HARVARD IS A PLACE OF UNPARALLELED INTELLECTUAL RICHNESS AND VITALITY. THE REAL OPPORTUNITY OF HARVARD IS . . . TO HAVE THE CHANCE TO PUT YOUR IDEAS INTO CONVERSATION WITH OTHER POINTS OF VIEW, OTHER EXPERIENCES, AND DIFFERENT METHODOLOGIES ACROSS A STUNNINGLY BROAD RANGE OF DISCIPLINES. THIS EXCHANGE IS EXCITING AND UNPREDICTABLE, AND SOMETIMES IT OPENS UP ENTIRELY NEW POSSIBILITIES FOR RESEARCH AND TEACHING.

CLAUDINE GAY
Dear Colleagues,

It is my pleasure to present the Dean’s Annual Report on the activities of the Faculty of Arts and Sciences (FAS) during Academic Year 2018 (July 2017 through June 2018).

Having started my tenure as Edgerley Family Dean of the Faculty of Arts and Sciences just days before the start of the fall term, I report to you here on the accomplishments achieved under the leadership of my predecessor, Dean Michael D. Smith. His drive to solve problems, openness to new ideas and novel ways of doing things, and commitment to advancing our mission of teaching and research are well known, and clearly evident in the pages that follow. I hope that our conversation about leadership and the opportunities and challenges before our Faculty (page 5) gives you a view of the Mike I have come to know—a leader with the wisdom of many years of distinguished service on his side, but also a funny and kind person who was committed to my success, and to that of all faculty who take on hard tasks in support of this institution. I am enormously grateful for the strong foundation that his leadership has provided as I step into this role.

Harvard is a place of unparalleled intellectual richness and vitality. The real opportunity of Harvard is not just the ability to work with the best people in the world in your field, though that is certainly an important part of it. It is to have the chance to put your ideas into conversation with other points of view, other experiences, and different methodologies across a stunningly broad range of disciplines. This exchange is exciting and unpredictable, and sometimes it opens up entirely new possibilities for research and teaching. The Quantitative Biology Initiative is a case in point (page 8). Conversations between biologists and colleagues in quantitative fields like mathematics, statistics, and engineering have resulted in a groundbreaking new approach that harnesses vast quantities of data to examine fundamental questions in the life sciences. This is taking shape as a new way of both supporting research and of training the next generation to connect fields and ask questions that can only be answered at the intersection of disciplines. The potential of this approach is as big as the questions are important, with gains to be made in our understanding of how living systems not only work but also go awry, giving new perspectives on disease.

At the New Faculty Institute a few weeks ago, I couldn’t help but feel rising excitement as I looked around the room and imagined all the things that are now possible with the arrival of each new faculty member to our campus. Our faculty represents possibility—of ideas to be explored, connections to be drawn, moments of transformation and
expansion to come for our students, and a future that we can define together for our community. In the “Faculty Trends” section of this report (page 13), we see that over the past 10 years, we appointed 364 ladder faculty, and as a result our faculty has gained extraordinary scholars and teachers, enhancing our intellectual depth and breadth and furthering our interdisciplinarity. Our searches have benefited from strong practices and broad candidate pools. The tenure track, after a decade of development, is now working well and yielding results. And, as a faculty, we are giving thoughtful attention to the important roles we play as mentors in helping our tenure-track colleagues further develop as researchers, teachers, and citizens in the academic community.

The “Financial Report” (page 18) provides a picture of significant achievements in the face of adversity. After a decade that has in many ways been defined for the FAS by the global financial crisis and its lingering aftereffects, the FAS has, through strong leadership and partnership across our many units, achieved budgetary balance in the modified Generally Accepted Accounting Principles view used by the University, a meaningful indication of stability and health. Beyond this significant achievement, the past 10 years have also seen important investments in our faculty and our students. One such investment is the Dean’s Competitive Fund for Promising Scholarship, which launched in Fiscal Year 2017. Since that time, the faculty awarding committee has provided more than $4 million in support of 103 compelling faculty projects across the three FAS academic divisions and the John A. Paulson School of Engineering and Applied Sciences (SEAS), with awards of between $5,000 and $50,000. The range of funded projects is an exciting view into a vibrant and ambitious faculty. In the coming year, we will continue to work carefully to set priorities, confront shared challenges, and make the meaningful investments necessary to advance our teaching and research mission.

As we look from the achievements of the year behind us to the possibilities of the year ahead, I am guided by our fundamental commitments. We aspire to excellence in teaching, research, and creative expression; to an environment in which every member of our community can do their best work and achieve their full potential; and to preparing our students for lives of leadership and service to the world. I look forward to collaborating with you to advance our shared mission.

Sincerely yours,

Claudine Gay
Edgerley Family Dean of the Faculty of Arts and Sciences
Wilbur A. Cowett Professor of Government and of African and African American Studies
You have worked together for many years. Can you talk about your relationship and why it has been so successful?

Gay: To start, Mike really wants everyone who works with him and for him to succeed. That comes through clearly in your interactions with him. I also appreciate his decision-making style, which is very disciplined. He begins with a clear set of principles; is methodical about applying them; and then is straightforward in his communication about all of it. So you always understand his position and how he arrived at it. There’s not a lot of guesswork, which is good for me because I’m not good at guessing. He actually just says what he really means. His decision-making never feels ad hoc.

Smith: I got to know Claudine through the search we did for the divisional dean of social science. From day one, we started chatting about where FAS was going to go, what the College could do, and what we should try to achieve with the Graduate School. I’ve always felt she’s a person with whom I could work deeply. I love the way she thinks and the way she works through a problem: trying to understand exactly what’s going on, but also how we got there and what we are trying to accomplish. And then working
with her is just a delight. She’s always prepared. I never have to worry that there’s something that hasn’t been thought through. FAS will benefit from her leadership, her instincts for what kind of things we need to know, what things we might be able to do, and what tradeoffs we may have to make. In almost all the decisions you make, there are tradeoffs to be made. And her instincts on how to both treat people and push forward on our mission have been spot on.

**Gay:** What I have learned from working with Mike is how important it is to own the impact of your decisions and the tradeoffs you make. Never pretend that when you’re saying “no” to something or someone it’s not disappointing for them to hear “no.” Tradeoffs are part of life. They’re part of leading and that should be acknowledged. It’s an insult to pretend that a decision that is unpopular is anything but unpopular.

