

FAS Senate

AN ELECTED BODY OF THE FACULTY OF ARTS AND
SCIENCES
YALE UNIVERSITY

Faculty of Arts and Sciences Senate Meeting

Thursday, April 23, 2020
4 PM – 6 PM Via Zoom

In (virtual) attendance:

Senators: John Geanakoplos, Chair; Jennifer Klein, Deputy Chair; Sybil Alexandrov; Arielle Baskin-Sommers; Howard Bloch; Jill Campbell; Emily Erikson; Joseph Fischel; Alessandro Gomez; Shiri Goren; Valerie Horsley; Matthew Jacobson; Ruth Koizim; H el ene Landemore-Jelaca; Rajit Manohar; Nikhil Padmanabhan; Ruzica Piskac; William Nordhaus; Theresa Schenker; Charles Schmuttenmaer; Ian Shapiro; Paul Van Tassel

FASS Program Coordinator, Rose Rita Riccitelli

Virtual Guests: (please see attached guest list of 362 guests)

The Faculty of Arts and Sciences Senate (FASS) meeting was called to order at 4 PM by chair **John Geanakoplos** and he welcomed everyone to this Zoom meeting. He presented the minutes from the March 26, 2020 FASS meeting and asked for corrections or comments. There were no corrections or comments made. He asked for a show of hands for approval of the minutes, and it was unanimous for approving the minutes from the FASS meeting of March 26, 2020.

Mr. Geanakoplos reminded everyone that the FAS Senate elections were beginning tomorrow and that there may never be a more important time to be a senator. He announced that the slate of candidates would be sent to everyone tomorrow and there would be two weeks to vote and encouraged everyone to vote for the next generation of senators.

Mr. Geanakoplos encouraged everyone to consult their agendas, where time limits for the speakers were carefully specified. The meeting had four parts. The longest would be a discussion of the Yale Endowment and the Budget in the aftermath of Coronavirus, featuring David Swensen and four other speakers. The second would be a discussion of our online teaching experience, led by Jenny Frederick. Next would come Mayor Justin Elicker speaking about New Haven, and finally Dr. Albert Ko speaking about opening Yale in the fall.

Mr. Geanakoplos introduced David Swensen, Chief Investment Officer for the Yale Endowment, who spoke about the Yale Endowment in the current crisis. **Mr. Swensen** began by quoting James Tobin from an article titled “What is Permanent Endowment Income?” that appeared in the *American Economic Review*. “The trustees of an endowed institution are the guardians of the future against the claims of the present. Their task is to preserve equity among generations. The trustees of an endowed university like my own, assume the institution to be

immortal. They want to know, therefore, the rate of consumption from endowment which can be sustained indefinitely. Sustainable consumption is their conception of permanent endowment income. Consuming endowment income so defined means in principle, that the existing endowment can continue to support the same set of activities that it is now supporting. This rule says that this current consumption should not benefit from the prospects of future gifts to the endowment. Sustainable consumption rises to encompass and enlarged scope of activities when, but not before capital gifts enlarge the endowment. “He then talked about how Yale’s spending policies are structured and the purpose of the spending policy. He said there are two critical goals in managing the endowment. 1) Preserve the purchasing power of the portfolio in perpetuity. 2) Provide substantial, sustainable flow of resources to support Yale’s operations. As to preserving purchasing power, he believes that we have a moral commitment to donors who make gifts to endowment, to have that gift support the designated activity in perpetuity. He said that means today, fifty years from now, 100 years from now, 200 years from now and beyond. If we didn’t maintain the purchasing power and if inflation were to be allowed to degrade the value of the gift and therefore the value of the distribution to the university, as time passes the endowment would fail to satisfy the donor’s intent. Maintaining purchasing power is at the heart of intergenerational neutrality. He noted that we don’t use ordinary inflation when we calculate the purchasing power of our portfolio and the purchasing power of our spending stream. He said we use the higher education price index which tends to run a point, a point and a half, or two points higher than inflation in the general economy. As to providing substantial, sustainable flow of resources to Yale, he said that is a goal that certainly has been accomplished in the 35 years he has been at Yale. When he began in 1985, the Yale operating budget for \$450 million and the contribution of the endowment to the operating budget was \$45 million, only supporting 10% of Yale’s operation – the lowest level percentage of support in more than a century. He said that 35 years later, the budget is \$4.2 billion, and the support from the endowment is \$1.4 billion, and roughly 32% of revenues. He said that if you look at Yale’s overall budget you’re missing something very important about the contribution of the endowment to the Faculty of Arts and Sciences. He noted that the Medical School has a different business model – more grants, contracts, clinical income than it has endowment support – roughly 45% of the budget. If you exclude the medical school, endowment support for the rest of the university – FAS, Law School, SOM and the graduate and professional schools, is more than 60% of revenues. So, he noted, the endowment is truly mission critical when it comes to the core of Yale University. He then said – how do you deal with these two goals. He said there is unfortunately a trade-off – the more that you focus on the stable flow of resources, the more you introduce volatility in the purchasing power, the more you care about stable purchasing power, the more you introduce volatility into the flow of resources that goes to the operating budget. He said that the way you deal with that trade-off is by establishing a spending policy. He noted that most spending policies have two elements – a smoothing mechanism and a spending rate, and Yale obviously has a spending rate at the high end of the range for colleges and universities of 5 ¼%, and our smoothing rule is more sophisticated than a simple moving average and the way it works today is that we take the current year’s budget, multiply that by 80% and that is one element of spending. And if you’re going to spend 80% of what you spent the previous year, that introduces a strong element of stability into spending distributions year in and year out, and the remaining 20% is determined by the spending rate – the 5 ¼ % times the current endowment value so that you’re moving 20% of the way toward new equilibrium value of spending. He noted that over the time he has been at Yale, the parameters – both the smoothing component and the spending rate have changed. He said that in 1985, the spending rate was 4 ½ %, and at risk of offending the investment gods, we

decided that our portfolio had improved enough to justify 4 ¾ and then 5 and ultimately 5 ¼ and fortunately the gods have not been angered to the extent that we have been able to meet those pay-outs with room to spare. He said that as Yale's dependence on the endowment increased, we saw a need to increase the stability of the flow to the operating budget. If the endowment is only 10% of revenues, the fluctuation of the endowment matters relatively little. When you are responsible for 32, or 33 or 34% of the budget, and in the case of FAS – 60% of the budget, it matters a lot more, so we moved the weight on the previous year's budget from 70% to 80% in order to provide increased stability. He asked for any comments or questions.

Alessandro Gomez noted that **Mr. Swensen** mentioned sustainable consumption to support activities, and he noted that if we go back 35 years when Mr. Swensen started, it appears that we have accumulated quite a bit of money in the endowment so that perhaps we can relax some of the restrictions of the spending rule when we have a real crisis impending on us, and he asked **Mr. Swensen** to comment on this. **Mr. Swensen** said that there is no question that this is a wonderful time to invest. He said that the great bull market began in 1982, but if we look at the experiences of the 1980's, 1990's and 2000's, we miss the experience of the 1970's and on average, endowments lost 40% of their purchasing power during the decade of the 1970's where inflation was high and market returns were low and it was a disaster. He said he worries that people will think that he is a bit like chicken little - the sky is falling - but after having an extended period of 38 years, of extraordinary returns to all risk assets, he thinks that maintaining the discipline of a 5 ¼ % spending rate makes sense. **Mr. Geanakoplos** said that he knows that Mr. Swensen cannot tell us precisely where the endowment stands now after the recent market moves but asked if he could give us a hint of what's happened to our endowment – whether it is a calamity or whether it is bad but not so bad. **Mr. Swensen** responded that he will explain where we are today by reference to the July 1st (2019) starting point for this fiscal year, and there is only one number that matters every year and that is the June 30th endowment value and the other 364 days out of the year has really no impact on the university because we use that one evaluation when determining spending. He said that if you look at returns on the equity markets from July 1st to today, it's negative to low single digits. He said we had a peak on February 12th substantially higher than where we are now, but fiscal year-to-date the equity market posted modest losses and we are a very equity-oriented portfolio so you can imagine that our returns would be not dissimilar to those that you see in the stock market and maybe a tad better. He said we are doing a lot of scenario analysis, and when we live in normal times we can use the assumption that returns are normally distributed even if you assume that there are fat tails to the distributions that don't really have an impact on the overall analysis because they are in the tails and the tails have a low probability of happening when you do the analysis. He said he thinks that one of the major errors many observers are making is to treat the pandemic in the same manner as other financial crisis's that we have experienced in our time – 1987, 1998, 2008 – those were fundamentally financial and once the financial system regained its equilibrium, then the economy was ready to go. So, he said, he is preparing for a tough environment over the next 12-18 months. **Ray Fair** asked that if it turns out that after spending the income from the endowment, that the university is running deficits this year and next year, how will that be financed? **Mr. Swensen** said that the university has hundreds of millions of dollars in cash reserves and has substantial borrowing capacity. In 2009, he decided that Yale should maintain its triple-A rating and having access to the markets as a triple-A borrower, is enormously beneficial. He said that Yale has a strong triple-A rating today and very good access to both tax

exempt and taxable markets and that would be the way that we could finance any short-falls – that along with cash reserves that the university has accumulated over the years.

