have a clear mechanism for dealing with merit increases and other cost increases. If the program cannot function successfully in the Division, it should be placed under the stewardship of the VPDUE, as recently recommended by the Council of Provosts. CEP and GC also raised concerns about Writing instruction and the Writing Program, though neither suggested placement of the program with the VPDUE.

2. Adequate opportunities should be provided for qualified graduate students to teach courses in the Writing Program and introductory courses in the Language Program, while maintaining adequate standards for these courses. As noted by CEP (and as is current practice for graduate student writing instructors), the campus will need to train graduate student teachers, monitor their performance, and ensure that teaching does not thwart timely graduation. Since graduate students can be more expensive than lecturers and require effort to train, it should be ensured that there are no budgetary disincentives to employ graduate students, since graduate student support is beneficial to the campus.

3. There should be better integration between Literature and the Language program. The two-layer model with ladder faculty doing all literature in one department and lecturers doing all language instruction in another department does not seem to be the most optimal.

4. The plan should evaluate the potential graduate programs in American Studies and Feminist Studies — given the available resources, is it feasible for the Division to support the development of two new stand-alone Ph.D. programs? How should support for these programs be balanced with the needs of other departments? Comments by the Graduate Council echo these concerns. Even if we have minimally adequate faculty to launch new graduate programs, a lack of resources for fellowships and TAs will lead to a decrease in the quality of students across the division.

5. The current status of the American Studies department is highly volatile. The failure of a search last year, the loss of a valued senior faculty member, and issues of intradepartmental collegiality and leadership place the future of the Department in jeopardy. As noted in its recently completed external review, this Department has a long history of excellent scholarship, as well as strong undergraduate interest and enrollments. As such, abandoning the Department because of potentially transient difficulties seems short-sighted. Still, the current situation is serious, and the new Dean must make as one of his highest goals offering a clear vision for the future of this Department.

6. The plan should evaluate the current status and future of the History of Consciousness Department. As the preeminent senior faculty retire, how will the Department maintain intellectual strength and continue to attract high-caliber graduate students? The Department has been highly influential. Its interdisciplinary intellectual vision was unique in academia 30 years ago, but is now shared by departments across the Arts, Humanities and Social Sciences at UCSC and elsewhere. Under these circumstances, what is the rationale for the continuation of a stand-alone Ph.D. program in the History of Consciousness? Can its Ph.D. program be coordinated with the proposed graduate programs in Feminist Studies and American Studies? How can the History of Consciousness faculty participate more extensively in undergraduate teaching?

7. We recommend that the plan articulate a strategy for growth of History and Literature (the large departments in the Division) that serves two purposes. First, it should make clear how these departments, which will remain small relative to departments at other universities, will achieve excellence. We would imagine that the goal would be to retain a focus on targeted areas, rather than to try to cover too much ground. Second, growth positions in these departments that support other divisional needs (e.g., development of grad programs in American or Feminist Studies, writing and language instruction) should be a high priority, though hires that solely serve goals in History or Literature would, of course, still be possible. Furthermore, if the FTE allocations to this Division remain as modest as originally projected and if the Division moves forward on proposed new graduate programs, even the small number of recruitments suggested in the plan may be in jeopardy.

8. The plan should explain how Interim Dean Lease's proposal to distribute the divisionally held FTE to the departments would work. We presume that the money from these FTEs is currently being used to run the Division. What belt-tightening will be required with decentralization? Can the Division manage this? If it cannot, this proposal should be rejected. Conversely, the EVC should now explain what extra resources he is

planning to provide to 'disadvantaged' Divisions, as per his earlier statements when discussing a new formula for allocating Opportunity Funds. It is possible that these resources may make the proposal viable.

9. The plan should prioritize how it would distribute a limited number of extra FTE beyond the EVC's provisional allocation (perhaps 5 more), and what benefits these would bring.

PHYSICAL AND BIOLOGICAL SCIENCES DIVISION

The lack of discussion of FTEs resulting from retirements implies that FTE will mostly be used for replacements, not programmatic shifts. We note that many retirement replacements will be substantially delayed, whereas new FTE will mostly be filled promptly, for reasons that are not clear. The plan also does not explain why the fraction of open FTE will increase only temporarily, during the 'growth' phase, when it has increased steadily over the last few years.