**Who are the people you have sought out for advice?**

**Smith:** There are very few people who understand the complexity of the role, so I’ve found it extremely beneficial and helpful to have individuals I can talk to. For me, it’s been a group of different individuals, including former deans of FAS. Henry Rosovsky is someone with whom I’ve regularly had lunches and conversations when problems came up. It’s a different world and context today than when he was dean, but I certainly found it constructive to hear how he thought through different but similar problems. It helped me think more broadly about what it is we had to do to come out on the other side as best as possible. Then there are also leaders here across the University. Obviously, this role has a strong relationship with the President, and I think I’ve had a strong relationship with President Faust in my time here. We had a lot of honest, straightforward, difficult conversations. She’s seen a lot, and I benefitted from her mentoring. I’ve gotten to know some of the members of the Corporation quite well. They have been terrific sounding boards about how I could push forward, what I wanted to do in this role, and how I could grow. And then I also looked externally for others in unique places: the deans of faculty at institutions like Yale, Princeton, and Stanford.

**Gay:** It’s good to hear that you consulted with former FAS deans because I intend to do the same. I will try and respect your sabbatical, but I won’t bend over backwards to respect it! I would add that in my social science role I talked a lot with the divisional deans. Outside University Hall, I consult widely and seek out many perspectives as the issues change. That’s been my style for a while.

**How do you feel your scholarship has informed, or will inform, your work as FAS dean?**

**Gay:** I’m an empirical political scientist, and my research is very data driven. That’s how I’ve approached my work in this role and how I make decisions. I always like to be informed by data when making decisions. I don’t like to get too far in front of the data I have.

**Smith:** Unsurprisingly, given my background, I’m very data driven as well, though not exclusively. Data tells you some things and can inform a lot of thinking, but some problems are complex. You have to stay true to who you are. I’m an engineer, so I’m going to approach some of the problems as an engineer would. I’m happy to hear how someone in the humanities or social sciences thinks, but you should know where I stand and how I talk about different issues. It’s also been helpful for me to pull from other parts of my life. Yes, I am a scholar, and I know what it means to teach and mentor undergraduates and do leading-edge research. But I also worked in the commercial world starting a company. When we wanted to start an FAS initiative, I could look at what we did starting the company and what might benefit us here in terms of skills and strategies even though it’s in a different context.

**What are some of the challenges you will face or have faced as dean?**

**Gay:** The need to make tradeoffs—all the time—is an overarching theme. Harvard faculty are incredibly ambitious, and they have lots of ideas, many of which you entirely want to get behind; but the resources are finite, and we can’t pursue all of the new ideas, especially if we aren’t willing to give up on the old ideas. That just hangs over everything.
Smith: Challenge is sometimes taken to be something negative. For myself, a job always has to have challenges, and there has to be a variety of challenges to keep me interested. I think you and I are very much the same in this way. You’re going to meet every challenge, exceed it, and make it something we benefit from. As dean, we decide which ones are the most important, which ones get to shape us, to keep us at the leading edge. Then we get to what Claudine is saying. Oftentimes, the first thing you hear on some particular challenge coming from faculty is, “We need to go do X. We need the funds to start doing X.” It always comes in as a need first and then the real conversation happens: “Who is going to lead X for us?” If none of our existing faculty have the bandwidth to lead it, perhaps it is not the right thing for us to do right now. However, when the faculty are committed and feel responsible for the new initiative, that’s when great things will happen.

You love to run. You love to swim. Talk about what that outlet provides you.

Gay: I love to challenge myself physically—that’s the main appeal. But also running is so simple and uncomplicated; it’s just the best way to start the day.

Smith: It’s all for the physical aspects that studies show are good for your health. I don’t do it so much to compete or to make myself better; I do it a lot for the community. My masters swim club is a group of people who don’t care who I am. If I’m not there in the morning working out, they want to know why I couldn’t get up and get there. It’s a great way to be grounded.

Gay: That’s the complete opposite experience I want to have when I work out! I don’t want to interact. I don’t want to talk. The couple of times when I’ve tried to run with other people, each time it was done I’ve had to go on another run by myself. I relish the time alone and the quiet—just me and my Beyoncé playlist.

Smith: Well, I can understand. I have my head in the water so nobody can talk to me.

How do you balance work and private life?

Smith: Not well.

Gay: I married well and that solves a whole bunch of problems. I’m not a role model for anyone when it comes to work-life balance. I try to go to bed early. I prioritize sleep so that helps me.

Smith: I absolutely agree. It’s hard like most jobs in life. This one is particularly hard because the scope is huge, and there’s always something happening that can pull you in. You can’t have rigid boundaries. I tried, for example, to tell my family Friday nights are our nights, but every once in a while there’s an event. You have to have a partner who is supportive and understands, and then try to set expectations and try and meet them as well as you can. It’s the best I’ve been able to do.

Gay: Something I’ve always admired about Mike is that, in three years of working together, I never received an email from him at some weird hour in the morning or night and almost never on the weekends. It’s a subtle, but powerful message that you can have a life, and that you don’t need to be available at all hours. I’ve really appreciated that. And so has my family.

Dean Smith, what advice do you have for Dean Gay?

Smith: FAS and Harvard are extremely lucky to have Claudine’s leadership. My piece of advice is to have fun. It’s a great job. You meet so many wonderful people. I always try to do something different each year to see some corner of FAS that I only kind of knew existed and just learn.

So should we give the last word to Dean Gay? Any final thought for Dean Smith?

Gay: Do not go far.
QUANTITATIVE BIOLOGY

Working across disciplines, the Quantitative Biology Initiative is bringing together physical and life scientists to answer fundamental biological questions.
With the launch earlier this year of the Quantitative Biology Initiative, Harvard scientists set out to use the combined power of biology and quantitative fields like mathematics, statistics, and engineering to take on some of the most fundamental questions in the life sciences.

“Today, understanding complex biological processes requires expertise in multiple areas of science, from biology to mathematics,” said Golub Family Professor of Stem Cell and Regenerative Biology Paola Arlotta, who serves on the Initiative’s Executive Committee. “As a result, discovery relies more and more on collaborations among researchers in these different fields. Quantitative biology is at the heart of all this.”