Mr. Geanakoplos introduced **Steven Berry**, the David Swensen Professor of Economics and member of the Provost's Budget Committee. **Mr. Berry** said there have been times when he had not been sure that the budgetary officials on the academic side fully understood the budget; in contrast, he feels that the current team does. He said there is currently a lot of pressure from our side of the university to break the spending rule. Some have argued that if there is a downturn, one should get the pain over and take very deep cuts right from the beginning. He said that the Provost resists this type of pressure and wants to stick with the spending rule and provide stability. Mr. Berry concurred that we should stick to the rule, and as a result, a fair amount of money will flow out of the endowment. While he initially questioned the 5% across the board cut from all units, he said he has come to support that decision because we want to maintain a substantial degree of flexibility on the upside as well as the downside. If the environment gets better, it will give us flexibility on the upside. If there is a downturn, it provides for a modest flexibility on the downside. From his perspective, this is a modest and prudent cut at this point. He said units may be asked what they would do in a sustained downturn; however, no one has asked anyone to commit to any large cuts but to consider what would happen, which he also feels is prudent and correct. He endorses these decisions to maintain the spending rule, smooth the endowment income, and think about a modest fiscal pause in the form of a 5% cut, and thinking about but not committing to actions we would take in the future. In response to **Mr. Geanakoplos'** raising the scenario that perhaps the fiscal situation is not all that bad, Mr. Berry contends this plan serves us well if, in fact, there is good news. He said that the Budget Committee is most interested in making sure that the FAS is protected from the crisis to the maximum possible, along with the Medical School and the School of Management because of the massive reduction in the Medical School's clinical revenue. Plus, they are much more driven by tuition from foreign students, who may have difficulty returning to the U.S. in the Fall. He is happy to hear that the institution overall has good borrowing power, and as a member of the FAS, he said, he wants to make sure that the FAS is protected in the long run from the crisis.

William Nordhaus, Sterling Professor of Economics, was introduced next. **Mr. Nordhaus** introduced the idea that scenario analysis and decision theory are appropriate approaches to think about decisions amid deep uncertainty; the current situation is one that he calls deep uncertainty in the sense that it is unusually high and unstructured uncertainty. It could be because of *fat tails* or because it is so far out of our normal experience. He enumerated some of the uncertainties: what the deficit of the Medical School will be; when will there be a residential college again; what will be the future of our graduate students; what will happen to the endowment? He said the temptation in budgeting is to make the best guess and then make decisions - that is the way budgeting has always happened at Yale: run a budget, argue about the assumptions and then see what happens. While this may usually be reasonable, it does not work well with deep uncertainty. Consequently, he then turned to decision theory, that builds on the work of L.J. Savage (Yale), Howard Raiffa (Harvard), and Allan Manne (Yale), from all of whom Mr. Nordhaus learned directly. He said he has applied it to some of the deep uncertainties of climate change. According to the theory, decisions are sequential: we don't make decisions once-and-for-all - we decide, we act, we learn, we act, we learn. For example, say we want to know what to do about the residential college, what to do about on-line learning, what to do

about the Medical School deficit – we’re going to make some decisions now in face of this uncertainty, and we’re going to learn something about it and then we’re going to react again and we go on. He said it requires thinking about two things – what the uncertainties are and how the uncertainties are resolved. Thinking about Yale today, we can think about two scenarios – optimistic and pessimistic. An optimistic one would be “we’re back to normal late this year and up-and-running in January.” A pessimistic one would be “we’ll be back to normal in about three years – in the summer of 2023.” These are pandemic-driven decisions. It’s a wide range, but it probably spans the plausible range of outcomes. We cannot know which one is right today, but we will know which one is going to be right by the end of the year; in fact, we’ll know by the end of the year if the optimistic one is right. He posed the question of how we should act today given this decision tree. He posed the example of on-line teaching. If we are sure of the optimistic scenario, we just muddle through now and next Fall, and then we’ll be up and running with normal teaching in January and that’s it. If we’re sure of the pessimistic scenario, he said, then we should invest massively in on-line education and even though it would be expensive, we would be way ahead of our competitors if the pessimistic scenario was right. These basic principles apply to each of the major decision areas he mentioned and require careful definition of uncertainties of the costs and how these uncertainties are going to be resolved. He asked, “is Yale doing such an analysis now?” He said he does not know but suspects in terms of the budget, Yale is not, and we should.

Mr. Geanakoplos spoke on lessons from past financial crises at Yale, offering these comments:

There are at least three lessons we might learn from previous crises. First, there have been many of them, and after all of them, Yale emerged richer than before. During the 1970’s oil embargo and stagflation, the endowment shrunk by 40% in real terms. In 1991, Yale President Benno Schmidt declared that he had just learned the shocking news that the buildings required \$1 billion of deferred maintenance when the endowment was \$3 Billion. In the 2008 Great Recession, Yale’s endowment fell by 20%. Yet, he noted, after all these financial calamities here we are at Yale in 2020 with an endowment that is now 7 times higher than the annual budget, whereas 30 years ago it was 3 times higher. Not only is the endowment greater than ever, but the Colleges and buildings are more beautiful than ever. So, the first lesson is not to panic about potential lost wealth.

The second lesson is not to try and save money by cutting things that are crucial to the core teaching mission and research mission of Yale and which will be hard to restore once Yale recovers. He noted that though the endowments and buildings have greatly improved since our three crises, the faculty has not, relative to our competition. The main reason for this is that in every crisis, we froze hiring and sometimes salaries too, and kept their growth slow for too long. These points are well documented in the FASS [Faculty Excellence Report](#). He said that freezing hiring is very tempting in a pinch. Nobody here is affected. And money is saved. But it’s an illusion that we can make up for lost hiring later when things return to normal. Faculty will leave in retirement. Others will go somewhere else. Those who remain will get another year older. The missing new faculty would have been, on average, younger, more energetic, more in tune with recent scholarship, more diverse, and more productive than the older faculty. And, he said, that absence and generational imbalance itself makes it harder to recruit. To "pause" hiring is to take a step backward. We are sometimes told that other schools are also freezing, so we won't lose ground. To the extent that they really are freezing hiring, he said, we have an extraordinary

opportunity to hire distinguished young faculty. Imagine if Yale had the only departments hiring on the junior market. Recognizing this, our well-endowed competitors almost always seem to pause less than we do. In the 2008 crisis, every university endowment plummeted and had the same financial pressures we did to cut back hiring. Yet we lost ground to almost all of our competitors, which, as after previous crises, we have not regained. Making up for lost ground is extraordinarily difficult.

An alternate narrative that some in the administration have given is that the lesson of the 2008 crisis is that Yale should have reacted by making bigger cuts in hiring just after the markets began to fall. That way, it is alleged, Yale could have reached equilibrium sooner and then resumed hiring. It is baffling how it could be argued that the best strategy for climbing higher is to start lower. The impulse to cut sooner also runs directly counter to our endowment spending rule. The Yale endowment spending rule prescribes that after an actual loss of wealth, Yale should spread the necessary reductions in spending from the endowment over many years. It formally recognizes the principle that abrupt cuts cause unnecessary damage.

