Washington State University College of Arts and Sciences Strategic Planning Committee

Subcommittee Report: Improving Physical Infrastructure for Research, Teaching, and Creative Activities

Members

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Backdrop

On October 1, 2012, the newly comprised Strategic Planning Committee of the College of Arts and Sciences, chaired by Dean Paul Whitney and populated by faculty and staff representing all departments, convened for the first time. In a series of meetings over the course of fall semester, committee members (1) familiarized themselves with the March 31, 2012 Integration Implementation Planning Team (IIPT) report, which summarizes processes through which the former College of Sciences and College Liberal Arts were merged to form the new College of Arts and Sciences (CAS); (2) developed a framework for authoring a CAS Strategic Plan; and (3) divided into Subcommittees charged with collecting relevant information from sources both within and outside CAS units, and writing specific aspects of the CAS Strategic Plan.

From late December, 2012, to March 1, 2013, each subcommittee assessed relative strengths and weaknesses of CAS departments and centers, and devised a preliminary plan for addressing current weaknesses. All committee members were encouraged by Dean Paul Whitney to "…share your best thinking on the major challenges related to your subcommittee topic, ideas for addressing those challenges, and metrics for assessing progress". In sections to follow, we present findings from the subcommittee charged with improving physical infrastructure for research, teaching, and creative activities.

Subcommittee Tasks

The Subcommittee for Improving Physical Infrastructure for Research, Teaching, and Creative Activities first convened on Dec 3, 2012. Members decided to divide their section of the broader report into the following three areas: (1) existing building needs and capital planning; (2) major instrumentation needs; and (3) teaching and creative activities needs. The decision to adopt this structure was based primarily on recognition that funding steams for each area are often quite different, which has significant implications for short and long term planning, and the extent to which the College, individual units, and faculty can effect meaningful change without support from, for example, the State Legislature. Accordingly, Subcommittee recommendations that appear in the sections to follow differ substantially in the degree of control the College might have in implementing immediate change. Nevertheless, Subcommittee members felt it important to convey a candid appraisal of current challenges facing the College in each area. We state at the outset that almost none of the challenges identified below can be addressed without additional resources, while recognizing how limited resources are in the current fiscal climate. Nevertheless, we believe steps can be taken to increase the College's extramural funding base, which will address some of the items identified below, in some cases directly (e.g., through major instrumentation grants), and in some cases indirectly (e.g., through an expanded indirect cost base).

To gather information needed to generate this report, Subcommittee members attended a series of meetings hosted by the Dean's Office, which included department chairs across the College, and

directors of centers from across the College, including Cornell Clayton (Foley Institute), Mary Collins (Anthropology Museum), Michael Gaffney (Division of Governmental Studies and Services), Yogi Gupta (Institute for Shock Physics), Larry Hufford (Connor Museum and Ownbey Hergarium), Michael Knoblauch (Franceschi Microscopy and Imaging Center), Kelvin Lynn (Center for Materials Research), and John Wolff (GeoAnalytical Lab, School of the Environment). Subcommittees members then sought additional information from sources relevant to each section described below.

Physical Infrastructure: Existing Buildings and Capital Planning

Information and suggestions regarding current buildings and related facilities issues within CAS were provided from discussions with senior members of Facilities Operations and Capital Planning (Ev Davis, Assistant Vice President for Facilities Operations, Bill Vertrees, Assistant Vice President for Capital Projects, Bobbie Ryder, Senior Campus Planner, Terry Ryan, Director of Facilities Operations Energy Management, and Steve Potratz, Facilities Operations Engineering Supervisor), from surveys of CAS faculty and staff, and from meetings with department chairs and center directors.

Problems with building infrastructure are widespread throughout CAS, which adversely affects existing research programs, creative activities, and instruction; reduces the effectiveness of departments in recruiting world class faculty members; and limits our ability to keep pace with emerging fields of research. *The most critical infrastructure needs to be addressed in the next few years include renovation and maintenance of existing space to ensure (1) continued success of existing, well-funded research programs; (2) improved productivity of research programs and creative activities of current faculty, and (3) successful recruitment of new faculty in areas of strategic importance. Careful planning for future major renovations and building replacements also needs to be carried out to facilitate success in these same critical areas.* Discussion of issues associated with evaluation of research space, and with its renovation, maintenance, and allocation are presented below, followed by subcommittee recommendations.