The Quantitative Biology Initiative hopes to use that integrated approach to find answers to some of the most fundamental questions about living systems—ranging from how they grow, divide, and pattern themselves to how they process information about their surroundings and use that information to make decisions to thrive and reproduce. Answers to these complex questions will help researchers make predictions not only about how living systems work, but also about how they go awry, giving new perspectives on disease.

Organizers of the Quantitative Biology Initiative will bring together biologists, mathematicians, and engineers to develop new ways to measure and collect data on biological systems, and new analytical tools for sorting through massive biological data sets and identifying the most important information. These advances will help researchers to understand how cells make decisions, organize themselves into tissues and organs, and adapt and evolve in response to their environment.

Previous page: The cover image shows the locations of many neurons from the temporal lobe of the cerebral cortex of a human. Three types of cells are visible: pyramidal excitatory neurons (red) interdigitate with inhibitory interneurons (blue) and supporting cells (Glia in green). This image was constructed from a large serial section electron microscopy data set that exceeds 1 petabyte in size. This work was done by the Lichtman Lab in collaboration with the Google Connectomics group. Image rendered by Daniel Berger, Ph.D.
“At first blush, the Quantitative Biology Initiative seems odd—isn’t being quantitative a necessity for any scientific enterprise?” said Venkatesh Murthy, chair of the Department of Molecular and Cellular Biology and a faculty affiliate of the initiative. “Many subfields in biology already have a strong tradition of quantitative thinking. What is new... is the astonishing growth of experimental techniques that necessitate novel approaches to organize and interpret the sheer volume of data being collected. We are talking not only about the analysis of data, but also about novel conceptual and theoretical advances to explain the data in a concise manner that has been the norm in physical sciences. Models and theories that are as complex as the real thing are of little use, and shaving down parameters to get to the essence of phenomena is vital. I am sure the Quantitative Biology Initiative will prompt a diverse set of researchers to aim for such synthesis, and educators to equip the next generation of scientists to solve important biological problems.”

“Over the past decade, there has been unbelievable progress in the sciences, so much so that what scientists can accomplish today would have sounded like science fiction just a few decades ago,” said Sharad Ramanathan, the Llura and Gordon Gund Professor of Neurosciences and of Molecular and Cellular Biology and a faculty affiliate of the Department of Molecular and Cellular Biology and a faculty affiliate of the initiative. “Many subfields in biology already have a strong tradition of quantitative thinking. What is new... is the astonishing growth of experimental techniques that necessitate novel approaches to organize and interpret the sheer volume of data being collected. We are talking not only about the analysis of data, but also about novel conceptual and theoretical advances to explain the data in a concise manner that has been the norm in physical sciences. Models and theories that are as complex as the real thing are of little use, and shaving down parameters to get to the essence of phenomena is vital. I am sure the Quantitative Biology Initiative will prompt a diverse set of researchers to aim for such synthesis, and educators to equip the next generation of scientists to solve important biological problems.”
“The landscape of science is changing rapidly,” Ramana-
than continued. “This initiative will enable our students
and faculty to stay competitive and, more importantly, to
push the boundaries of science, statistics, applied physics,
and engineering so that a decade and a half from now, our
students will set the standard in addressing the fundamen-
tal questions in the life sciences.”

“The Quantitative Biology Initiative has at its heart a rather
bold idea,” said Executive Committee member and Profes-
sor of Stem Cell and Regenerative Biology Mark Fishman,
“which is that computers somehow will bring order to data
of astounding dimensions outside our ability to compre-
hend by standard approaches. To achieve that requires a
mind-meld of biologists with computer scientists, at both
the faculty and student level. Today, individuals who
combine both sensibilities are rare. So how do we convince
faculty to embrace such efforts and students to take a
chance on these new directions?”

One way is by choosing to investigate biological fields that
attract a wide range of faculty across multiple disciplines
and to develop a critical mass of expertise. One such field,
Fishman said, is the idea of “emergent behavior.” Ques-
tions of how groups generate behavior—whether cells in
an embryo, fish in schools, or humans in tribes—could
have immense implications in diverse fields from evolu-
tion to medicine.

Vinothan Manoharan, Wagner Family Professor of Chemi-
cal Engineering and Professor of Physics and Initiative
Co-Director, said that as scientists start finding answers to
these kinds of questions, they need to make sure that
everyone can speak the same scientific language. To make
that possible, ensuring that biologists receive training in
the quantitative and physical sciences—and that mathe-
maticians and physicists are educated in the life sciences—
will be at the heart of the new initiative, said Manoharan
and Initiative Co-Director Sharad Ramanathan.
“We hope to make cross-fertilization of short courses and seminars routine, so it becomes part of Harvard’s proto-plasm, and to devise new courses in which we pose broad problems addressable only by the combination of biological and quantitative thinking,” Fishman said.

A forerunner to the Quantitative Biology Initiative’s educational approach is Andrew Murray’s LS50: Integrated Science. Open solely to first-year students, the course is built around the premise that biology, chemistry, mathematics, and computer science are inseparable—scientists use each one to inform the others. That includes everything from hands-on computer programming work to original research in the lab.

“We have a class motto, ‘By any means necessary,’” said Murray, the Herchel Smith Professor of Molecular Genetics and Director of the John Harvard Distinguished Science Fellows Program. “Our mission, more than it is to teach any particular fact or concept, is to make them think like scientists. This is part of a single intellectual tradition, which is to make closer links between the life sciences and the physical and mathematical sciences…and that’s all to the good.”

The initiative’s educational focus, Manoharan and other faculty said, is already paying off in two key ways—by building a community of like-minded researchers eager to collaborate and by making those collaborations more productive since both sides are better able to understand each other.

“Our initiative pioneers an educational approach that crosses traditional fields of study and gives our students an opportunity to gain direct training across traditional fields,” Arlotta said. “The result, we think, will be a new class of student and future researchers able to connect fields and ask questions that can only be answered at the intersection of specialties.”
FACULTY TRENDS
Office for Faculty Affairs
Academic Year 2017–18
Faculty Trends

During the 11 years of Dean Michael D. Smith’s term as Edgerley Family Dean of the Faculty of Arts and Sciences (FAS), the FAS appointed 364 new ladder (i.e., tenured and tenure track) faculty, and the ladder faculty grew from 709 to 734. The FAS gained extraordinary scholars and teachers during this time, increasing our intellectual depth and breadth and becoming more interdisciplinary.