The third lesson, he noted, is that in crises, faculty governance is more important than ever. He said that he began his term as Senate Chair by writing faculty about the notable tradition of Yale faculty governance, in which nearly every momentous decision, from tenure standards to freedom of expression, to co-education, to diversity was initiated by a faculty committee with a faculty chair. Those committees spoke widely about their ideas with other faculty, and their recommendations were further vetted by the faculty Board of Permanent Officers. Yale has occasionally made momentous decisions without faculty governance and many of these decisions turned out badly. For example, some years after the Doob committee recommended admitting women, President Kingman Brewster arranged a secret deal to go co-ed with Vassar without consulting broadly with faculty. Only after the plan was announced did it become apparent that the question of merging the faculties had not been thought through, and the merger was called off.

He pointed to another example from 1991, when Benno Schmidt announced his plan to shrink the faculty by 15% to meet the deferred maintenance crisis, without consulting faculty experts. He appointed a committee of chairs of the biggest departments and a few others that met to decide how to make the cuts, agreeing in the end to eliminate five smaller departments. The general faculty was enraged when they found out. A committee was appointed to examine the President's economic assumptions and evaluate the process by which the cuts had been decided. The President was forced to submit a document spelling out exactly the nature of the budget problem and the ten-year plan for coping with it. The committee found that the economics in the President's white paper was badly flawed, and that the budget problem was far smaller than the President had imagined. The committee also found that the process for deciding the cuts was flawed. Soon thereafter the Provost, the President and the Dean resigned. He tells this story not to condemn the people who made the decisions. They were the leading figures of Yale. They were all wise, and all dedicated to Yale. But they did not have the full picture. They were caught up in implementing a plan to shrink the faculty, without the time needed to examine the grand strategy, including whether such cuts were really necessary.

He said that appointing Coronavirus committees was an excellent step. The committees contain many excellent people, and they are doing vital work. He applauds the President and Provost for

establishing these committees. But the committees are all implementation committees, chaired at the very top of the structure by deans. He said that he hopes that they will be open and provide a flow of information to the faculty and are receptive to queries and suggestions. Today's Senate meeting has provided us information about the budget that none of us knew. There is time still to include the faculty in making important decisions, especially budget decisions. The university will make better decisions if the faculty are better informed and are able to participate in formulating the grand strategy.

Jennifer Klein spoke next and noted our deep concern for graduate students and recognition of what they are going through with the disruption of their work and research, situations of tremendous upheaval, unexpected family caretaking, and some even facing having COVID-19 themselves. She said there are some departments that have submitted letters to Graduate School **Dean Cooley** calling for the increase in emergency support and also the extension of one year of support for graduate students who have experienced disruption for at least a semester and summer. Other programs have suggested extending that additional year of support for graduate students in years 4-7. In response to these departmental and graduate student, Dean Cooley has put additional funding into the emergency fund for graduate students. However, it's not a universal grant; rather, each student will have to petition for emergency relief individually. For students who will graduate with PhDs in May, the GSAS has agreed to extended health insurance coverage for an additional month, from July 31st when it would end, to August 31st, when it will now end. She said to end health insurance on August 31 for those who most likely will not be employed in the Fall when we are experiencing a global pandemic is not only unjust but socially irresponsible. The GSAS dean has announced that there will be 30 Postdoc teaching positions available next year for graduate students who have completed their degrees but do not have academic jobs. Regarding extended support for current graduate students, the Dean has indicated that there will be a departmental cost. If individual departments decide to extend a year of support to graduate students who have faced disruption of their research, the department will be docked admission slots. Moreover, it is presented as a double jeopardy. Not only will a decline in admission slots against their decision to support students; the Dean specified that this reduction would be separate from the decline in admission slots that will be determined by the endowment downturn. These present potentially permanent big assaults to graduate programs, which seems contrary to the notion of "intergenerational equity." The strength of the Graduate School is part of the equity of Yale University. Additionally, this would be unfairly detrimental to smaller programs in which reducing the graduate school admissions cohort by 2 or 3 students would put that program in jeopardy. If a program normally accepts six students a year, such a reduction basically means the program doesn't have a viable cohort and thus top admitted students are far less likely to come here. If we indeed want to promote intergenerational equity, we should endorse the Graduate Student Association proposal - to ask the university to provide a greater injection of funding to the GSAS as a whole. That is the only way to truly solve these issues in an equitable and sustainable manner.

Shiri Goren spoke next. Ms. Goren said that we keep repeating the phrase "We're all in this together." She does not disagree with the sentiment, it has authenticity and truth to it, however at the same time it is not quite accurate. As part of the conversation today about the principles that should guide Yale's decision-making about the budget, there are critical concerns relating to instructional faculty. Before we embark on a discussion of priorities specifically, she asks that instructional faculty do not become an afterthought as often happens. We must consider three

points: 1) vulnerability of some of our peers; 2) equity; 3) inclusion. On the first point, she noted that instructional faculty are essential to the core mission of the university and there are concerns across the board about longstanding instructional faculty, regarding both part-time and full-time contracts that are about to expire and the necessity of health insurance. Many of our colleagues are extremely anxious and those who are on one-year or one-semester contracts do not yet know what will happen to them come June 30th, the end of the Yale fiscal year. Secondly, uniform salary freezes (or cuts) are not as equitable as they sound. Under the current circumstances, it may appear easier to make universal decisions. However, it is important to know that instructional faculty salaries span \$60K to \$80K per year; a salary freeze at these levels is significantly harder to manage than a freeze on a salary of \$150K per year. And, she noted, there are many who make much more than \$150K per year. Instructional faculty teach every single day, five days a week, yet still rapidly rose to the challenge of shifting to on-line teaching. Amid these conditions, we should be aware of our colleagues who are just trying to make ends meet, and taking away from their modest earnings would make things even less equitable. She also believes this same principle applies to the 5% cuts that departments are being asked to make. Departments and programs are not created equal and the ramification of 5% cuts take very different forms across units and divisions. Third is the question of visibility and inclusion. We were disappointed to find out earlier this week that there were no instructional faculty appointed to any of the contingency planning committees. We've acted to bring it to the attention of the administration, and as of yesterday, three instructional faculty members were added to relevant committees. She also noted that inclusion does not stop with administrative decisions and that it is also the responsibility of chairs of departments. As an example, she said that some departments still do not invite instructional faculty to their departmental meetings. She said now is the time to show empathy, respect and dignity to the hard and exemplary work of all faculty at Yale.

Mr. Geanakoplos asked for questions from the floor.

Doug Rogers from Anthropology (and former FASS senator) reminded all that in 2016 the FAS Senate Report on Faculty Diversity and Inclusion demonstrated a direct, disproportionate, and devastating link between post 2008 budget austerity and faculty diversity, not just interrupting, but in many cases undoing a decade's worth of efforts to hire and retain more faculty from underrepresented minorities and women faculty. The committee attributed this reversal to lack of attention by high-level university administrators whose attention was focused elsewhere, and to a much more defuse process in which thousands of decisions made by all of us with the goal of preserving the core mission of the university had the unintended effect of making that core more white and more male. We have made much progress since then, and we must not repeat those mistakes. He said that he is confident that the current FAS leadership will continue to focus on faculty diversity, and he is hopeful that university leadership will as well. He reminded all that recent history shows us that times of budget crisis require more, not less, attention to equity and diversity by all of us.

Emily Greenwood, Professor of Classics (former FASS senator who also served as chair of the senate), spoke next. She noted that she served on the FASS committee that produced the Report on Diversity and Inclusion. One of the most striking pieces of information that came out of that report was that in a seven-year period, the university, and FAS specifically, lost 60% or 56 URM (underrepresented minority) faculty under a minority hiring initiative. She said that she was

heartened to see an interview with **Kimberly Goff-Crews** on April 14th in her capacity of co-chair of Yale's current diversity committee saying that the work of that committee is on-going. **Ms. Greenwood** said that we cannot afford to lose attention for a moment because Yale is already playing catch-up on such initiatives and seriously behind in paying attention to diversity. We still have so much work to do.

She also said that she wants to caution us, referring to what **Professor Nordhaus** called "deep uncertainty." When administrators speak of intergenerational neutrality, we might look at what happened to the Classics Department during the last recession. The Classics Department was fortunate to have endowed funds to support learning opportunities and intellectual community in the program. Unfortunately, the wishes of donors of the past were not protected against claims of the present and we lost endowments that were set-up for Greek archeology and for the study of the Greek and Latin languages and were appropriated for all-funds budgeting. So, she said, at a time when we are trying to make a Yale education more accessible than it has ever been before, it is patronizing and unethical to ask students to give up the funds that make these educational opportunities accessible to them-- to pursue policies but make that education less rich than it was for students in the past. It's imperative we remember this when we look at intergenerational neutrality and look at the real cost in terms of Yale education in the future and what opportunities we may be taking away from our students.