The plan argues that the new FTE being requested are required to bring departments to critical mass, but in the Divisional goals, the targets for extramural funding and graduate students are "proportional to faculty growth". As larger programs and research projects are enabled, greater growth should be possible in these areas. With respect to teaching, the Division should plan for how it will fulfill its need for W designated courses.

For the main thrust areas, CPB found a number of places where more work is required. In particular, there are several places where more details, clarification of specific directions, or the identification of synergies, will help enhance the plan. The following are our main recommendations in this regard.

Environmental Sciences

Although prominent in the 2000-01 plan, the environmental sciences are missing from the current plan. When pressed on this issue, Interim (now permanent) Dean Thorsett's response was that this is because of space constraints, with the Environmental Science building not scheduled to open till 2013. This situation will be aggravated by further delays in academic buildings that are anticipated. We recommend that the emphasis on environmental sciences in this plan be elaborated further as follows.

1. In view of the importance of this research field, and the fact that the FTE provided to the Division up to 2010-11 will not be fully utilized till 2015, the hiring plan until the end of this period should be offered and demonstrate that the environmental sciences will eventually be adequately represented in the Division.
2. Academic buildings provide space in large blocks. It is unwise for our academic plans to be driven so strongly by the capital plan. While it is true that the building next on tap for Science Hill will be labeled a "biomedical sciences facility", space in the building should be used to support environmental sciences and perhaps engineering, if needed. Similarly, when the environmental science building is eventually constructed, it too may have to serve multiple functions.

3. The plan should better articulate the synergies a) amongst the departments conducting research in the environmental sciences within the PBSci Division; and b) between PBSci and other Divisions, especially, Engineering and Social Sciences. Of particular importance here is a clear articulation of campus priorities in environmental sciences. Toward this end, we would like to see evidence of a consultative process that ensures that the future investments in the environmental sciences at UCSC best optimize the synergies already extant on the campus.

Material Sciences

The materials science theme is also not fully developed. The Dean has explained that the success of growth in this field will require focusing on a limited number of areas where campus strengths can be exploited. While reasonable, there is no mention of what these areas are, other than biomaterials, which is not in the white paper. We also find a contradiction between the stand of the Acting Dean of SOE, that several Electrical Engineering faculty can be considered to be in materials science and therefore substantial growth in this field in EE is not needed, and the view of Dean Thorsett that growth in the sciences in this field has to follow growth and leadership from Engineering. Further, even with the two recent hires in materials chemistry, the hiring plan for the Chemistry Department has insufficient emphasis on this field, contrary to the clear recommendations of their last external review committee.

The hiring plan for Physics Department also has all positions for condensed matter physics in the last few years, despite the urgency expressed by the last review committee, the endorsement by the Department, and the need for condensed matter physics independent of materials science theme. Condensed matter (CM) physics borders on materials science, and it should be possible to hire at their boundary. The CM group should be asked to propose possible growth areas that have a materials science flavor, explain what startup and other resources will be needed, and what return the campus can expect for its investment. The possibility of applying for large multi-PI grants, suggested by the review committee, should be explored.

We recommend that the Division think long and hard on the place of materials sciences, and propose a plan that will help strengthen it. In particular, we recommend that:

1. Areas of focus need to be determined immediately. It is possible that subsets of the relevant departments may be interested in different areas, and a prioritization between these areas must be produced. If materials science (or a subdiscipline of materials science) cannot be developed by the Division, it should be removed from the plan.
2. The hiring plan for Physics and Chemistry should provide an appropriate emphasis on this field if it is developed. Independent of such an interdisciplinary initiative, it should be possible to justify growth in condensed matter physics with a materials science flavor. (Growth in EE is addressed in our recommendations for the School of Engineering.)

Biomedical Sciences

The biomedical theme is the strongest in this plan. The plan successfully explains that it builds on the strengths of the MCD Biology Department. However, further work is needed to coordinate the plans of the Division with the SOE in order to:

1. adequately link the plans for molecular biology and bioengineering, and avoid duplication of efforts between several departments, and
2. identify the resources needed and how they will be shared in this expensive field. This is especially important for wet lab space; it is unlikely that a new bioengineering building will be possible in the near future.