During Dean Smith’s deanship, the percentage of women in the ladder faculty increased from 25% to 31%, and the percentage of minorities increased from 17% to 23%.

Figure 1: Ladder-Faculty Counts in the FAS, Fall 2007 to Fall 2018

Figure 1: Ladder-Faculty Counts in the FAS, Fall 2007 to Fall 2018. The ladder-faculty ranks include Convertible Instructor, Assistant Professor, Associate Professor, Professor, Professor in Residence, and University Professor.
In the last five years, the percentage of offers to women has been almost 50%, with 47% of offers in the last Academic Year (AY) made to women.

After many years of roughly constant percentages, we also made significant progress in racial and ethnic diversity, with 43% of offers in AY 2017–18 made to minorities and 19% of offers made to Black or African American, Hispanic or Latinx, and Native American candidates.

Our new colleagues are doing exciting research, from exploring the complex relationships between Native and African people in early America to analyzing the drivers of economic inequality and declining intergenerational mobility in America, to studying the genetic bases for cellular reprogramming that make limb regeneration possible in certain animals, though not yet in humans.

This coming year, we are asking departments and SEAS areas to continue to follow best practices in faculty searches, as outlined in such documents as the FAS Appointment and Promotion Handbook and “Recommendations for Ensuring the Integrity of Faculty Searches.” In addition, Mahzarin Banaji, the Richard Clarke Cabot Professor of Social Ethics and FAS Senior Advisor on Faculty Development, will continue to work with departments, areas, and individual faculty. If we search as widely as possible and make every effort to build broad candidate pools, we will increase our chances of finding the most gifted scholars and teachers.

Dean Smith’s tenure was also characterized by the sustained development of an effective tenure track. Over several years, FAS policies and procedures to support a working tenure track were developed, implemented, and refined on an annual basis. As this system took hold within the departments and SEAS areas, the FAS began to, and continues to, see positive results. Of the faculty who started as assistant professors between AY 2008 and 2013, 50% achieved tenure. As a comparison, 38% of the assistant professors hired in the 10 years prior to AY 2008 achieved tenure. In the last academic year, of the 14 faculty (8 men and 6 women) who completed tenure reviews, 11 were promoted (5 men and 6 women).

With the tenure track working well and yielding results, the FAS has been focusing on faculty mentoring and professional development, which FAS Dean Claudine Gay has identified as a continuing priority for AY 2018–19. Departments and areas invest a tremendous amount of time and effort in bringing outstanding faculty to the FAS. Supporting these new colleagues' professional development, work-life balance, and sense of inclusion and belonging is essential to retaining these faculty and enabling them to do their best work. We ask senior colleagues to continue to mentor their tenure-track colleagues and help them to develop as researchers, teachers, and citizens in the academic community.
Toward this end, we encourage all faculty to reread the detailed *Guide to Faculty Mentoring in the Faculty of Arts and Sciences* and to have regular conversations in their departments about whether their mentoring plans and practices are working and, if not, how they might be improved. In addition, the FAS Office for Faculty Affairs (OFA), which piloted a laser-coaching program in the past few years, will provide more in-depth, individual coaching opportunities for tenure-track faculty this coming year.

As in past years, in AY 2018–19 OFA will be offering several professional development workshops for faculty. Professional development occurs throughout the career of a faculty member, punctuated by important moments such as becoming a manager to staff or taking on a leadership role, such as Director of Undergraduate Studies, Director of Graduate Studies, or Chair of a department or area. For this reason, OFA is planning management training workshops on topics such as how to be an effective manager of staff and how to give and receive feedback. We will also be offering our yearly training for new or returning department chairs and center directors. Additional targeted programming for tenure-track faculty may include a workshop on writing reference letters for students or postdoctoral fellows and honing evaluative skills for serving on search committees or prize committees. In addition, the Division of Science, in partnership with Research Administration Services and OFA, is planning events to help faculty to develop their research management skills. The Standing Committee on Women will again run its highly successful minisymposia, this year focused on the Division of Science and SEAS; these events enable tenure-track faculty to present their work to a broad network of colleagues.
Financial Report

We are pleased to present the FAS’s financial results for Fiscal Year 2018, the fiscal year ending June 30, 2018. This report briefly explains how our financial resources supported our academic mission over the last year, and it provides a preview of the financial opportunities and challenges facing the FAS in Fiscal Year 2019.

We present our financial results in several views.

**Modified GAAP:** The Modified GAAP (Generally Accepted Accounting Principles) view describes the FAS’s internal income statement in a way that is consistent with the University’s external statements. In this view, depreciation — or the annual wear and tear on physical assets such as buildings and equipment — is included as an operating expense, while principal payments on internal debt are excluded.

**Managerial View:** The Managerial view focuses on our overall change in cash, where a surplus represents an increase in reserves and a deficit represents a decrease. The Managerial view incorporates all cash expenses, whether generated through operations — the teaching and research activities at the FAS — or through capital expenditures (i.e., construction activities and the purchase of certain equipment).

**Consolidated and Core Views:** The FAS budget is both large (approximately $1.5 billion) and highly decentralized, with significant spending occurring within the direct control of over 150 separate departments, centers, libraries, and museums. Within the Managerial view, the Consolidated Statement of Activity presents important categories of revenues and expenses of the FAS as a whole. This view combines what is typically called the “Core” of the FAS (which comprises the faculty, the College, and the Graduate School of Arts and Sciences) together with the other major affiliates of the FAS (i.e., Athletics, the Division of Continuing Education, Dumbarton Oaks, the Harvard College Library, the Museums, and the John A. Paulson School of Engineering and Applied Sciences). Given that the Core constitutes about 71 percent of both the FAS Fiscal Year 2018 consolidated revenues and consolidated expenses, we also present a Fiscal Year 2018 Statement of Activity for just the Core.

**Balance Sheet View:** Finally, we include a Balance Sheet for the FAS, another statement that measures the FAS’s financial health. The Balance Sheet displays the FAS’s assets, liabilities, and accumulated results of its operations over time as of the end of each of the last two fiscal years.