Senator Matthew Jacobson spoke next. He underscored Ms. Goren's point, Mr. Roger's point and Ms. Greenwood's point. He said that he feels that we all understand our responsibility as stewards of the institution and as a faculty, we have proven ourselves to be incredible team players when it comes to taking cuts and soldiering on with the teaching mission of the university and thinks that we can be counted on to do this again. Given the extraordinary moment we find ourselves in-- not only here but across the globe-- we have to be expansive in defining what our responsibilities are in this moment. We cannot simply define ourselves as stewards of the institution, although we definitely have to do that as well. Being responsible in this moment means to be responsible educators: to take responsibility for higher education as a project, as the training of graduate students for the future of knowledge, for our students and their futures, and as the largest employer in the region, be responsible to the city of New Haven and to southern Connecticut. There are so many crucial and expansive ways of understanding our responsibility that he would hate to see us collapse everything to the brutal calculations of economics and financial concerns, and to the very narrowed possible conception of what it means to be stewards of this university. We are much more than that, and while the budget might call for certain moves, humanity and ethics call for certain others and we cannot lose sight of that.

Tim Barringer, Professor of the History of Art, thanked the FASS for all of the work that the Senate does and said that he and his department supports Ms. **Klein's** call for an immediate injection of cash for the graduate program. He also raised the issue of the danger of the permanent reduction in the total program size which is being proposed and particularly in the field of Art History. Art History is a global discipline and our faculty aim to provide teaching across an ambitious range of fields and periods. Recent faculty hires have enhanced the diversity of the department's personnel and have made powerful curricular exchanges. Each cohort of graduate students, 10 out of 280 applicants, is carefully balanced with the aspiration of insuring research continuity and teaching continuity across this area. He said we could probably handle a short-term reduction in program size to allow for sustaining some of our current graduate

students but a permanent reduction in the total program would inevitably eliminate key fields compromising the diversity of course offerings and of our research community – smaller fields such as African Art and Byzantine Art, fields where Yale has been historically a leader over generations, could simply disappear with no continuity of teaching or research. This, he said, would cause irreversible damage to the Art History sector. Moreover, we are particularly concerned because our graduate program supplies expert curators to many of the world’s great museums, so the argument that there will be fewer tenure-track academic positions doesn’t justify such cuts. So, he said, we stand against permanent cuts and program size, even as we acknowledge that a temporary reduction may be necessary.

Paul Van Tassel, Professor of Chemical Engineering and a senator spoke next. He had two questions: 1) Spending cuts in light of the global pandemic seems prudent and asked whether the amount of the endowment available to spend would follow the established Yale spending rule - that is to be fixed by formula or market value. Or in this crisis, can there be some, even if modest, deviations possible to fund some of these valuable programs moving forward? 2) He noted that opportunities may exist in this downturn in which spending money in the short-term actually saves money in the long-term. **Mr. Geanakoplos** just brought up hiring faculty in the short-term, which would not only be a great opportunity to hire faculty who we might otherwise have a hard time getting, it might be a less expensive time to hire faculty in the absence of competing bids. Mr. Van Tassel added that moving forward, it might be possible to do certain building projects more inexpensively than otherwise because interest rates and other costs are much lower. He asked how the university is considering these strategies wherein we can actually save money in the long-term.

Mr. Geanakoplos asked for **Mr. Swensen** or **Mr. Berry** to respond to **Mr. Van Tassel’s** question about whether Yale has flexibility regarding endowment spending, or would the Trustees have to weigh in and change something dramatic.

Mr. Berry said that his understanding is that this is set by the Trustees over time and that much of the pressure from outside of the university goes the other way, that is, pressure to recognize the natural reality quickly rather than later. He said that his guess is that as a practical matter, any short-term flexibility is not going to come from changes in the spending rule.

Mr. Swensen said that the structure of the spending rule actually gives an advanced look at where we are going to be so the spending for the next fiscal year – the one ending in June 30, 2021, is already set at \$1.527 billion, which is an increase over the current year of \$1.46 Billion, and the spending for the year ending in 2022 will be based on our June 30th value, so there is a substantial amount of foresight into what it is that we will have to spend, and then of course, how much of that is spent and how it is spent has to do with the administration and the corporation and not the investment office.

Mr. Nordhaus spoke and said it is his understanding that the income from endowment, which is the spending rule plus the smoothing rule, is set by policy and can be changed. Historically, half of that has gone to dedicated programs, for example the Beinecke Library, and cannot be used for other things. And, he said, about half of that goes to the center to be used for things like faculty salaries. His understanding is that actual spending from that income would be cut by 5% next year, and if this understanding is correct, that would be held in the account and would not be

swept into other accounts to be used in the future and in a way pursues flexibility for these endowed funds. He hopes that the target spending rate is not moved from 5.25% – many would like it to go up, but he thinks it will be a battle to keep it from going down. He said that his understanding of the spending cut of 5% means that the funds will not be available this year, but they would be put in a fund and be available for that fund in the future. **Mr. Geanakoplos** said that this is also his understanding.

The next commenter was a non-senator **Ian Quinn**, chair of the Music Department. Mr. Quinn commented that Yale's leaders should commit to making their decision-making processes as inclusive and transparent as possible. Leadership needs to find forms for deliberation that formally seeks deliberation from all the people representing all the caucuses in our community as the FASS has done for us today. He noted that small committees with token representatives do not do this work. He said that open meetings where we hear from familiar faces also do not do this work. We are accustomed as faculty to teaching and learning in small groups, and in medium size seminars and in large lectures, and he feels we need to deliberate together in overlapping groups in varying sizes and scopes as well. When it comes to transparency, I ask for our leaders to declare their principles loudly and frequently, and he feels that we have not heard this from our leaders. He noted, when it comes to middle managers in this university, they need to know what their total program size is, which changes from year to year, and we do not know what our resources are when it comes to our instructional faculty, which also changes from year-to-year. Regarding transparency, he said that the budget books, although it is a good initiative and are available online, unfortunately for most of us are utterly uninterpretable. He said when looking at the question about graduate school money, we see that some amount of money comes in, an amount is spent on these things, and an enormous reverse funds transfer occurs but we don't know where it goes, and we don't know where it's coming from. He asks that the university leaders make a genuine commitment to educate us on how that budget works rather than make it confidential.

Udo Schwarz, chair of Mechanical Engineering and Material Science was next to speak. Mr. Schwarz wanted to follow-up on the blanket hiring freeze that we are having. He explained that from the perspective of a smaller department, it is important to realize that this hurts small departments more than larger ones. He pointed out that Yale, even before the COVID-19 crisis, had not allocated to his small department enough resources to satisfactorily carry out our core teaching mission. While being told Yale's budget has gone up since the early 1980s, we have the same number of faculty now that we had in 1984 even though our undergraduate enrollment has increased by over 300% in the last decade alone. Consequently, we need to offer more classes just to comply with mandatory engineering accreditation requirements for our major. To do so, each year we end up having to hire several outside lecturers just to teach essential classes. He said that despite this demonstrated need, we were denied the opportunity to make an offer in a search that our department had finalized this March because of the hiring freeze. He said that he is disappointed that there is no apparent mechanism that will allow us to address urgent needs even in this environment. That said, he agrees that the present situation presents an opportunity to make up for lost miles if we do not revert to counterproductive measures to fix the budget.

Jessica Brantley, the chair of English, was next to speak. **Ms. Brantley** commented on the principles on which we base the budgetary decisions that we make at Yale, not so much the details. She said she believes we should be guided by two principles as we think about these

questions: one is that we look after those most vulnerable members of our community, and two, that we make only those cuts that we can imagine recovering from. In other words, we focus on people and mission. She noted that a focus on people means that in the short term, we should not allow anyone who depends on Yale for healthcare to go without it in the middle of a global pandemic. In the long-term, it means that we keep our students, teachers and researchers at the center of every budget decision. A second part, she said, is prioritizing Yale's mission of both teaching and research. She underlined the importance of the Graduate School, and fears that it will suffer more than Yale College in this crisis and does not have as many voices speaking for it. Yet the Graduate School is at the center of Yale's research excellence and is a source of Yale's excellence in so many cases. She said that there is no teaching and research without Yale's faculty and her department was in the middle of a transformative hiring initiative and halting it would indeed be hard to recover from. She said that her department is already under strength in numbers and they face demographic transitions with many retirements on the horizon. We need to reorient for the future - a diverse future as well as many other kinds of future that we have been thinking about and working very hard to bring about. If we don't look after these needs and similar needs across the university, she believes that Yale's mission will be deeply compromised for years to come.

