

Report of the LAS Faculty Excellence Task Force

The Task Force studied the strategic plans submitted by the departments and schools in LAS with the goal of identifying compelling, cross-cutting research topics, already with some momentum in our college and across campus, that could animate innovative hiring initiatives. We offer the following eight topics for consideration. Please keep the following points in mind as you read about these ideas:

- The first two, “Ethics & Social Responsibility and Cultural & Intercultural Competence, should be seen in two ways: for hiring as explained above and in addition, as imperatives that should guide initiatives related to the other six topics.
- All eight topics have the potential to attract significant funding from foundations and federal agencies.
- All eight topics have the potential to synergize with activities in other colleges and institutes across campus, with LAS taking a leading role.
- Mentions of LAS departments, schools and other units are meant as evocative examples, and not as exhaustive or exclusive lists.

In working together to produce this report, we greatly enjoyed the experience of learning about worlds beyond our own disciplinary silos. We believe that our collaborative experience is suggestive of how fruitful these kinds of multidisciplinary conversations can be across the College.

If you and the various LAS strategic planning groups wish to delve more deeply into any of the topics described below, members of the Task Force would be pleased to engage further.

Ethics & Social Responsibility

Etymologically, the word “ethics” means customs, habits or dispositions, and is concerned with what is good for individuals or for the collective. As such, ethics are always relational. Ethical considerations involve philosophical, religious, and cultural systems of belief and practice. Whenever we engage with social life, social change, social identity and the like, we take up the relationship between ethics and responsibility.

The kinds of debates, innovation, and social transformation that are at the heart of the mission of the public research university have always been implicated in ethical concerns and debates. Questions of ethics are inherently transversal and transnational: they affect the business world, the public sector, the military, the law, politics, bioethics, medicine, and technology. Ethical debates are also at the very foundation of some of the greatest works of literature and art in all cultural contexts.

No matter how innovative our technological, scientific, or humanistic research may be, it always should be framed in the context of its ethical and social implications. Innovation and the production of new knowledge are not enough; as scholars, teachers, and mentors of the students who will shape the future we have the obligation to think about the repercussions of our work in

the context of ethical ideals and socially responsible practices, both locally and globally. Innovative and award-winning faculty members in many units of LAS are already bringing issues of ethics and social responsibility to the fore across the whole university. In spite of those strengths, at present we lack dedicated opportunities and resources that would allow faculty to work intentionally and collaboratively on the links between ethics and social responsibility. There also are complementary strengths in Law and the College of Agricultural, Consumer and Environmental Sciences (ACES), and scientific work related to brain science at the Beckman Institute and genetically modified organisms at the Carl R. Woese Institute for Genomic Biology (IGB) that could provide the basis for new scholarship.

Cultural & Intercultural Competence

LAS is home to globally recognized research that investigates the factors that define, constrain, and distinguish human cultures, such as climate, environment, and material resources; language; race and ethnicity; gender and sexuality; shared histories and traditions; and religious and political ideologies. Such research allows us to understand, assess, and appreciate the multiple cultures to which each of us belongs, to recognize the actual and potential tensions among cultures within the USA and across the world, and to discover strategies for overcoming the conflicts that inevitably will arise in open, pluralistic, democratic societies. LAS units do most of this work for the entire university. From campus diversity, social equity, and inclusion to global impact, the university cannot accomplish its strategic priorities without the wide-ranging cultural expertise of LAS researchers, including those located in units such as the School of Literatures, Cultures and Linguistics, the Illinois Global Institute (IGI), the LAS Global Studies Program, Illinois International, the School of Earth, Society, and Environment (SESE), and in departments such as English, History and Communication. Faculty with global expertise routinely partner with campus research units. For example, the 2020-21 theme for the Illinois Program for Research in the Humanities (IPRH) will be “The Global and its Worlds” in collaboration with IGI, and LAS faculty are deeply engaged in the Carle-Illinois College of Medicine. The Unit for Criticism and Interpretive Theory also routinely has the global in its sights. The need for global perspectives, global partners, transcultural competence, multilingualism, and international expertise on every issue we engage has never been greater. LAS is well-positioned to capitalize on existing strengths to lead in this area.

Social Inequality & Poverty

Poverty and inequality have profound personal and societal consequences, and recent campus initiatives have bolstered the research opportunities for those studying poverty/inequality. In addition, the university has an existing network of poverty and inequality researchers approaching the threshold needed for a powerful research center. These three factors support an expansion of this area of research and scholarship.

Despite years of economic growth and multiple policy interventions, inequality and poverty remain stubbornly high in Illinois and the broader United States (US). Indeed, levels of economic

inequality in the US are the highest they have been since the great depression. Outside of the US, the situation is even more dire: over 3 billion people live on less than \$2 per day. The short- and long-term consequences of poverty are enormous both for individuals and society. Inequality and poverty touch all aspects of life, including health, well-being, education, development, relationships, financial inclusion, and mortality. With such a pernicious impact on individuals and society, poverty and inequality are important scholarly issues for many units in LAS and are high priority targets for funding agencies and foundations.

