CONCLUDING REPORT ON THE APRIL 17 FACULTY FORUM

Background

In fall semester 2018, UC Forward staff began a reflection on the dramatic development of Artificial Intelligence (AI), its convergence with other technologies like data analytics, robotics and digital communications, its expected impact on the U.S. labor market and the future of work, and the dramatic effects these developments were likely to have on higher education in general and the University of Cincinnati in particular. We recalled that the University of Cincinnati has long been a leader in cooperative education and other effective strategies for preparing students for entry into and success in the “world of work.” We could see that the advent of AI could be highly disruptive to these strategies, particularly if (as some labor economists predict) we are facing high levels of net job destruction in the next two to four decades. We asked what impact these developments would have on UC’s value proposition – how we could continue to maintain that we are preparing our students for the world of work when there might be little or no work for them to do.

There is no consensus among economists as to the degree of net job destruction that will be caused by the application of AI and related technologies to more and more professions and business sectors, but most agree that it will be significant. It seemed to us that UC must follow developments closely and be prepared to change its curricula, pedagogical methods, and research programs as AI’s impact on the future of work becomes clearer. We believe that now is the time for UC faculty members and administrators to confront the many challenges posed by AI and decided to help stimulate additional discussion of these important issues through a UC Forward call for courses and a related faculty forum we called The Future of (No) Work and Artificial Intelligence: UC’s Response (FONW). A report on the call for courses program is available elsewhere. Here we briefly describe the faculty forum and summarize some of the key ideas that emerged at it.

FONW Faculty Forum

The faculty forum was held on the afternoon of April 17, 2019 at the Niehoff Urban Studio. M.C. for the forum was David Adams, UC’s Chief Innovation Officer and CEO of the UC Research Institute. The program agenda is attached to this document.

A faculty forum focused on the effects of AI on the future of work and on UC and its mission necessarily is an exercise in futurism and scenario building. We kept that in mind as we designed the forum and chose a keynote speaker and UC faculty responders able to sketch a range of possible scenarios for both our society and for individuals – as well as for the
future of work and higher education. At the same time, we wanted to keep the focus firmly on UC faculty who are beginning to plan for the impact AI will have on their teaching and student advising.

The approach we chose to keep a faculty focus was a competition we called “UC Talks.” All faculty members were invited to submit a proposal for a 10-minute TED Talk ® type presentation addressing such questions as the questions:

- What will be the purpose of education in an automated future?
- How do we impart knowledge at a time when information is instant, ubiquitous, and free?
- How do we prepare students for jobs that do not exist today?
- How do we prepare students for a world with few jobs?
- How do the emergent technologies influence educational models?
- How do we help faculty affect changes in their disciplines?
- Which educational models would best prepare our students for “robot-proof” careers?
- How should a future educational environment be structured in terms of classroom, age division, curricula, etc.?
- What impact could automation have on the future of learning and education?
- How should the changes occurring in the workplace impact the way we educate people in organizations?

Several UC Talks proposals were submitted and five were selected for presentation at the forum. It was announced that two winners would be selected (one by popular vote and one by jury), each to receive a $3,000 faculty development grant from UC Forward.

**Keynote Speaker and UC Faculty Responders**

Keynote speaker for the forum was Lee Rainie, Director of Internet & Technology Research at the Pew Research Center in Washington, DC. Rainie is the author of *Artificial Intelligence and the Future of Humans, Networked: The new social operating system*, and has published more than 650 articles based on the Center’s research into the role of technology on people’s lives. He speaks on these subjects regularly to government officials, media leaders, scholars and students, technology executives, and the leaders of non-profit groups.

In his presentation, Rainie focused on the future of education in a society and economy dominated by rapidly evolving AI. He acknowledged the range of views on experts on the question of whether or not more jobs will be net job creation or destruction caused by networked, automated, artificial intelligence (AI) applications and robotic devices but noted that a Pew Research 2014 canvas of experts in the field showed that 52% of respondents believed that there will be more jobs created than destroyed while 48% believed that more jobs will be displaced than created.

Rainie referenced a more recent Oxford/Yale study that quizzed AI experts on when they think “high level machine intelligence”/unaided machines will be able to accomplish given tasks better and more cheaply than humans. The responses are striking:
• By 2024 machines will outperform human language translators
• By 2027 machines will drive trucks
• By 2031 machines will work in retail
• By 2049 machines will be able to write a best-selling book\
• By 2053, machines will be able to perform surgery

Pew surveys show that Americans believe robots will take over much of the work done by humans, but most workers aren’t convinced that this will affect their own type of work. However, a commanding majority of Americans (87%) acknowledge that continuous training/retraining will be important or essential throughout their work years.