Currently, buildings are rated by Facilities Operations according to a "facilities condition index" (FCI), which is intended to compare a structure's performance relative to expectations. This index is used by Facilities Operations and Capital Planning and Development to determine priorities for minor capital renewal funding, major capital renovation projects, and building replacement. *Remarkably, standards for both performance and expectations used in the FCI are not based on needs of the units housed in the buildings, so adequacy of facilities for departmental research and instructional programs is not necessarily reflected in the assessment.* Moreover, evaluations are based on expectations established at the time of the original design of the structure, so adequacy of aging buildings for current and future needs is not considered. These evaluation metrics are mandated by the State Legislature.

A striking example of the disparity between FCI criteria and needs of academic units is the Webster Physical Sciences Building, which was considered by Facilities Operations to be in excellent condition based on its FCI, but is regarded as highly problematic by faculty and staff in the units housed within the building. Faculty reported damage to instrumentation as well as significant loss of research productivity due to continuing problems with poor temperature stability, poor and unstable building ventilation, poor power stability and reliability, poor quality and reliability of the building chilled water system, and water leaks. In addition, vibrations in the building adversely affect sensitive instrumentation. These issues limit research capabilities and external funding potential of current faculty and adversely affect recruitment of new faculty. It is not possible to pursue research programs in a number of important emerging areas due to the limitations of the existing infrastructure. In addition to the impact on research, many faculty and staff members expressed concerns about health and safety issues related to facilities problems.

A second area of major concern is the condition of CAS vivaria, which are located in Johnson Tower/College Hall and Eastlick Hall. These facilities are used by faculty who have major, longstanding,

and ongoing extramurally-funded research programs. Yet in the final report from the Association for Assessment and Accreditation of Laboratory Animal Care International (AAALAC) following their October 2012 site visit, the JT/CH vivarium was placed on the "mandatory" list. Thus, our continued accreditation by AAALAC *requires* that the JT/CH vivarium be closed or substantially renovated. Our campus vet, Dr. Steve Russell, in consultation with Facilities Operations, has determined that renovation of the facility is cost-prohibitive and may in fact be impossible. The other CAS vivarium, located in Eastlick Hall, does not have adequate space for current JT/CH users. In order to sustain the JT/CH users, including anticipated new hires, alternative vivarium and laboratory space must be secured within the next six months. Dr. Russell is exploring a possible move labs and vivaria into Wegner Hall, but to date no plans have been finalized, and parties from other colleges may also be vying for that space.

Additional concerns about maintenance and renovation of existing space throughout CAS were a recurring theme in discussions with chairs and directors. Departments lack sufficient funds for upkeep and renovation of existing space. Moreover, high costs and lengthy waits associated with repairs and renovations carried out by Facilities Operations are a universal problem. Many chairs, directors, and faculty who have pursued such projects have found these costs prohibitively expensive, not only because of high labor expenses, but also because of high administrative fees. At times, results of renovations are also unsatisfactory. Communication regarding facilities problems can prove difficult, and is often left to department administrators who may not have a full understanding of technical issues or of the organizational structure of Facilities Operations. Thus, faculty and staff concerns about building facility issues are not always accounted for or communicated reliably.

In our meeting with Facilities Services, representatives acknowledged problems facing academic units with regard to cost and delays, and noted that there is currently a 16-18 month backlog of repair and renovation projects. This situation has been exacerbated by budget cuts, especially over the past two biennia. High costs are driven by administrative expenses and prevailing state wages. Facilities Services is researching ways to bring these costs down, and Capital Planning and Development is working with outside contractors to fast track certain critical projects, when funds allow.

Finally, allocation of space is also a concern for CAS units. Chairs called for a transparent process for research space allocation across the College. In addition, space within buildings occupied by CAS units, but controlled by outside areas, should be evaluated to make the best use of limited resources. For example, basement rooms in Webster that are currently used as general university classroom and video conference space would be prime laboratory space, especially for vibration sensitive work and for work involving large and/or heavy equipment necessitating access to the building loading dock.

The Subcommittee offers the following specific recommendations:

1. *CAS should advocate for funds, especially from the Central Administration, to address infrastructure issues at all levels, from construction of new buildings and major renovations to repair and maintenance of existing research space.* Central funding is essential for CAS units whose mission does not result in the generation of large F&A revenues, and investment in improved infrastructure for units with externally funded research programs will significantly enhance their productivity and funding potential, resulting in higher future F&A revenue.
2. *CAS should designate a college-level Facilities Coordinator to address current and future facilities concerns.* The Facilities Coordinator will establish a CAS Facilities Condition Index based on the infrastructure needs of units that can be used to prioritize facilities renovation and maintenance projects and plan for future infrastructure needs. The Facilities Coordinator should have appropriate expertise to understand the technical issues underlying facilities problems and to interact with faculty and with Facilities Services to advocate for the needs of faculty in college units. The coordinator can work with Facilities Services to explore ways of reducing costs and lead times, and make use of capabilities at Technical Services to provide lower-cost and more

rapid solutions involving non-structural work. Representatives from Facilities Services used the College of Veterinary Medicine as a successful example of having a designated position of Facilities Coordinator.