The Chancellor's office has recently called for an increased focus system-wide on issues of inequality, materially bolstering the resources for poverty/inequality research. In support of the Chancellor's call, the Center for the Social and Behavioral Science (CSBS) has initiated a program intended to leverage the existing strengths in LAS and beyond to address these pressing societal issues. Illinois' investments in the areas of inequality and poverty provide a timely opportunity for LAS to recruit scholars.

Addressing issues of inequality is a critical, unifying issue for many social and behavioral science researchers, especially in LAS. Research questions on inequality and poverty resonate with departments including Sociology, Anthropology, Political Science, Economics, Communication, Psychology, and SESE and IGI. Despite the theoretical research commonalities across these disciplinary units, their collective expertise has yet not been harnessed into a focal theme.

Understanding Data and Technological Transformation

Across the globe it is well recognized that the technological revolution is changing the way we work, feel, eat, sleep, learn - the way we live in every dimension. There also is a growing global call to acknowledge that we need more data and interpretive frameworks for appreciating what these accelerating changes mean for human society, now and in the future. LAS is uniquely equipped to lead campus in its determination to be a driver in the space of data and technological transformation, broadly conceived. LAS has both breadth and depth in the social sciences and the humanities -- the very disciplines and interdisciplines where, according even to technology gurus, there is the greatest need to study technology as a social and cultural phenomenon.

In the Humanities we have prominent big data-oriented scholars in departments such as English and History, and strong connections to the iSchool. IPRH already is active in this space, hosting a conference and receiving research-related funding from internal and external sources.

In the social sciences, there are prominent big-data oriented scholars in departments such as Psychology and Political Science. This also is an area of emphasis for CSBS. Possibilities for novel collaboration also exist with IGB and the Beckman Institute, with several groups generating big data of strong scientific and societal relevance.

Environmentalism

Confronting environmental issues including changes in climate, the impact of global warming, and the role of individuals and societies in dealing with these changes is both a grand challenge of our time and a cross-cutting topic that impacts many units in LAS in the humanities, social sciences, and life sciences.

For example, Environmental Humanities is a vibrant arena of research and teaching that is very strong on campus, crossing many units and disciplines. Last year and this year it has been the focus of the Mellon Emerging Areas grant (PI: Bob Morrissey, History). There also is an Environmental Writing minor overseen by Gillen Wood (English and Geography/GIS) who works as associate director of Education and Outreach in the Institute for Sustainability, Energy and the Environment (iSEE). And there have been numerous environment-related conferences on campus in the last two years, including major ones hosted by the Unit for Criticism and Interpretive Theory and Landscape Architecture. The Unit plans one on “planetarity,” which will surely have environmental themes, in spring 2020. When the Mellon-sponsored Environmental Humanities theme is over in spring 2020 there will be several new undergraduate courses on this subject available. Perhaps most significantly, we see dissertation projects rooted in Environmental Humanities coming from departments like English, History and Spanish and Portuguese, which suggests how widely the impact of this field is on future researchers in the core humanities and beyond. It goes without saying that all these projects are extremely interdisciplinary. As the field continues to expand, humanists will be seeking technical and scientific knowledge and scientists will, in turn, need expertise in social and cultural studies to move their work forward. This is, in other words, a scholarly arena where LAS can foster critical synergies.

Environmentalism is, of course, also a social and behavioral science issue as it both affects and is affected by societies and individuals. Environmental changes threaten the stability of countries and the economies that these countries rely on, which is the purview of fields such as Economics, Sociology, Geography, and Political Science. In turn, communicating the perils of climate risks and dealing with behavioral and attitude changes related to environmentalism are the focus of researchers in departments such as Communication and Psychology.

Another dimension to this topic is that societies face enormous changes as our natural, built, and social environments degrade and inequalities in access to essential resources and services increase. These societal grand challenges are a major opportunity for the Natural Sciences within LAS, with their existing expertise in the research of the physical processes that govern earth’s systems and affect human existence on earth.

Important topics include how to mitigate weather and climate risks and impacts on land and water resources, and various dimensions of human health and food supply and quality. This is a theme that is cutting across many departments within LAS including those in SESE, the School of Chemical Sciences, the School of Integrative Biology, and the School of Molecular and Cellular

Biology (e.g., Atmospheric Sciences, Chemistry, Entomology, Geology, Geography, and Microbiology), Math, Statistics, and with possible connections to ACES, IGB, the Interdisciplinary Health Sciences Institute, iSEE, and Beckman. Cutting-edge approaches to tackle these questions include remote sensing, geographic information system technology, analytical chemistry, and ecology, areas where the University of Illinois has already a strong presence and where several departments intersect. There also are obvious connections to the Understanding Data topic.