As they reflect on the new economy and society that lie ahead, Americans see many possible benefits: a more efficient economy, the ability to focus on less on work and more on “what really matters,” the possibility of more meaningful and appealing jobs that might pay better. However, they are troubled by the prospect of greater inequality between rich and poor (76% see that as likely) and the hard time people will have finding “things to do with their lives” (64%). Overall, survey respondents favored the idea that government policies should be adopted that limit the impact of automation on people’s lives.

However, in other research, Pew found that the public is broadly pessimistic about the future of America and that a majority of respondents to a recent poll have little or no confidence in “the wisdom of American people in making political decisions.”

Rainie predicted that a new training ecosystem will evolve to arm people with the skills they will need to survive and thrive in the new milieu. He acknowledged that universities will continue to have important roles to play in preparing people for life and new kinds of work but predicted that there will be diversification and differentiation among colleges and universities, with different institutions pursuing different missions and strategies. He noted, though, that institutions of higher education face the challenges brought on by AI and robotics at a time when there is a loss of public confidence in them. In a 2018 Pew public opinion survey, 61% of adult respondents agreed that America’s higher education system is “generally going in the wrong direction.” 84% said that tuition costs are too high, while 65% expressed the view that “students are not getting the skills they need to succeed in the workplace.” Related to these challenges, Rainie also noted the prediction that we will see a 15% drop in the number of college-going students after 2025.

Providing brief responses to Rainie’s presentation were Julia Heath, Director of the UC Economics Center, Richard Harknett, Political Science Department Head, and Terry Grundy, adjunct associate professor in the School of Planning.

• Dr. Heath focused her remarks on the effects that automation already has had on the labor market, particularly the role it has played in increasing inequality. She reported that labor economists generally expect inequality to worsen with continued adoption of automation unless specific policies are enacted to counteract its effects. She also suggested that higher education can make our students’ adjustment to automation more efficient by (1) making it easier for them to major/minor or double major in disparate disciplines, to include STEM-related fields paired with humanities, for example; and by (2) creating a culture
that emphasizes the need for students to continue to engage in learning after they receive their degrees. The ability to engage in life-long learning confers at least two benefits: it can help people adapt to the rapid changes in work milieus brought about by the adoption of new technologies like AI and it can provide people with the personal enrichment they will need if they spend an increasing amount of time outside of structured jobs.

- Dr. Harknett’s main thesis is that the challenge of AI is that it will outstrip the capacity for humans to stay INSIDE the Observe-Orient-Decide-Act (OODA) loop. The main objective of public policy must be to ensure that, in critical areas, humans stay ON the loop and are not kicked entirely OUT of the loop. Since AI is creating a fluid socio-economic-political adjustment, students will need to be adaptive and creatively oriented. Thus, the core skills of critical thinking and analytical reasoning across a breadth of substantive areas – what universities are meant to develop – are, in fact, what is most necessary for future success. Our curriculum must evolve to re-invigorate and re-centralize these skills (often demeaned as ‘soft’) and not be defensive about them, as they are the only way to position future graduates for a fluid labor market. Our focus should be on how we position students to be key “on-the-loop” drivers, enabled with immense information and decision-processing scale, scope, and speed.

- Terry Grundy emphasized the importance of educational planning that grows out of possible future scenarios based on likely premises – in this case the premise that AI will result in high levels of net job destruction. If that is the case, it will be essential to adopt public policy frameworks that guarantee reasonable levels of income for Americans. Not solving the problem of income could result in high levels of social unrest. If the problem of income is solved, we will be confronted with very real human problems. Most Americans rely on their jobs/careers for a sense of personal identity and on their work cohorts for social contact and a sense of community. If work in the sense of jobs goes away, anomie and alienation are bound to follow. Many see a “world without work” with reliable incomes as paradisiacal but the truth is that most people lack the imagination and discipline to use leisure well and could face long lives of boredom. That provides a hint about the role of higher education in a “post work” world. Its great contribution could be to teach students how to be self-actualized producers of cultural, social, and political value – in other words, how to live the good life and build good communities. That suggests that the Humanities, the Social Sciences, and the Arts will need to have a central place in our curriculum.

The UC Talks Competition

The UC Talks competition, described above, attracted good interest among the UC faculty and the five faculty members who were selected to present at the forum offered fascinating perspectives and important glimpses of future curricular and pedagogical choices that can keep UC relevant in the AI environment to come.