3. *Active participation of CAS in the Capital Development Plan is essential to ensure that longer-term infrastructure needs are met by major building renovations and/or new buildings.* Currently, the University is developing a Capital Development Plan to address these issues. Academic units need to express these needs to CP&D by fall of 2013. The plan will be presented to the Regents in May of 2014 and brought to the legislature in January 2015. Since CAS occupies many of the older buildings in the campus core, yet has no building renovation in the top 15 of the WSU Ten Year Capital Plan despite many urgent needs articulated above, representatives from CP&D suggested that we emphasize the need for renovation to modernize our buildings to meet current and anticipated demands.

Physical Infrastructure: Major Instrumentation

In addition to collecting information from department chairs and center directors, the Subcommittee consulted with the following individuals toward assessing major instrumentation needs: Dennis Dyck (Professor of Psychology and Veterinary Medicine, Spokane), V. S. Manoranjan (Senior Associate Dean for Faculty and Academic Affairs), John Roll (Associate Vice Provost for Graduate Education and Scholarship, College of Nursing, Spokane), Pari Sengupta (Senior Scientist, Applied Sciences Laboratory, Spokane), Paul Whitney (Senior Associate Dean for Research and Graduate Education, CAS). Although many other individuals have a clear stake in major instrumentation, time constraints precluding the Subcommittee from casting a wider net.

A college of arts and sciences at any large research institution has a wide range of major instrumentation needs. Here at WSU, some of these needs are being met soundly, whereas others are not. State-of-the-art research facilities at the Institute for Shock Physics (ISP), and the Franceschi Microscopy and Imaging Center (FMIC) are clear strengths of the College. Thanks to sound oversight by Center Directors Yogi Gupta and Michael Knoblauch, respectively, these centers play an vital role in driving the core research mission of CAS and the University. Regular and strategic investment in these and other CAS strengths is essential in the upcoming years if we wish to maintain or improve our standing relative to our peer institutions.

In contrast to facilities available at ISP and FMIC, other major instrumentation needs have been overlooked or disregarded entirely. Perhaps the most conspicuous example of this is a complete lack of magnetic resonance imaging (fMRI) capacity for functional studies of the human brain. *This has left WSU a generation behind our peer institutions in critical research on human neuroscience.* Thus, even though CAS faculty and graduate students have made core contributions to neuroscience by uncovering cellular processes of learning and memory, describing important mechanisms of auditory and visual information processing, elucidating the role of brain dopamine systems in motivation, and discovering mechanisms of neural plasticity that give rise to adaptive behavior, almost all of these contributions have come from faculty working on animal models of learning and behavior. These faculty use techniques that are highly sophisticated (e.g., single cell recording), yet cannot be employed with humans due to their invasiveness. Our strong animal neuroscience program evolved in part because it did not face the limits of technologies for studying similar processes in humans.

Technological developments in neuroimaging, which are not available to CAS faculty or students, make it feasible to study basic neural mechanisms of learning, memory, and other cognitive processes in humans. Indeed, since the mid to late 1990s, a neuroscientific revolution has swept the study of human behavior, yet WSU has been left behind our peer institutions given lack of investment in imaging technologies. Importantly, opportunities to uncover the neural substrates of human behavior have led to major shifts in the missions of federal funding agencies. For example, the National Institute of Mental

Health has moved away from behavioral research in favor of translational research that involves basic science aimed at elucidating the neural underpinnings of psychopathology. A similar shift in focus is evident in the NIH Neuroscience Blueprint. In addition, the NIMH Strategic Plan specifies a number of objectives that can only be advanced with modern neuroscience technologies, including (1) building an integrative science of brain and behavior, (2) developing more reliable, valid diagnostic tests and biomarkers, and (3) defining the genetic and environmental risk architecture for mental disorders. Neuroimaging research also comprises a large portion of the National Science Foundation budget, and is used extensively in basic science aimed toward elucidating central nervous system substrates of vision, audition, speech, memory, etc. Thus, to obtain federal funding, it is no longer sufficient to study behavior or behavior disorders without probing their neurobiological substrates. It is therefore of utmost importance that we increase our capacity for conducting neuroscience research with humans here at WSU.