We recognize that the SOE and PBSci have produced a white paper on the biomedical research, but this document is only a first step in articulating a clear academic vision as well as a strategy for hiring and building facilities that support biomedical research across the two Divisions.

Other themes

These themes are discussed in less detail in the plan, and not many FTEs are proposed for them. CPB notes that Coastal and Marine Policy is proposed to be developed if extra FTE are provided from central resources (i.e., from the 60 FTE that are being sequestered by the central administration to support new programs). This should only happen as part of the assessment and prioritization of professional schools and programs now underway. For particle astrophysics, it is surprising that all positions in this interdisciplinary area are allocated to Physics rather than Astronomy. The planetary science program seems coherent and solid.

CPB Recommendations for Physical and Biological Sciences

In summary, the CPB recommends that the Division go ahead with its plans for biomedical sciences (albeit with more concerted work on its interdivisional white paper); work a bit more on the environmental sciences; and do some systematic re-thinking on the materials sciences program. We also recommend that more systematic and cross-divisional work be initiated to explore and build on the synergies amongst the various fields.

THE SOCIAL SCIENCES DIVISION

The plan describes a Division composed of excellent departments that have accomplished growth in research, teaching, and fund-raising. The plan emphasizes the growth of graduate programs in almost every department; it also emphasizes the heavy undergraduate teaching load borne by Social Sciences.

The Divisional plan does not identify areas of particular strength or excellence, and when asked, Interim Dean Hutchison stressed that, given the differing stages of development of departments within the Division, it would be difficult to argue for differential investment to bring some departments to international preeminence. Instead, the Dean's strategy appears to be to divide up the FTE allocations to the various departments, based in large part on necessary support for Ph.D. programs.

The Dean was explicit about his rejection of a “thematic approach,” and the plan does little to identify “synergies” across departments within the Division or with other Divisions. In cases where there are apparent redundancies in the FTE requests (e.g., environmental economics and economic environmental studies), the Dean seems to believe that these should be allowed to flourish, rather than arise from a more centralized planning process.

CPB Recommendations for Social Sciences

1. The recruitments scheduled for 2006-07 should proceed, with some consideration as to whether Community Studies should be advanced an FTE in order to support their graduate program.

2. Before recruitments are authorized for 2007-08, the new Social Sciences Dean should articulate a set of priorities for the Division and provide an analysis of what are the pivotal cross-disciplinary centers of excellence within the Division.

3. Before recruitments are authorized for 2007-2008, the new Dean should develop a plan for synergistic FTE. Interim Dean Hutchison mentioned 3 potential areas for synergy: Social Sciences and Engineering; Arts and Social Sciences (around common interests in media); Social Sciences and Humanities (around overlapping interests in gender studies). The Interim Dean’s comments about the importance of Environmental Studies at UCSC suggests that this could be an area for collaboration between Social Sciences and the Physical and Biological Sciences. CPB would like to see a more extensive discussion of the areas of synergy and ideas about the possible nature of synergistic recruitments. For example, should “synergy” consist of cluster hires? Of joint positions?

4. The status of Community Studies in relation to FTE allocations should be carefully considered. Community Studies is unique in the Division, as it is the only department that does not currently have, or propose to have, a Ph.D. program. One could argue there are good reasons to limit the degree offerings to the undergraduate and master's level. In an environment where FTE allocations are driven primarily to support Ph.D. proposals, how will the Division ensure that it offers the department sufficient FTE to offer a high quality undergraduate and master's curriculum and to build research excellence?

5. Before recruitments are authorized for 2007-08, further information should be provided about the following.

a) The FTE for Education that is to support the Ed.D. program is “contingent upon enrollments in the program reaching a threshold level.” Information about enrollments would be necessary before moving forward.

b) The plan states that the three new FTE for LALS are “contingent upon the development of a doctoral program.” Clarification about the state of the graduate program proposal is needed here. And given that it has not yet been approved, it is not clear why a recruitment has been scheduled for next year. It is also not clear why, in such a small department, a recruitment would be defined in transnational circuits of media, given that there is already one faculty member who works in that area.

c) The Interim Dean noted that the FTE in Economics is partly due to the “separation” of two very accomplished environmental economists. They left because UCSC could not offer competitive salary for faculty in this field. If this is the case, why is it likely that UCSC will be able to attract prominent faculty in this field now?