Remote sensing techniques can be used to detect and understand changes in Earth's atmosphere, geosphere, and biosphere, to relate human migration to changes in physical and social environments, and to understand how air pollution threatens human health. Geographic information system technology is instrumental to relate natural disasters to human infrastructure, to understand urban growth's impact on agriculture and water resources, to relate energy resources, including renewables, to human consumption and demand, and to understand how social and spatial processes interact to shape the Earth's natural and built environments. Sophisticated ecological sampling and modeling can be used to study how climate change will affect infectious disease, including some of the deadliest diseases on the planet, which are vectored by insects.

Social Connectedness

Connecting with others is a key activity according to decades of interdisciplinary theory and research. Drives for social connectivity are manifest in ties such as friendships, family relationships, community groups, work teams, religious organizations, gangs, volunteer associations, cults, political affiliations, athletic teams, and activist groups. The social dimensions of brain development, the role of physiological response in emotional states and cognitive judgments, the foundations and outcomes of isolation, the capacity for social media to bridge distances between people, and the social biases that foster conflict, discrimination, and even violence – these are just some of the arenas in which LAS faculty research shapes conversations, both academic and popular, about how people connect (or fail to connect) as individuals, communities, nations, and global citizens.

The limits and possibilities of social connectedness are intrinsic to human activity, impacting the business world, the public sector, the military, local communities, families, global politics, and bioethics as they intersect with medicine, law, and technology. Accordingly, it is crucial to prepare students who understand how and when social connectedness is nurtured, protected, ignored, and exploited.

Given its already rich history of faculty research in and around these issues, LAS is poised to build on existing strengths to become a nationwide leader in this domain. Many units in the college contribute to understanding issues of social dialogue, affiliation, and belongingness, such as Anthropology; Communication; the units represented in the School of Literatures, Cultures and Linguistics; Economics; English; History; IGI; Linguistics; Philosophy; Psychology; Political Science;

SESE; and Sociology. Envisioning how to create intellectual glue – scholarly forms of social connectedness – between and among these units and their faculty is key to keeping LAS in the vanguard of research in this space.

Human Sociogenomics

Sociogenomics is a subdiscipline at the interface of the biological and social sciences that integrates genomics, molecular biology, neuroscience, behavior, and evolutionary biology to elucidate the two-way relationship between genes and social behavior. Sociogenomics seeks to understand how genes influence brain and behavior and how the social environment “get under the skin” to affect the genome, especially gene expression. With this conceptual construct, social scientists are able to develop explanations of social behavior that draw on data and models from the biological sciences to better understand the microfoundations of human behavior. At the same time, life scientists have become aware that macro-models of societal behavior, developed by social scientists, can inform their understanding of how biology affects social behavior.

Social scientists seeking to explain the factors influencing health outcomes, including depression and anxiety, have found that advances in biology give them access to means of measurement that have not been previously available. For example, one can trace the effect of chronic poverty in childhood to poor health in midlife by identifying gene expression patterns in inflammatory markers in adults with different life histories. One can also study epigenetic changes in DNA that affect gene expression and that have proven responsive to stress. In the future, these environmental effects can be quantified more precisely with to-be-designed biosensors, to further understand how environmental factors affect the genome and downstream measures of health and wellness. Advances in the study of genomics have shown that gene expression plays a dynamic rather than deterministic role in shaping human behavior.

The complex and multivalent relationship between the life sciences and the social sciences has only begun to be explored, and LAS is positioned to be a global leader in this emerging area of research. There already is excellence in several domains of sociogenomics in the College, including in Psychology, Political Science, SIB and MCB. CSBS and IGB could help develop this cross-college effort.

Plant Photosynthesis

Photosynthesis is the direct or indirect source of all of our food and most of our energy. Recent concern over stagnation in improvement of crop yields has prompted a major drive to harness understanding of photosynthesis to increase crop yields both for food and energy security. A special challenge is that these improvements need to be achieved in conjunction with global change and with diminishing resources of water and nutrients, demanding higher sustainability.

The University of Illinois has led the world in photosynthesis research for six decades, and the Departments of Plant Biology and Biochemistry are among the units that have formed the core of that excellence. Looking to the future, the topic does and should spread far beyond these Departments to include other departments in LAS such as Chemical and Biomolecular Engineering, and departments in SESE, ACES and the College of Engineering. This opens up significant opportunities for several departments to lead breakthrough advances, in partnership with the traditional campus strengths.

This initiative would be strengthened by an already outstanding research infrastructure in LAS, ACES, and IGB. For example, SoyFACE is now the largest outdoor facility in the world that studies how major food crops respond to global climate change. The fully instrumented bioenergy plots at the Energy Farm are the only ones nationally where carbon, greenhouse gas and nitrogen fluxes are being investigated for different ecosystems at a large scale. The Realizing Increased Photosynthesis Efficiency (RIPE) program, funded by the Gates Foundation, is the largest single project globally, focused on engineering photosynthesis for increased sustainability and food security.

Respectfully submitted,

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