Senator **Joseph Fischel** was next to speak. He spoke about transparency, deliberation and vulnerability and echoed Ms. Goren's point about instructional faculty, noting that instructional faculty have 10% more women than ladder faculty and have more under-represented minorities. He noted that we received an e-mail from the administration that tenure-track professors will automatically get an extra year on their clock and instructional faculty were told that decisions for them will be on a case-by-case basis to be reviewed by the dean. This, he said, seems terribly wrong to him. Instructional faculty, he said, are the most vulnerable in this situation and yet are so crucial to the teaching mission of Yale. Security and equity mean not further endangering the lives of these faculty and their families by not having a more expansive policy towards them.

Senator **Howard Bloch** spoke next. In keeping with the mission of the University in terms of teaching and research, **Mr. Bloch** said he wanted to bring a full-grown elephant and a baby elephant into the room. It's time to start examining the non-academic side of the university when we think of making cuts: that is, the growth of layers of administration and the managerial class in the university. You need only to look at the list of committee members to realize how many vice presidents, associate and assistant vice presidents we've acquired, and how many deans and deputy deans, associate and assistant deans, and how many vice and associate and assistant provosts there are. There's the growth in the communications department and media and general counsel and Title Nine, the Center for Teaching and Learning - these are all part of the big elephant in the room where he feels that Yale has to look at making cuts before it starts to cut the Graduate School or cut departments. The little elephant in the room, he said, is what it costs Yale each year to maintain its buildings, which is an astonishing amount that the Senate Budget Committee of the FASS had already begun to look at; he says it is about \$140 million a year. He noted that if these buildings are not going to be occupied for a while, it seems that there will be a lot of maintenance that can be saved.

Jacqueline Goldsby, Professor of English, spoke next. She commented on the fact that clearly many faculty are curious to know the ways in which we can fund initiatives that need to be mobilized, and to support graduate students. Further, we keep hearing arguments about not

changing the spending rule. Therefore, she asks why the cash reserves and the borrowing power that were talked about earlier cannot be tapped to pay for the cash infusion to the Graduate School? If it is possible, how do we go about lobbying for these funds to be used?

Steve Berry replied that he thinks it is good for the faculty to express their sense of priorities and what they think is most important to preserve; he finds that it is more credible when people express what they are willing to give up. Suggestions have been to give up some associate deans and also look at the costs associated with maintaining buildings. **Mr. Berry** thinks that priorities are taken more seriously when they are paired with something that we ourselves would give up, which is all a matter of politics.

Ms. Klein noted that she read in a *New York Times* article by a law professor that the Federal Tax Law requires a non-profit to spend 5% of the endowment. So that would mean Yale basically only draws on the legal minimum of the endowment each year (5 ¼%), while investments have made over 8%. Doesn't that offer a sufficient financial cushion to avoid austerity? She was told that this is not the case.

Mr. Nordhaus referred to the Capital Replacement Fund which is set aside for building, renovation and replacement. He said it was created after a period of deferred maintenance and he said he feels we have a period of enhanced maintenance. When all things are being scrutinized, he feels this should be scrutinized as well. The formula for what is set aside is very large. Perhaps we could defer some enhanced maintenance for as long as the crisis endures.

Senator **Jill Campbell** said that today's discussions really need to be just the beginning of the involvement in discussion and decision-making of the university budget in these difficult and uncertain times. She said that the FASS will be reporting to the President and Provost, and other members of the university leadership about these discussions and advocating for more forms and means of participation directly of all faculty as we feel our way forward in these uncertain times. We know in general that organizations make better decisions in difficult times and in good times when decisions emerge from an informed and inclusive process. She said universities are special kinds of organizations in which these principles are tied to their foundational values. Our foundational values include the principle of shared governance and faculty participation; this principle reflects that faculty members are integral to the leadership of a university, an enterprise that is founded on the value of knowledge and of deliberation about complex matters. Demonstrating the value of such communal deliberation, today's meeting has included speakers who have shared their special knowledge. She could see in the chat section that many of us wanted to know more and understand more about the budget and hence greater transparency is essential to participating in the process of articulating priorities and trade-offs. We deeply thank those of you who spoke today about what's happening in your departments, but you are also experts in the university. For the 375 people who joined this meeting today, we are all experts in its core mission and need all of you to be involved in these discussions. We invite you to see the FASS as one vehicle for advocating for you as means of faculty participation in this process.

Paul Sabin, Professor of History and American Studies, spoke on Yale hiring and the competitive advantage we may have. He too emphasized the opportunities of low interest rates and Keynesian-type spending – more like the Federal Government than a State government - and taking advantage to build up some of the departments that we started to do, construct some of

the buildings at lower rates, and invest in the city at a time when that investment would pay particular rewards.

It was noted that Mayor of the Haven, **Justin Elicker** just joined the meeting. **Mr. Geanakoplos** thanked **Mr. Elicker** for agreeing to come and speak to the Yale FAS Senate. If we think life is hard these days, imagine being Justin. He thanked **Mayor Elicker** for holding the city of New Haven together in these difficult times. He said that we are all eager to hear how things are going and what he thinks the city might look like at the end of this crisis.

Justin Elicker thanked people for being so patient, flexible and supportive during this difficult time. He has been mayor for about 120 days and so far it has been a crazy ride. He noted that about two months ago on February 26th, he said in the press that it is highly possible that we may get a COVID-19 case in New Haven. A week later he said it was increasingly likely that New Haven would get a case. A day after he said that it is only a matter of time until New Haven is hit, he cancelled the St. Patrick's Day Parade. It was only 1 ½ months ago that we had to close the economic and social functioning of the city. Our lives have changed so dramatically, along with the challenges to our customs and our interactions with each other. We as a city are trying to figure out what our role is in this process. We had some advantage of seeing what was happening first in Italy and then New York and thus preparing rapidly to contain infection. We could proactively respond and aim to reduce the number of cases before a massive surge. He noted that one of the primary roles that we play is pushing the social distancing message while at the same time using executive powers to close schools, reduce building occupancy rate, and limiting gatherings to 10 people. More recently, we've required people to wear masks in public places. Each one of those orders has taken the public a few days to digest, but people are starting to understand the gravity of the situation and comply with those orders. He feels one of our primary roles is to reduce the spread of the virus, not medically (this is the role of the state and the hospitals) but when we make sure that the spread of the virus is reduced, the medical needs also reduce significantly. The most essential component we can promote is that of social distancing.

A second is creating an environment that helps protect the most vulnerable. We work with individuals experiencing homelessness in New Haven. Many New Haven residents, unlike the majority of us on this Zoom, do not have the option of working from home, either because they have to continue to work in the service industry, or because they don't have a home. So, he noted, the city administration has implemented measures for the homeless population to facilitate distancing, so they do not spread the virus among themselves. We are working with the state to get these individuals into hotels – in New Haven we have over 200 individuals who are in hotel rooms so that people don't have to live in very close quarters. Also, he said, if there are individuals who test positive, we have created a site at Career High School where individuals have the care to recover and not simply be released to the street to potentially spread the virus. We are also doing a lot of work with seniors. To make sure that we're monitoring people, especially in Bella Vista that has over 2,000 people. Fortunately, we have had only a handful of cases reported. We've also worked hard to increase food access to people who are in need through food pantries, through senior deliveries, and also school food programs. He noted that there are many challenges with so many students out of school. The other challenge of school closure is continuity of education. In New Haven we have many families who do not have technology to do on-line learning. Plus, in a matter of a week, we had to figure out how to have

our teachers do on-line learning. He said we still have thousands of students who do not have devices and many who do not have the Internet and therefore are currently not receiving any instruction. We are working hard with some of our funding partners to get more Chrome Books and iPads for younger kids to do on-line learning. He talked about testing and contact tracing, because at the end of the day these are important parts to kicking this virus. In New Haven we have prioritized people having access to testing and noted that this virus has heavily hit the black community. We now have two testing sites and are working on a third site put up in neighborhoods to allow people to get tested through walk-in facilities where you don't need a car. Fortunately, there is an army of people in partnership with many entities from Yale to do contact tracing so that once the curve starts to really flatten, we can identify potential outbreaks and very quickly identify the individuals who not only tested positive, but also those individuals who have interacted with those who have tested positive.