It is important to note that these results are not audited, nor should they be confused with the audited financial statements of Harvard University as a whole, which are published in the fall by the University finance organization. However, we have worked with the University to ensure that our figures and theirs agree.
Overview and Outlook

This report and the accompanying Financial Statements expand on the following highlights:

- The FAS completed Fiscal Year 2018 operations with a $3.1 million surplus in the Modified GAAP view. Achieving Modified GAAP balance at the school level has been a University priority for several years, albeit one that has been challenging for the FAS to achieve. This achievement is particularly notable for taking place in a year with no growth in the endowment distribution, which is far and away the FAS’s largest source of revenue.

- In the Managerial view, the Consolidated, all-funds result was a surplus of $64.8 million. Like last year’s result, this figure reflects a restructuring of the debt the FAS is scheduled to pay to the University for past and current capital projects. This restructuring has the effect of creating a modest cash cushion in lieu of a cash deficit, which is much needed in a time of financial challenges and uncertainty.

- These positive results were also enabled by higher than expected revenue growth resulting from receipt of current use gifts in the final year of the Campaign for Arts and Sciences. Other growth occurred in non-federally sponsored funding and royalty income.

- As it has been since the recession, expense growth was again tightly controlled.

- The FAS continued to invest strategically in its research and teaching mission and the student experience. To enable the FAS’s capacity for investments, we continue to focus on conserving unrestricted cash and reserves. The aforementioned debt restructuring was related to this objective.

- The FAS’s balance sheet reflects an increase in Total Net Assets of $1.0 billion or 5.6 percent during Fiscal Year 2018, mostly attributable to endowment earnings of 10 percent, offset by increased internal debt obligations related to House Renewal and the debt restructuring.

- These accomplishments reflect the academic leadership and management focus of FAS Dean Michael D. Smith, who concluded his 11-year tenure as Dean on August 15, 2018. The FAS is indebted to his strong financial stewardship.

- Newly appointed FAS Dean Claudine Gay will harness the financial resources of the FAS to continue to invest in the scholarly enterprise, innovative teaching, and the student experience; and to advance scientific discovery and path-setting creativity.
In the Modified GAAP view, the FAS financial results continue the steady improvement seen in recent past years. Through continued discipline and management actions, we achieved a modest surplus of $3.1 million, an improvement of $14.8 million from the Fiscal Year deficit of $11.7 million. Excluding SEAS, the Modified GAAP surplus for the FAS was $10.0 million. This is the first Modified GAAP surplus the FAS has achieved since that standard was introduced at the school level in Fiscal Year 2014.

In the management or cash view, the bottom-line results reflect a Consolidated, all-funds surplus of $64.8 million, an improvement of $4.8 million over Fiscal Year 2017. The Consolidated, all-funds result for the Core alone improved from a surplus of $50.6 million in Fiscal Year 2017 to a surplus of $62.9 million in Fiscal Year 2018. Core unrestricted results are closely watched as they are what fill or drain the FAS cash. The Core unrestricted results showed modest improvement in Fiscal Year 2018, a surplus of $25.0 million compared to a surplus of $21.4 million in Fiscal Year 2017. As recently as Fiscal Year 2014, the FAS had a Core unrestricted deficit of $55.1 million.

The surpluses in the management views are directly attributable to a restructuring of internal debt according to an agreement entered into with the University in May 2017. This agreement was first described in last year’s Annual Report. Without it, the underlying unrestricted operating results would be a deficit of approximately $2 million.

The level of reserves provided through the refinancing is a welcome, but modest, cushion against future shocks and uncertainty. It is well below what might be considered adequate for an entity of the FAS’s size. The Core unrestricted surplus of $25 million is equivalent to 4 percent of Core unrestricted revenues, compared to a benchmark of 10 percent considered minimally adequate. The surplus would provide only about 14 days of unrestricted cash needs. Moreover, the short-term relief it affords will give way to higher costs in time as the FAS compensates the University for reduced payments in the early years. The action was undertaken to enable needed investments and other budgetary remedies.

Revenues. In the management view, on a Consolidated, all-funds basis, the FAS’s total revenues grew by $47.1 million or 3.2 percent over Fiscal Year 2017 levels. The most significant contributor to this growth was an increase of $17.8 million or 18 percent in Current Use Gifts during the final year of the Campaign for Arts and Sciences.

Though delivering considerably fewer new dollars to the budget, two other bright spots in revenues were non-federally sponsored funding and royalties, which grew 4.7 percent and 85 percent, respectively. More detail on these and other Fiscal Year 2018 revenues can be found in the accompanying Managerial Report.

Campaign Highlight. As of June 30, 2018, the Campaign for Arts and Sciences raised $3.28 billion in gifts and pledges to advance Harvard’s fundamental commitment to discovery and the education of leaders to make a positive difference in the world. The achievement reflects the cumulative generosity of nearly 74,000 households who have made over 302,000 gifts to the FAS, and the efforts of more than 2,000 volunteers.

The extensive impact of the campaign on our campus and in the lives and work of our students and faculty can and will be felt in many ways, including: more named chairs and research funding for our outstanding faculty; investment in specific academic programs such as Creative Writing; ongoing support for our leading financial aid program; transformed spaces for teaching, studying, living, and socializing; innovative approaches to teaching and learning in the digital age; innovative teaching and cutting-edge research at SEAS; and increased professional and social experiences for students.

The agreement in effect creates a new schedule for repaying internal debt to the University, which has been borrowed by the University treasury and loaned to the FAS with interest, consistent with the practice across Harvard for financing some capital improvements. Specifically, in the new schedule the FAS will pay the University the same amount each year over 20 years, rather than greater amounts in the beginning and lower amounts in the future. This produces near-term budget relief in years 1–10 in exchange for greater payments in years 11–20. The payment schedule incorporates an interest charge at the rate of 4 percent per year.

To maintain consistency in our financial statements, the regular amount of debt service will continue to be budgeted and reported. The level payment contemplated in the agreement will be effectuated through an operating loan which, when combined with the debt service payment schedule, will yield a net flat payment for 20 years.
Expenses. In the management view, on a Consolidated, all-funds basis, the FAS’s total expenses grew by $32.3 million or 2.3 percent over Fiscal Year 2017 levels. (For comparison, the most recent HEPI index measure of inflation in higher education costs (2017) was 3.7 percent.) Approximately two-thirds of the FAS’s expenses relate to people and space, and these major categories are described below. Details on other expense categories can be found in the accompanying Managerial Report.