SCHOOL OF ENGINEERING

The academic plan for the School of Engineering has a general goal to build excellence in three areas — information technology, biotechnology and nanotechnology. The first two areas incorporate programs that are presently sub-critical: TIM and Biomolecular Engineering. The SOE financial projections envision, in conjunction with an almost 50% increase in ladder faculty between 04-05 and 10-11 (77 to 114), a five-fold increase in gifts and a more than factor-of-two increase in the dollar amount of external awards. Over the same time period they project a 66% increase in undergraduate FTE, nearly a factor-of-two increase in graduate FTE and an almost 75% increase in Research Scientists, Adjuncts and Post docs. The precise deployment of new faculty resources is difficult to garner from the plan as submitted, but the picture that ultimately emerges is for incremental growth more-or-less across the board in existing departments and programs.

Major difficulties associated with the growth of SOE exist. These include space issues (especially related to wet lab space), difficulties in recruiting, the expense of competitive start-up packages, and the distribution of resources between a significantly larger number of programs than were present at the inception of the SOE.

Strategic Hiring versus Diffusion of FTE Resources

Bleeding out faculty resources to the different programs for the duration of the plan may simply guarantee that all programs are equivalently FTE starved — with the longer established programs (CE, CS) maintaining numerical hegemony due to their longer histories. How (or whether) such a strategy will lead to excellence, or even to critical mass in nascent areas or programs is unclear. There is little indication that the idea of focusing resources on a given program or program(s) has been considered. The plan includes no discussion of possible cluster hiring, or consideration of the campus wide coordination, which can yield recruitments and areas of excellence that could not be produced on a piece-meal hiring basis. These are not subtle oversights, as at least two programs are identified as below critical mass, and nanotechnology — one of the three principal areas of focus of the SOE — is nascent. Is SOE considering cluster hiring? Even if cluster hires were put into place as part of the plan, what would the priorities of the SOE be for such hiring? Indeed, it is not obvious from the present plan that there are prioritizations for *any* program or area within SOE with respect to hiring.

Inter-divisional and Inter-programmatic Synergies and Redundancies

The plan involves considerable growth in topics spread across multiple departments and programs. For example, within the bioengineering-related fields, faculty growth is

distributed through BME, EE and CE. While such distribution of expertise could nucleate a highly interdisciplinary area of excellence, it could also, without appropriate structures and oversight, give rise to isolated pockets of expertise in bioengineering. There is also little indication of extensive interaction/joint planning with the MCD Biology program in the Physical and Biological Sciences Division. With a BME program for which two of the three possible outcomes described within their programmatic plan involve ceasing to exist, the lack of both an integrated plan for the future of bioengineering within SOE and a joint plan with PBSci for campus growth in biosciences/bioengineering is a fundamental shortcoming. Comparable queries about an integrated campus plan (and perhaps even just a synoptic interdisciplinary plan within SOE) could be raised about both nanotechnology and materials science.² Detailed planning and coordination for how to best pursue the entirety of the field of bioengineering as a campus, rather than having separate departments pursue their particular priorities in this area could prospectively avert faculty and programmatic embitterment, and give rise to programs designed for strength (rather than simply for marginally critical mass), with the structural and infrastructural limitations of UCSC minimized through economies of scale.

Is the present portfolio of programs optimal with the current resource base and the quest for excellence in both research and education?