The reality is the pandemic will hit the city very hard economically and in many ways the hardest challenges are to come. His budget team had already determined New Haven would have a significant deficit when the fiscal year ends on June 30th. When Mr. Elicker submitted his new budget two months ago before this crisis began, it was therefore a budget that already included many cuts and a tax increase. Now, things will be even worse financially and he feels it will be very difficult to bounce back. There will be many small businesses that won't be able to reopen. He knows that we will be facing very difficult times moving forward and in particular, this will exacerbate challenges in low income communities in the city.

Mr. Geanakoplos said he was almost brought to tears hearing about New Haven and its future. He asked about **Mr. Elicker's** remark about small businesses in New Haven and how many will not survive the crisis. Mr. Geanakoplos asked about the government's PPP program to help small businesses, by giving them loans that will be forgiven if the money is used to pay employees, and whether Yale or New Haven has done anything to help businesses get these government loans?

Mr. Elicker said we have a Financial Empowerment Center in the city that is helping support people – individuals and businesses – and the university is working with University Properties to support businesses. However, he said, frankly there are many businesses who have applied but not nearly enough money; in many cases, they have either gotten no response or they have been put on a waiting list. He said that the need nationwide is so great, and he is hopeful with the new, additional stimulus, that we will get some of that money. We will certainly be proactive to help some of our businesses to get that, but there are challenges because there is so much need across the nation and our businesses are still not getting access to that money.

David Watts, Professor of Anthropology, asked what the mayor would like Yale to do for New Haven. **Mr. Elicker** replied that he would like the university, and the leadership of the university in a very meaningful and truly genuine way, to ask what the city needs and to follow through on it.

Mr. Geanakoplos proposed to extend the FASS meeting for 15 minutes. He took a vote of senators and it was unanimously passed to extend the meeting for 15 minutes.

Mr. Geanakoplos introduced **Jenny Frederick**, Director of the *Poorvu Center for Teaching and Learning*. He said he got to know her through his work with the FASS Admissions Committee. He noted that he was astonished at how much the *Poorvu Center* was doing to help disadvantaged

students catch up, and was impressed to see what the *Poorvu Center* is doing to help with on-line teaching. He thanked her on behalf of the whole faculty for what she is doing for Yale.

Ms. Frederick said she wants to share some of the lessons learned from this unprecedented interruption of education at Yale. She said that first and foremost, Yale education is a fundamentally in-person residential experience and what happened this term required emergency, temporary, remote instruction, which she intentionally distinguishes from standard, well-designed on-line education. She noted that they are learning many lessons from this experience, and that the best lessons will reinforce our in-person teaching, rather than pull us away from our core mission. She listed what has been learned:

- Student motivation and engagement in a virtual classroom is more difficult, especially in larger classes. We do know that motivation and engagement are also difficult in the best of times.

- Some of our standard approaches to teaching do not translate well into on-line teaching, and hands-on courses such as labs and performing arts are almost impossible to replicate from a classroom experience to an on-line class and we have had to be very creative with those.

- Differences in our students' personal identities of home environments became much more visible. Students who face illness or financial issues and additional responsibilities were extra challenged this term. She noted that many worked admirably to reach them and connect them to resources.

- While student use of some of our programs went down a little, overall our numbers are still up compared to spring 2019. Our writing support and our Academic Strategies Program, which targets first generation low-income students, are down a little. The science and quantitative reasoning tutoring are being heavily used. The residential math and science tutoring is significantly down but represent a small fraction of our programming. They found that students and faculty reported challenges with access to course material such as textbooks, films, library resources and collections, so we'll need to think about how to make those more available.

- Ms. Frederick said that we all know that graduate student research has been adversely affected, but the same is not true for their teaching. We continued to see graduate student teaching fellows in teaching workshops in high numbers and they are benefiting from professional development in a mode of teaching that is an expected qualification for some faculty positions. Teaching fellows have been particularly helpful in some of our larger courses.

She then spoke of the need for guidelines. Uncertainty about best practices for remote instruction brings new challenges. Should you deliver lectures live or pre-record them so that students can watch them on their own? We recommend recording for students who cannot join due to time zone or technology reasons; nonetheless, students' value synchronous class time so that they can connect virtually in a community and ask questions to the instructor and each other. Graduate students reported spending more of their time on remote instructions, so when does that cross a line and what limits are practical? Lastly, how do you redefine participation in a virtual class? She noted that one positive outcome we are hearing is that more students are willing to ask questions through the chat function. She said the *Poorvu Center* will continue with more systematic analysis of our data and will share their analyses on remote instruction. On behalf of the entire *Poorvu Center*, she thanked the faculty for their overwhelmingly positive and can-do attitude and expressed appreciation for faculty's creativity and resilience. We certainly got through it together.

Mr. Geanakoplos asked about comparisons between the three experiments we had this semester – regular teaching, on-line teaching with grading, and on-line teaching with universal pass/fail. He heard anecdotally from colleagues that the number of participants in the big lectures had fallen precipitously in the last week or two after we went to pass/fail. He asked if she has any data that would tell us what the participation was both in the regular on-line grading part of the term and the pass/fail grading remainder of the term. **Ms. Frederick** said she has heard similar observations from her friends. She said from the Zoom data that she has, which is not as clean as she would like it to be, it appears that the participation decreased in large Zoom lecture courses, perhaps by as much as 25% - 30%. However, she also noted that the total number of views and downloads of recordings still remained pretty steady, so she advised caution when making presumptions based solely on live participation in courses. Also, individual instructors can look at data for their own courses.

Dana Anglin from Computer Science said there was some discussion about changing how student course evaluations will be done at the end of the term and she asked if there is any information on how that will be conducted? **Ms. Frederick** noted that the Poorvu Center is not involved with this process, although there has been a different set of questions that has been approved. Neither narrative nor numeric questions will be made available to other students and faculty. For this term, evaluations will be a form of narrative feedback to the instructor for the instructor only.

Mr. Geanakoplos introduced **Dr. Albert Ko**, Chair of Epidemiology and Microbial Diseases at Yale Medical School, and the Co-Chair of Governor Lamont's CT Re-Open Committee. Mr. Geanakoplos said he never imagined that his high school friend and Dean of the Yale Law School Harold Koh might one day be eclipsed as the most famous Ko in New Haven.

Dr. Ko began by talking about the challenge of COVID-19 and Yale and how that influences re-opening Yale in the context of the broader question of how we are going to re-open Connecticut. He reported that at this point, Connecticut has 71,000 real cases with 1,500 deaths in the state, and he noted that this is probably a mere fraction of everyone who has gotten infected with the coronavirus. In New Haven there have been over 5,800 confirmed cases and 300 deaths to date. He said that we know a lot about who is at risk for getting severe complications, and who is relatively protected from that. We know that the highest risks are the elderly – age groups above 60 years old – with a linear increase in mortality the older you are, and particularly susceptible are people in nursing homes. 39% of the deaths in CT have been associated with nursing home outbreaks and epidemics. In addition, people who have multiple underlying medical problems are significantly at risk, and we already have high rates of poor health outcomes in our underserved communities. There are 5 or 6 block areas where we have seen the brunt of the epidemic and the communities that have been hardest hit, and it parallels what we've seen in the poorest sections all over the state and in New York city. COVID-19 is more transmissible than influenza, intensifying the public health challenge. He said the majority of people are asymptomatic and this is a double-edged sword – on one hand, a lot of people are infected and do not get any of the severe complications associated with the disease; on the other hand, they are really hard to detect, and when we think about the important parts of public health which rely on testing, detection, tracing and isolation, that becomes inefficient every time the proportion of asymptomatics go up.