Salaries, Wages, and Benefits. Faculty and staff compensation (salaries, wages, and benefits) represents the largest component of the FAS budget. Salaries, wages, and benefits increased by $22.9 million or 3.4 percent over Fiscal Year 2017 levels. Contributing to this increase were: annual merit increases for FAS faculty, exempt and union employees, which averaged 1.8 percent; the impact of position reclassifications, equity adjustments, other pay increases, and modest growth in FTEs, which totaled 1.0 percent; and growth in benefits of 5.7 percent.

In Fiscal Year 2018, FAS faculty and instructors stood at a count of 1,061 Full-Time Equivalents (FTE) compared to 1,055 in Fiscal Year 2017. Please see the “Faculty Trends” section of the Annual Report for a more detailed discussion of faculty counts and growth.

We continue to monitor staff headcount closely and look for opportunities for efficiency. On June 30, FAS staff stood at a count of 2,683 FTE compared to 2,669 FTE at the end of Fiscal Year 2017, a net increase of 13.6 FTE (+0.5%). This growth in positions is roughly one-third of the average staff growth over the last several years. Position growth was concentrated in DCE (+20.4 FTE), representing continued strategic investments according to multiyear plans. Other areas of growth were offset by small declines resulting in overall stable levels in other units.

The FAS’s position review process, which places extra scrutiny on positions funded with unrestricted dollars, is more streamlined for positions on sponsored research funds or restricted funds. In addition, positions on sponsored or other time-limited funding sources are almost always term limited to match the availability of the funds supporting them. Accordingly, over 75 percent of the net new positions last year were term limited.

Operation and Maintenance of the Physical Plant. The FAS’s large physical plant is comprised of over 10 million square feet in 267 buildings. The FAS’s Office of Physical Resources and Planning (OPRP) staff is dedicated to stewarding FAS facilities through professional building management, investment in life-safety, and building systems renewal. The costs to operate the FAS’s facilities increased by $10.1 million or 5.7 percent in Fiscal Year 2018, from $178.8 million to $188.9 million. This represents 13 percent of total expenses. (Including debt service and depreciation, the facilities-related costs rise to $350.6 million or 24 percent of total expenses.)

Both the operating budget and capital budget of the FAS reflect significant spending on facilities renewal. In Fiscal Year 2018, FAS invested $52.2 million in operating funds and $203.7 million in capital expenditures for the renewal of FAS Core, Affiliates, and SEAS facilities. Included in that investment, $123.2 million was invested in the House Renewal program this year. These investments, which represent a renewal level of 3.8 percent, were significantly above the general guideline for renewal investment (2.5 percent of Current Replacement Value, or CRV). Even without the significant investment in the Houses, FAS was at a renewal level of 1.9 percent and the FAS Core was at 2.4 percent. Major renewal projects and other notable capital investments during Fiscal Year 2018, including House Renewal, are described later in this report.

In the continuing program to enhance facilities management and improve efficiencies, substantial progress has been made in integrating and coordinating the FAS, Athletics, SEAS, and Library building operations teams. In Fiscal Year 2018, the new management team for the museum complex was fully established and successfully implemented improvements to operations and maintenance. This complex contains the Museum of Comparative Zoology, the Museums of Science and Culture, the Center for the Environment, the Peabody Museum, and the Museum of Comparative Zoology Laboratory Building.
Financial Aid. Undergraduate financial aid has grown significantly since Harvard’s leading-edge financial aid initiative (HFAI) was introduced, from $73 million in Fiscal Year 2004 to $192.5 million in Fiscal Year 2018. The growth reflects Harvard’s deep commitment to access and affordability, with policy changes that eliminated or significantly reduced the parent contribution for many aided families; and increased efforts to recruit, admit, and support excellent students regardless of their financial need. During Fiscal Year 2018, approximately 54 percent of undergraduate students received some level of scholarship grant aid to Harvard.

Dean’s Competitive Fund for Promising Scholarship. In the fall of 2017, Dean Smith launched the inaugural competition for the Dean’s Competitive Fund for Promising Scholarship to provide support for eligible projects at critical stages when external funding may not be attainable. Since that time, the fund has provided $4 million in support of 103 compelling faculty projects across all three FAS divisions and SEAS.

Dean’s Leadership Fund-Sponsored Investments. The most flexible, current use and unrestricted funds supplied through the Campaign for Arts and Sciences — combined with a budget process grounded in priority setting and savings where possible — supported a number of investments in Fiscal Year 2018, including: creation of the John Harvard Distinguished Fellows (a new program to create community among postdoctoral fellows); FirstGen (modest to low income) and diversity and inclusion programming; strategic planning and curriculum development in Government and Economics; a partnership between Philosophy and SEAS, Embedded EthiCS; changes in engineering advising; new initiatives in QuantBio and Data Science; planning for a new Creative Writing space in Lamont; a new Ethnic Studies track in History and Literature; HumPop, pop-up humanities events on campus; and expansion of the Classroom to Table program that brings faculty and students together in informal settings.

Research Computing. Strategic investments in professional staff, advanced cyberinfrastructure, data centers, and networking have advanced FAS Research Computing (FASRC) to become a world-class facility in partnership with the MGHPCC, a consortium with colleagues at MIT, Boston University, Northeastern University, and the University of Massachusetts. FASRC has grown from 3 staff to 23 cyberinfrastructure professionals supporting nearly 100,000 processors of cluster computing, virtual machines, databases, and 40 petabytes of storage for 600 research groups across all of FAS, SEAS, and other Harvard professional schools.

College Investments in Student Academics and Social Experience. Key Harvard College investments during Fiscal Year 2018 include the following:

- The launch of the General Education revision, with the development of the first 33 courses out of a targeted 100. Outreach to students regarding the impact of the transition is continuing pending full implementation in 2019.

- New approaches to Advising, including the Fall 2018 pilot of a new approach to first-year advising using 20 non-ladder faculty to decrease dependence on a large corps of staff volunteers and to increase training and accountability.

- A new associate dean for academic support to focus specifically on issues of inclusion and belonging in the classroom.

- A new integrated Dean of Students Office to strengthen student affairs coordination for all four classes.