The Subcommittee offers the following specific recommendations:

1. *Immediately form an interdisciplinary Neuroimaging Initiative Committee (NIC), with the long-term objective of establishing a research-dedicated neuroimaging facility in Spokane, Eastern Washington's major population center*. The NIC should be populated with individuals across campuses (Pullman, Spokane), colleges (CAS, Nursing), and departments (e.g., Biological Sciences, Psychology) who have a stake in conducting neuroimaging research with humans.
2. *Solicit a preliminary report to the President and Provost from the NIC in which (a) funding opportunities, (b) research programs, and (3) CAS and University standing relative to our peers will all be enhanced through infrastructure investment in human neuroimaging*.
3. *Identify a broad network of individuals across campuses, colleges, and departments who will use an imaging facility in their work*. This is an essential prerequisite to a major instrumentation grant (see below).
4. *Initiate discussions between the Dean's Office and Central Administration about the importance increasing our human neuroimaging capacity, and the need for infrastructure investment from the University, with the objective of receiving both renovation and matching fund commitments for major instrumentation proposals* (see below).
5. *Identify an interdisciplinary team of faculty to write major instrumentation grants (e.g., NSF, Murdock) to fund MRI*. Expertise already exists on campus for accomplishing this objective. However, major instrumentation grants require much more University-wide integration than single-investigator-initiated grants. It is therefore recommended that Principle Investigators receive some negotiated course reduction or other remuneration for this activity.

Physical Infrastructure: Teaching and Creative Activities

General University Classrooms (GUCs) and video conference classrooms (about 136 rooms). The General University Classrooms Committee (GUCC; Debra Carlson, Budget Office, Chair), which reports to the Provost, is responsible for upgrading and maintaining these facilities. The Committee has a 10-year replacement plan and a prioritized list of classroom needs. Statistics on how often classrooms are used, and numbers of students occupying each are reported to the State, with direct implications for future budgeting. Priority for upgrades is determined partially by how much use each classroom receives.

Departmental teaching spaces and teaching labs. These spaces tend to be smaller and, according to the GUCs Committee, less frequently used than general university classrooms. A likely reason for this is that departments lack a sustainable source of capital for maintaining these spaces, and for teaching infrastructure more generally. Equipment upgrades and remodeling for these spaces are funded internally through allocations by the Dean.

Department Chairs have comparatively more influence over infrastructure needs for research spaces

and equipment than for teaching-related infrastructure. In our meetings with chairs, however, almost all expressed dismay with the fact that departments lack a sustainable source of capital for maintaining shared rooms, labs, and equipment teaching. More specifically, chairs mentioned the following difficulties with teaching infrastructure:

- department laptops used for teaching are not being replaced or maintained. One department expressed its inability to regularly replace its four laptops used for teaching.
- need for more computer labs/resources for graduate students.
- no fixed-term replacement cycle for equipment such as faculty computers and labs.
- archaic lab equipment for teaching, some of which has not been updated for generations.
- no college-level recapitalization program, which should be established so CAS infrastructure needs are dealt with uniformly across the college. That is, a single recapitalization fund should be established by CAS to finance various infrastructure needs.
- all classrooms should be furnished with projectors and computers so that instructors do not have to bring their own.
- classroom projection systems in select buildings are old and in need of replacement.

Aging instructional facilities, including classrooms, teaching labs, and studios, were identified as a problem by several department chairs. Instructional spaces are divided into two groups. Smaller studios, labs, and classrooms are viewed as departmental spaces, with fiscal responsibility assigned to these units. Large lecture halls, auditoriums and classrooms fall under the direction of the GUCC. They are currently working with a consultant to evaluate the condition of classrooms, auditoriums, teaching labs and studios, and instructional support facilities. It was emphasized that the Dean of CAS should be vocal to the GUCC the concerns about our instructional facilities.

The Subcommittee offers the following specific recommendations:

1. *Develop a Technology Replacement Initiative (TRI), to replace computers used by faculty for research, teaching, and creative activities. WSU stands out among its peers in lacking such a program*. Faculty in need of replacement computers could apply for funds on 5-6 year rotating cycle. One idea for funding such a program is to 'hold' faculty replacement lines for a year, when possible, with saved monies being directed to TRI.
2. *Appropriate Minor Capital Improvement (MCI) funds be to upgrade facilities*. At present such funds are very limited, but might be expanded through the aforementioned mechanism.
3. *Establish an Aggregate Project List (APL) to address concerns in departmental instructional spaces*.