What does this mean for re-opening the state? There are criteria that we have developed for the state that are standard, with some nuances from rest of the country. We must have a sustained decline in cases: we not only have to flatten the curve, but we have to lower it such that levels of transmission won't cause a resurgence. Second, we must have in place good public health measures – testing, tracing and isolation – broadly and on a scale that we have never done, and that U.S. does not have an infrastructure for. He noted that before coming to Yale he worked in Brazil and lived there for 15 years. Brazil has a fluid and sophisticated outbreak-response and public health system that could respond to Zika, Yellow Fever, Dengue and measles. But here in the United States, we don't have that public health infrastructure, which means we have to build them under stress, not only from scratch, not only nationwide. We have to protect those high-risk populations-- whether the elderly, the vulnerable, the under-served, people in the nursing homes and prisons – as a priority because they are the ones who are going to be at the brunt of the current epidemic as well as any possible resurgence. It entails new ways of living and educating, with school systems relying on continued physical distancing. That will be our reality, at least for the short and medium term. Another major issue, from his point of view as a physician at Yale New Haven Hospital, are all the surgeries that have been deferred and all of the people on chemotherapy and all of the people who have not been able to get optimal care for heart attacks and other problems. We'll have to get our health care system back up so it not only can handle COVID-19 but can also handle the care that all of us expected prior to this public health emergency. Even if we put our best foot forward in terms of testing and all these aggressive measures, it's likely we will still have a risk of resurgence that will require going back to strong social distancing. So, what that means and how that will play out will be a big issue. Given that Yale is an international university, bans on visas and coming into the United States will also pose major hurdles.. He noted that he is on a committee, chaired by Stephanie Spangler, to help provide advice on adhering to social distancing while maintaining a campus environment and how we are going to work in classrooms. Fortunately, one of the things we have learned with this outbreak is that health impacts for the age group between 20-29 are minimal. Still, if we are going to have people from other states and from all over the world come to New Haven with infections, we are concerned that many of those infections will be asymptomatic and impossible to detect unless we do massive testing, probably testing at a scale that we don't currently have the capacity for. We will need a large paradigm shift if we are to ramp up testing and tracing to address this epidemic. Like himself, many faculty are in the “high risk” group. How, then, will we protect the faculty and the Yale workforce? Many of the people who are in the custodial services, the physical plant, and dining halls are already in high risk groups. Finally, he addressed the question of what we can do short of a vaccine.

The multi-disciplinary committee headed by Stephanie Spangler with representation throughout the colleges is important because there are large variations in how we pursue our educational mission across the different schools and centers. There will not be a single magic bullet. There will be no one intervention that will work and we're going to have to do multi-level interventions that will require testing, isolation, quarantine. Imagine what that means when you have one student in a social, educational environment and all their contacts. We're going to have to think of remodeling of classrooms to maintain social distancing, face masks policies to prevent infections, and protecting the elderly, whether staff or faculty, and use of technology with respect to sheltering them.

We certainly are not an island either within New Haven or Connecticut more broadly., We can try to put in barrier methods to isolate ourselves, but we know how that failed with the Black Plague in the 1300s. If there is a commitment to protect our students on campus, there is going to have to be a commitment to protect the community around us given the interconnectivity of staff, workers, and students in the community.

The last point he made was about the future with respect to science. He believes that there will be a vaccine. His guess is that it will be in 1 ½ years. It would still have to go through all of the issues of safety and there will be safety signals that we have to deal with just like we did with other vaccines. So, he said, we need to think about what we will do in the meantime, before the vaccine is ready, to move forward until it arrives. He remembers coming to Yale in 2010 and being very proud and taking his family and his parents here. He remembers walking into Woolsey Hall and seeing all the names memorialized. He drew much inspiration from here and what Yale means to a lot of us.

Dr. Ko took questions and **Mr. Geanakoplos** asked if there is a real chance that we can teach undergraduates in the fall (2020) on campus? **Dr. Ko** said speaking as a member of the school's committee on reopening, he feels that we need to be prepared to go into strong social distancing and have to have robust surveillance systems like we don't have right now. We will need to be very agile about it. We must prepare for various scenarios and be flexible in thinking about what will happen. **Alessandro Gomez** asked about herd immunity and if this will play a role in the development of a vaccine considering that it appears that the number of infected people is highly underestimated. **Dr. Ko** agreed that cases and deaths have been underestimated and the best scenario would be that we get infected, have mild symptoms, and become immune to this disease. However, for herd immunity to develop, about 50- 80% of the populations would have to be exposed and we're not anywhere close to that. It's more likely therefore that there would be a resurgence than herd immunity. Another part is that do we really have immunity after prior infection. He noted that if we draw on other corona viruses, it's not clear we get long-lasting immunity or total immunity, so this is one analogy that we can draw on. The other is that there have been animal experiments where they have infected monkeys with the corona virus and it actually showed immunity in those monkeys. So, he said, we're going to have to figure out with animal experiments and other types of experiments if we can get at the answer, but we do not have that answer right now. **Mr. Nordhaus** asked if there is a way to do random sampling of the population to find out what is going on in the larger population. **Dr. Ko** noted that there has actually been sampling going on within the hospital community that is not really random sampling, however a sampling, nevertheless. To do random sampling at this time will be very difficult but we need to do them, and we are thinking about how to do it and where do we go to get the best sampling. His talk then concluded.

Ms. Klein said she wanted to note that as faculty, we need to come up with our definition of equity and that it is not solely a financial concept. It should have a social meaning and should incorporate compassion and solidarity. She suggested that the FAS Senate should have some kind of solidarity statement or position that shows that the staff, the instructional faculty, the non-ladder faculty, the graduate students are together in this unprecedented experience and we are not going to allow ourselves to be pitted against each other in terms of who is supposed to swallow the bitter pill. She would like to see us to take control of that narrative of equity and make sure that it includes solidarity.

Mr. Geanakoplos thanked everyone who listened in, and the speakers who were so generous to come and share their expertise with us. **Mr. Jacobson** thanked **Mr. Geanakoplos** and said that this FAS Senate session has fulfilled the dream of what the Senate should look like for those of us who were the rebel rousers six or seven or eight years ago and this has been 2 ½ hours really well spent. It represents the fruition of a lot of work on the part of a lot of people, and he thanked Mr. Geanakoplos for convening us and making it a meaningful few hours. **Mr. Geanakoplos** said that we all worked together to make this happen and thanked all and adjourned the meeting at 6:15 PM.

Virtual Guests at FAS Senate meeting on April 23, 2020

1. A C
2. Adrezin, Ronald
3. Ague, Jay
4. Alan Mikhail
5. Aldrich, Andrea
6. Aletheiani, Dinny
7. Alhassid, Yoram

8. Altman, Eric
9. Altonji, Joseph
10. Amand, Marnix
11. Andrew, Dudley
12. Andrews, Jon
13. Angluin, Dana
14. Antonov, Sergei
15. Appelquist, Thomas
16. Arkolakis, Costas
17. Armstrong, Carol
18. Asensio-Manrique, Pilar
19. Aslanidis, Paris
20. Baffi, Carolina
21. Bailyn, C.
22. Baker, Keith
23. Bakker, Egbert
24. Barrett, Sean
25. Barringer, Tim
26. Basaro, Susan
27. Bass, Marisa
28. Basu, Sarbani
29. Bender, Lucas
30. Bennett, Beth
31. Berco, D.
32. Bergermann, Dirk
33. Berro, Julien
34. Berry, Steven
35. Bjornson, Robert
36. Blackhawk, Ned
37. Bo kyung, Blenda Im (Blenda)
38. Bojanowska, Edyta
39. Bowering, Gerhard
40. Bower, Claire
41. Bradley, Rizvana
42. Brainard, William
43. Brancati, Dawn
44. Breslow, David
45. Bribiescas, Richard
46. Brock, Jeff
47. bromwich
48. Brooks, Daphne
49. Brown, Benedict

50. Brown, Eric
51. Brown, Thomas
52. Buckley, Craig
53. Bush, Sarah
54. Butterfield, Ardis
55. Cai, Yang
56. Casetti, Francesco
57. Chalioti, Eva
58. Chan, Hsiu-hsien
59. Charles
60. Charles, David
61. Chun, Marvin
62. Clark, Damon
63. Clark, Katerina
64. Coates, Emily
65. Cohn, Richard
66. Cole, Peter
67. Cooke, Edward
68. Córdova Sánchez, Natalia
69. Costas Meghir
70. Creswell, Robyn
71. Darwall, Stephen
72. Davila, Eduardo
73. Davis, Stephen
74. DC
75. De La Cruz, Enrique M.
76. De, Rohit
77. Dean, Carolyn
78. Dembroff, Robin
79. Demers, Sarah
80. Deming, Richard
81. Denis
82. Dimitrova, Nadya
83. dirk
84. Dobson, Annise
85. Dollar, Aaron
86. Dorsey, Julie
87. Drews, Dan
88. Duncan, James
89. Dunn, Casey
90. Egan, Kathleen
91. Eisenstat, Stanley