- Leveraging the renewed houses to enhance residential life initiatives.

- Preparing for the Allston campus by implementing the first phase of changes to class meeting times beginning in Fall 2018 in Cambridge.

- Working with HUIT to implement a multiyear IT strategic plan aimed at substituting a limited number of feature-rich, HUIT-supported products for less effective, aging systems and applications.
Graduate Student Benefits and Support. In Fiscal Year 2018, the Graduate School of Arts and Sciences continued its program to enhance support for its students, including the following:

- **Care.com.** In direct response to student advocacy, in October of 2017, GSAS began providing all Ph.D. students with free access to a Care.com membership, subsidized in-home child and backup adult care, and subsidized backup care at child care centers.

- **Professional Development Fund.** In September 2017, GSAS began disbursing up to $2,500 of professional development funds to any Ph.D. student who entered in Fall 2015 or later and has begun or passed their third year of study. The awards are intended to enable the acquisition of skills or competencies that will enhance the competitiveness of students in the job market and serve students well in their professional careers.

- **Continuation of Financial Aid Benefits.** Ph.D. students within GSAS continue to receive a financial aid funding package that includes tuition, a stipend, health fees, and parental accommodation support for at least five years, an investment that can total more than $80,000 per year in direct funding.

**Capital Investments**

**Faculty and Research Related.** In Fiscal Year 2018, approximately $19.3 million was spent on 34 capital projects relating to faculty appointments and to facility needs for changing research. The latter included construction supporting the complex installations of new Hitachi tunneling electron microscopes and molecular beam epitaxy, microscopy, clean-room modifications, tissue culture and pure water systems renewal, and changes to studios.

**Classroom Modernization.** The FAS routinely modernizes and upgrades teaching facilities. In Fiscal Year 2018, a major project was completed in Vanserg, including a new cluster of nine classrooms, common space, the installation of a new elevator, and code-compliant, accessible restroom facilities. A new undergraduate teaching lab was constructed in the Biological Laboratories (Bio Labs). Planning was completed and construction begun on a major reconfiguration of Robinson Hall, the home of the History Department. When complete in Fiscal Year 2019, this project will provide a new elevator, enhanced modernized classrooms, reorganized and improved History Department administrative and faculty offices, and graduate student areas, all made fully accessible for the first time.

**Program Support.** Projects undertaken and/or completed in Fiscal Year 2018 enhanced the FAS student and research community activities on campus. These included a major renovation of the Grays Hall basement that now provides an accessible and welcoming home for the Office of BGLTQ Student Life and the Office of Inclusion and Diversity. With donor support, a covered batting facility was installed for the softball and baseball teams, and a new scoreboard was installed in Blodgett for the swimming community. An instantly popular commons area was constructed in the Bio Labs for the MCB and OEB community, providing an attractive space for informal gatherings and casual interactions.

**Infrastructure**

A very substantial number of projects were completed in Fiscal Year 2018 that renewed infrastructure in the FAS facilities and campus. Phase one of a multiyear program to convert all building control systems to the next-generation technology launched with the conversions of Bio Labs, Sherman Fairchild, Hoffman Labs, and the Museum complex. New roofs were installed on Cabot House, Vanserg, Music, and Matthews Hall, and window renewal projects were undertaken in the Bio Labs, Lehman Hall, and 9 Kirkland. Mechanical, HVAC, and/or electrical system renewal projects were completed in 45 buildings, including the GSAS Dorms, Pusey, the Observatory, Bauer Labs, Carpenter Center, and William James Hall. A massive, multiyear HVAC replacement project in the Bio Labs has progressed well, with large sections of the building now using the new systems. As part of this project, a number of program facilities within the building have been completely renewed, including the construction of a new undergraduate teaching lab. There are over 30 science research groups in the Bio Labs who will benefit from this extensive project. A major program of concrete repair in Harvard Stadium was substantially completed during Fiscal Year 2018.
**House Renewal.** Fiscal Year 2018 saw continued progress in the FAS’s massive undertaking to renew the undergraduate residential Houses. Following four successful projects (Stone Hall of Quincy House, McKinlock Hall of Leverett House, Dunster House, and Winthrop House), the construction of Lowell House continued on budget and on time with completion expected in August 2019.

Design and planning for Adams House renewal continued in Fiscal Year 2018, with the Phase 1 (Claverly Hall) construction documents completed and put out to bid in August 2018. The first Phase of Adams House renewal is expected to commence construction in June 2019, and the design of Phase 2 (Apthorp House and Randolph Hall) is expected to commence in December 2018 (both pending Executive Committee and Corporation approval). The three phases of Adams House will be completed over three academic years, with the full renovation of Adams House expected to be completed in August 2022.

As of Fiscal Year 2018, FAS has renewed a total of 569,000 gross square feet of House space including 1,099 beds. All renewed buildings are now fully accessible to those with mobility challenges, and all work has improved the operational efficiency and sustainability of the houses. All renewed buildings have attained at least a LEED Gold certification with Stone Hall attaining LEED Platinum certification. The renewed buildings also now accommodate 39 percent more academic and social spaces, mostly through renewing and repurposing lower-level spaces.

In Fiscal Year 2018, the FAS invested $127.5 million in House Renewal project construction and planning, as reflected in fixed assets, and spent $13 million on House Renewal-related operations. In addition, the FAS paid the first year of debt service payments in the amount of $3.8 million. As of June 30, 2018, the Corporation has authorized the FAS to spend $873.9 million.

**Operational Enhancements**

In Fiscal Year 2018, the FAS continued to participate in and partner on key university and FAS-specific administrative and technology initiatives. This year marked the completion or final stabilization phase for several multiyear efforts: the transition and rollout of the new VOIP Harvard Phone technology; the modernization of the financial reporting project, OBI; the new travel and expense tool, Concur; and the FAS Aurora faculty and staff appointment system. Concurrently, major new administrative initiatives began in the final months of Fiscal Year 2018: the university-wide procurement system, known as Buy to Pay; Position Tracking and Reporting; and new fileshare technology implementation.

Continued focus on risk mitigation, stronger data management and analytics, as well as a goal of efficiency/transparency were inherent in all projects. Also central to the work were stronger communication, change management strategy, and varied training offerings to meet users’ needs for new and existing systems.