The School of Engineering at UCSC was successfully initiated by focusing almost entirely on three disciplines: CE, CS and EE. Now, BME, TIM, and AMS have been added to the mix. The net build-out numbers of faculty FTE for these 6 programs are: 22, 28, 18, 14, 8 and 16, respectively. On a comparative basis, certainly EE and likely BME and TIM are planned to be quite small departments. Given that it is probably unrealistic to expect that UCSC will consistently attract faculty of the caliber to make a department of the planned size of EE superlative (the Caltech model), is this distribution of faculty between programs optimal for generating programs that are both excellent in research and in the scope and caliber of their educational offerings? Or would (say) making four departments through reorganization, each with ~26 faculty, be a more effective way of deploying limited resources? Almost no discussion is presented in the plan of what an optimal configuration (or size) of departments might be within the SOE, given the anticipated size of the school. For example, are there any universities of our expected size that have independent Computer Science, Computer Engineering, and Electrical Engineering departments of the sizes we propose; is there any reason to believe that such a concentration is optimal? What we have is a plan to build incrementally on what is already present.

As an important additional note, we observe that the SOE's diversity and retention statistics are poor when viewed from a campus perspective; how they measure up against other engineering programs is unclear. It would be useful if the School would explicitly define benchmarks and goals for improvements in these areas — in short, metrics that

² We recognize that white papers exist for biomedical sciences and material sciences, but we will need to move far beyond these documents to have full coordination among departments and divisions on these topics, which are central to the aspirations of two divisions.

can be used to assess whether there might be future linkages between growth and diversity.

What are the plans to provide for renewal of faculty members to prevent them quickly reaching a plateau in their academic career and thus becoming “deadwood” due to the dynamics of rapid changes in the engineering field?

In his consultation with CPB, Acting Dean Isaacson frankly admitted that there are some faculty members in the older, established programs that have become out of date in their research careers. Unfortunately, some of them are in a relatively early stage of academic life and will be with the programs for a while. These faculty members tie up precious FTE resources and become a major source of ineffectiveness for the programs. The Dean did not elaborate on measures to remedy this situation. This phenomenon of quickly and prematurely reaching the performance plateau is common in highly competitive and very dynamic fields such as CS, CE, EE, and BME if a faculty member doesn't have the necessary flexibility and versatility. Thus, in tandem with its planning for future growth, it is critical for SOE to address the issue of faculty career renewal so that these situations can be minimized.

CPB Recommendations for the School of Engineering

This draft plan needs substantial revisions. The plan essentially envisions incremental growth for each and every program within the SOE — it is not clear to CPB how excellence will be generated with simple inflation of each program and, given that the ground rules for the plan were to generate a 50% growth in the number of SOE FTE, the apparent failure to take advantage of economies-of-scale in hiring of new faculty is startling. Our specific recommendations are:

1. The SOE needs to provide a description of how it might proceed if cluster hiring was the favored mechanism of growth. Such a description should emphasize: a) what the specific, ordered priorities for cluster hiring would be, and on what timescale these separate initiatives could proceed; and b) how the cluster will help units/groups within the SOE achieve or build-on excellence.
2. The hiring outlined in the plan (or its revisions), whether cluster hiring or otherwise, should be explicitly shown to be consistent with SOE space and infrastructure planning and with the timing of when space is likely to come on-line for the SOE. The space and other resources anticipated to be necessary to successfully recruit new faculty should be in accordance with what can be expected from the central administration. As noted in our comments on the plan for the Physical and Biological Sciences, if growth of a critical program in SOE is essential but is being precluded by space constraints, then the central administration should consider reallocating space currently planned for other purposes.
3. The hiring plan should also include a discussion of synergies with the Physical and Biological Sciences Division, particularly for biomedical and materials science, and (where appropriate) should include explicit interdivisional planning.
4. CPB would also like the SOE plan to justify why its projected configuration of

departments is optimal for achieving excellence, in terms of both disciplines and FTE numbers/program. In particular, projected growth (versus renewal through replacement/attrition) in the older disciplines of CS and CE needs to be better justified.

5. Precise metrics (coupled with mechanisms) for how diversity and retention will be improved through time should also be developed.

6. There should be attention paid to means by which the research efforts of extant faculty can be renewed.

Sincerely,

A handwritten signature in black ink that reads "Paul Koch". The signature is written in a cursive style with a large initial "P" and "K".

Paul Koch, Chair
Committee on Planning and Budget

cc: Interim VPAA Galloway
Divisional Deans
AVP Moreno
CEP Chair Hughey
GC Chair Schumm