92. Elbousty, Jonas
93. Elicker, Justin
94. Emonet, Thierry
95. Engerman, David
96. English, William
97. Espin, Jose
98. Ewa's iPad
99. Fair, Ray
100. Farley-Barnes, Katie
101. Fedorov, Alexey
102. Fernandez-Duque, Eduardo
103. Fiduccia, Joanna
104. Figlerowicz, Marta
105. Fischer, Michael
106. FKW
107. Forscher, Paul
108. Fotos, Michael
109. Fradinger, Moira
110. Frahm, Eckart
111. Frank, Bob
112. Franks, Paul
113. Frederick, Jennifer
114. Fromont, Cécile
115. frunzio
116. FS
117. Garen, Alan
118. Garsten, Bryan
119. Geha, Marla
120. Gehlker, Marion
121. Gendler, Tamar
122. Gerber, Alan
123. Gerow, Aaron
124. Gilbert, Wendy
125. giseli
126. Gladney, Larry
127. Glazman, Leonid
128. Glenn, James
129. Goldsby, Jacqueline
130. Gorski, Philip
131. Greenwood, Emily
132. Grewal, Inderpal
133. Griffel, Frank

134. Guille-iPad (2)
135. Guy, Alfred
136. Haile, Philip
137. Halac, Marina
138. Hammer, Langdon
139. Hanno's iPad
140. Hansen, Valerie
141. Harkema, Leslie
142. Harms, Erik
143. Harris, John
144. Harte, Verity
145. Havlickova, Miki
146. Hawkins, William
147. Hazari, Nilay
148. He, Yu
149. Healey, Stephen
150. Heeger, Karsten
151. Herreid, Grant
152. HI (HADI)
153. Hirsch, Jennifer
154. Hochstrasser, Mark
155. Homans, M.
156. HoSang, Daniel Martinez
157. Howard, Joe
158. Hu, Wenjun
159. Huber, Gregory
160. Hunter, Mik
161. Huynh, Mioy
162. Inwood, Brad
163. Isaacs, Farren
164. ivmarcus
165. Jacobwitz, Seth
166. Jacqueline Jung
167. Jarvis, Jill
168. Jensen, Kyle
169. Fortner, John
170. Joormann, Jutta
171. JRR
172. Kaczmarek, Konrad
173. Kagan, Shelly
174. Kaliambou, Maria
175. Kamens, Edward

176. Kao, Grace
177. Karageorgos, Ioannis
178. Karato, Shun-ichiro
179. Karbasi, Amin
180. Kastan, David
181. Kaufman, Ronit
182. Kennedy, Paul
183. Kenney, Jeffrey
184. Khan, Sarah
185. Kim, Jaehong
186. Klemann, Heather
187. Klevatorick, Al
188. Ko, Albert
189. Kortum, Samuel
190. Kraus, Christina
191. Kreiner, Timothy
192. KristoNagy, Elka
193. Laguna, Albert
194. Lamont, Jessica
195. Laughlin, Gregory
196. Lederman, Roy
197. Lin, Pauline
198. Lin, Samantha
199. Lin, Winston
200. Linden-Retek, Paul
201. Liu, Fan
202. Lofton, Kathryn
203. Lombard, Louisa
204. Long, Maureen
205. Lora, Juan
206. Loria, Patrick
207. Lotito, Nicholas
208. Lowe, Lisa
209. Is529
210. Lui, Mary
211. Ma, T.P.
212. Machta, Ben
213. MacKay, John
214. Manning, Joe
215. Manning, Joe
216. Mares, Isabela
217. Maruyama, Reina

218. Marynel iPad
219. mblong
220. McIntosh, Roderick
221. Menon, Alka
222. Mikhail, Alan
223. Miller-Jensen, Kathryn
224. Miller, Scott J.
225. Minsky, Yair
226. Moncrief, Vincent
227. Mooseker, Mark
228. Moreno, Marla
229. Morrison, Elise
230. Moscarini, Giuseppe
231. Mukhopadhyay, Priyasha
232. Munoz, Martha
233. Nagai, Daisuke
234. Nagy, Elka Kriston
235. Najera, Luna
236. Naqvi, Fatima
237. Narasimhan,
Ganapathisubramanian
238. Nasrallah, Laura
239. Near, Thomas
240. Neitzke, Andrew
241. Newhouse, Timothy
242. Ngan, Quincy
243. Nishimura, Hiroyo
244. Noguera, Guillermo
245. North, Paul
246. Nshimura, Hiroyo
247. O'Dea, Cormac
248. O'Hern, Corey
249. Oh, Hee
250. Padro, Gerard
251. Pascutti, Michael J.
252. paulette
253. Pauline Lin
254. Pauze, Brian
255. Peirano Garrison, Irene
256. Peter's iPad
257. Peters, John
258. Peters, Michael
259. Piñango, Maria

260. Pinzka, Lauren
261. Pitti, Stephen
262. Polak, Ben
263. Price, Joshua
264. Promey, Sally
265. Prum, Richard
266. Quinn, Ian
267. Rabinowitz, David
268. Rader, Kelly
269. Radev, Dragomir
270. Ramos-Zayas, Ana
271. Rankin, Bill
272. Renaud, Terence
273. Rich, Miriam
274. Richards, Jill
275. rlandis
276. Roberts, Nathan
277. Roemer, John
278. Rogers, Douglas
279. Rosenbaum, Joel
280. Rourke O'Brien
281. rxsmith
282. Ryan, Nicholas
283. Sabé, Lourdes
284. Sabin, Paul
285. Saez Marti, Maria
286. Santos, Laurie
287. sara
288. Scassellati, Brian
289. Schechet, Talia
290. Schiffer, Peter
291. Schlag, Wilhelm
292. Schmidt Camacho, Alicia
293. Schneider, Francoise
294. Scholl, Brian
295. Schwarz, Udo
296. Seim, Katja
297. Semmel, Stuart
298. Shao, Zhong
299. Sherak, Constance
300. Sherman, Andrew
301. Shirkhani, Kim

302. Simon, Matthew
303. Simons, Katerina
304. Sindelar, Charles
305. Skiba, Witold
306. Skorupa, Candace
307. Slanski, Kathryn
308. Smith, Tony
309. Soll, Dietter
310. Spielman, Dan
311. Staver, Carla
312. Stearns, Stephen
313. Stone,
314. Swensen, David
315. Szabo, Zoltan
316. Tannenbaum, Rebecca
317. Tassiulas, Leandros
318. Thomas, Ellen
319. Thomasson, Camille
320. Thornbury, Emily
321. Tipton, Paul
322. Titus, Julia
323. Tomlinson, Gary
324. Toorawa, Shawkat
325. Toseland, Rebecca
326. Trumpener, Katie
327. Tsu, Jing
328. Turner, Nicole
329. Underhill, Anne
330. Vallengia, Claudia
331. Valle, Sonia
332. van Bladel, Kevin
333. van Wolfswinkel, Josien
334. Vanderlick, Kyle
335. Vazquez, Maria
336. Venkadesan, Madhu
337. von Ostenfeld-Suske, Kira
338. Von Kunes
339. Warner, John
340. Warrell, Jonathan
341. Washington, Ebonya
342. Webster, Jon
343. Weimin, Zhong

- 344. Wells, Marta
- 345. Wertz, John
- 346. Wetters, Kirk
- 347. Wettlaufer, John
- 348. Wilkinson, Steven
- 349. Wolenski, Joseph
- 350. Wood, Graeme
- 351. Wyrzten, Jonathan
- 352. xc44
- 353. Yamaguchi, Mika
- 354. Yan, Jing
- 355. Yeret, Orit
- 356. Young, Lauren
- 357. Zhong, Lin
- 358. Zhou, Harrison
- 359. Zilibotti, Fabrizio
- 360. Zilm, Kurt
- 361. Zinn, Robert
- 362. Zucker, Steve