Transparent governance for university and FAS initiatives continues to be a priority through representation on the University Project Review Committee (PRC), the University Information Technology Capital Review Board (ITCRB), and the FAS Project Review Board (PRB), as well as various project engagement, steering, and executive committees.
Balance Sheet View

As set forth in the Consolidated Balance Sheet, Total Net Assets for the FAS grew by $1.0 billion or 5.6 percent during Fiscal Year 2018, from $18.5 billion at the close of Fiscal Year 2017 to $19.6 billion at the close of Fiscal Year 2018.

The major factor contributing to the Fiscal Year 2018 increase in Total Assets was a gain in investment returns in Fiscal Year 2018, reflected in a 6.8 percent increase ($1.1 billion) in Long-term investments (primarily endowment) after withdrawals for operation. Fixed assets, net of accumulated depreciation, increased by 6.4 percent or $129.6 million, primarily related to the House Renewal project. Deposits with the University increased by $72.1 million or 11.2 percent over the prior year, reflecting debt-funded construction. There was a 14.5 percent decrease (-$111.3 million) in pledges receivable, reflecting the FAS’s success in converting pledges to support the School into cash.

At June 30, the FAS’s Long-term investments (primarily endowment) stood at $17.0 billion, up 6.8 percent or $1.1 billion from $15.9 billion a year ago. In contrast, this figure was $16.7 billion at the close of Fiscal Year 2008, before dipping to a low of $11.7 billion at the end of Fiscal Year 2009. At $17 billion, the FAS’s endowment position in nominal dollars at June 30, 2018 surpassed for the first time its value as of June 30, 2008. The loss of real value over that time is significant, however, despite a relatively low-interest environment. Adjusting for higher education inflation, the endowment would need to be $20.3 billion today, significantly more than the actual value of $17 billion, to have the same buying power today as in Fiscal Year 2008.

Total Liabilities increased by 13 percent or $148.9 million. Predominantly, this increase related to an increase in the FAS’s long-term debt portfolio of $149.3 million. Of this total, $117.5 million related to additional Construction in Progress (CIP) loan costs incurred as the result of the completion of several House Renewal projects; $29.0 million was related to the decision to restructure the FAS’s internal debt schedule with the University.

Reflecting on the Financial Stewardship of Dean Michael D. Smith

In his earliest days as Dean of the Faculty of Arts and Sciences, Michael D. Smith instituted procedural changes and installed a data-driven culture built on principles of transparency. That leadership and astute strategy helped the FAS navigate the trials of the 2008 financial crisis, which caused a perfect storm of revenue losses, increased costs, and the prospect of large deficits.

Dean Smith and his team took immediate actions to enhance non-endowment revenues and to reduce costs, while remaining committed to making investments in four pillars of the FAS: intellectual, physical, digital, and financial.

Among the intellectual investments, the FAS Faculty has been maintained and slightly increased to its largest size and greatest degree of diversity. A faculty retirement program was instituted. The Dean’s Competitive Fund for Promising Scholarship has run four cycles, making 119 awards to 103 faculty totaling $4 million. And the annual discretionary funds for faculty research have increased as well, up to $4,000 a year for faculty not receiving external research funding.

Undergraduate financial aid has doubled, from $97 million to $199 million (Fiscal Year 2019 budget), opening Harvard’s doors to students from all backgrounds.

Organizationally, the Harvard Library and FAS libraries are now managed together under one leader. Similarly, the public faces of the FAS museums were united under the umbrella of Harvard Museums of Science and Culture with new leadership. Significant investments have been made in the Division of Continuing Education, enabling it to expand and enhance its mission of extending Harvard’s excellence to students at every stage of learning and around the world.

In the arena of physical investments, approximately $1.6 billion was spent on capital projects and facilities renewal during Dean Smith’s tenure. Half the money was dedicated to House Renewal; five projects are complete and two are underway. All have been completed on time and on or slightly under budget. Other key capital projects have included: faculty labs and offices, classroom modernization, systems improvements, and new and renewed athletics and
library facilities, notably the Science Center/Cabot project. Accessibility and environmental sustainability have improved with every project.

In the digital realm, the FAS IT and University IT organizations were merged into HUIT, enabling improved strategy and investments. Strategic investments in professional staff, advanced cyberinfrastructure, data centers, and networking have advanced FAS Research Computing (FASRC) to become a world-class facility in partnership with the MGHPCC consortium in Holyoke, MA. Other technology investments have been made across the spectrum of infrastructure, security, academic, and administrative systems.

The financial pillar has been strengthened as well. A predicted cumulative deficit of $250 million was eliminated, despite the loss of about $200 million a year in endowment distribution income. Through careful management and collaboration with the University on restructuring internal debt, the FAS has been able to avoid exhausting its most flexible reserves, which would in turn have required liquidating the endowment. Dean Smith also spearheaded Harvard’s successful Campaign for Arts and Sciences, exceeding expectations with record-breaking donations in financial aid and for SEAS. His advocacy spurred increased unrestricted giving through the campaign to create a more nimble FAS that can respond to both opportunities and challenges such as those that characterized his time as Dean.

The Outlook: Fiscal Year 2019 and Beyond

At the time of our budget submission, we projected a Modified GAAP deficit of $53 million and an all-funds cash surplus of $17 million. To the extent possible, we will endeavor to improve on these results over the course of the year, as we have done in each of the last several years. Notwithstanding the progress reported here, financial challenges will continue and are expected to deepen in the near term. Higher education is in a new economic era with revenue constraints arising from tuition affordability issues, federal research funding uncertainties, and a pessimistic outlook for investment markets, as well as cost pressures and demographic changes. To enhance stability, beginning in Fiscal Year 2019, the University has introduced, subject to market conditions, a collar on the endowment distribution such that the distribution will be bounded within a 2.5 to 4.5 percent increase for three years. This temporary step is helpful, though the constraints on our financial model will require continued discipline and clear priorities.

Within this context, newly appointed FAS Dean Claudine Gay will harness the financial resources of the FAS to continue to invest in the scholarly enterprise, innovative teaching, and the student experience; and to advance scientific discovery and path-setting creativity.

The financial performance and investments described in this report reflect the leadership, creativity, and hard work of colleagues throughout the FAS and business partners elsewhere at Harvard and the generosity of alumni.