- **Aaron Bradley**, Assistant Professor, Experienced-Based Learning & Career Education. Dr. Bradley focused on how AI and related technologies will have dramatic effects on labor markets, sweeping away millions of existing jobs while
creating millions of jobs very different from those that are common today. Since millions of workers will need to change their occupational categories by 2030, he believes it is necessary for higher education to abandon “siloed, discipline-based experiences and the premise of professional degrees as pipelines to specific careers.” Replacing the old approach should be educational experiences that stimulate in students creativity and creative problem solving, critical thinking skills, and the ability to engage in collaborative work. Interdisciplinary, cross-listed courses should emphasize these Student Learning Objectives. He also recommended collaboration with industry partners and courses that emphasize real-time integration of theory and practice.

- **Donna Chrobot-Mason, Associate Professor in the College of Arts & Sciences Department of Psychology.** Dr. Chrobot-Mason’s presentation focused on organizational leadership and was based on the key premise that AI is unlikely to obviate the role of human leaders in organizations. In any version of the future that we can see at this point, there will continue to be a need for effective and humane leaders. For her, the challenge for higher education is to help develop leaders who will fill that role in new ways. The leaders we will need in a post-AI world will be less individualistic and “heroic” and more collaborative and supportive. She sees leadership education as a critical component of any new curricula we develop.

- **Jessica Furgerson, Assistant Professor, English & Communications, at UC Blue Ash.** Dr. Furgerson began her presentation with trenchant question for higher education: What if, instead of creating more and more educational programs that teach our students how to “think more like computers” and thus how to control technology, we instead gave pride of place to educational experiences that make students better human beings? Relying on the thinking of Oxford economists Carl Frey and Michael Osborne, she noted that there are many occupations that aren’t likely to be supplanted by machines because (at least for the foreseeable future) they require complex social interactions, solving problems with undefined parameters, emotional intelligence, and attentive interpersonal communication. Developing these capacities in our students is the best way to “future-proof” them and give them a chance to thrive in the new milieu. Dr. Furgerson believes that one of the best ways to help our students develop communication competency and creative problem solving is through guided Group Work experiences. Experiences of this kind help students develop the required human skills they will need and also mimic what we believe will be the workplace of the future.

- **Michael Jones, Assistant Professor, Economics, in the Lindner College of Business.** Dr. Jones focused on research studying the likelihood of certain occupations being replaced with artificial intelligence or other automation technology. Research in which he participated goes further by linking occupational data to the choice of a university major. The research shows that majors leading to occupations based on “uniquely human” activities (e.g., creative thinking, motivating others, or goal-setting) are resistant to technological job destruction. Examples of these majors include education, nursing, criminal justice, and social work. Other majors like
journalism and accounting are more vulnerable to automation. Within these more vulnerable majors however, there are differences in the ability of students to pivot to other jobs. An accounting major working as a tax preparer can switch to another accounting job more easily than a pilot who studied aviation can find another job. We describe an accounting major as “AI-resilient” and an aviation major as “AI-fragile.” If universities are to help students become AI-resilient, they must ensure that the curricula and majors they offer include creative thinking, teamwork, strategy, and other uniquely human skills.

- **Zvi Biener**, Associate Professor in the Department of Philosophy. Dr. Biener invited us to recognize that AI already is smarter than we are and that its steady adoption will change what it means to be human. What should our educational strategies be if these two statements are true? In support of his thesis that AI is smarter than we are, he showed applications like algorithms that detect breast cancer in tissue samples faster and more accurately than human diagnosticians – processes that are essentially incomprehensible to most people. AI and related technologies undermine our view of humans as having “unique, superlative and self-sufficient traits” and thus our very identity as humans. As Biener remarked, “No ability will be unique to us; none will be superlative with us” and machines will have abilities that we won’t be able to understand. For education, the question becomes how we prepare for a future in which every human ability is replaced and the experience of being human is different from it has been for all of human history. Biener recommended that the higher education we need is one that focuses not on teaching students how to develop first-order skills, i.e., problem-solving skills, but rather one that focuses on “problem-articulation” skills (how to recognize misalignments in values, information, precedents, and prospects). Like Grundy, Biener sees teaching of the Humanities as being one of the important ways to develop second-order skills. Biener also sees disability studies as important in a new curriculum since there is no essential difference between the use of assistive technologies by the disabled and the many assistive technologies all of us are using as machine learning, AI, and robotics become more and more ubiquitous.

- Denotes winners of the UC Talks competition.

**Closing Remarks by Provost Kristi Nelson**

In her closing remarks, Dr. Nelson linked UC’s response to the challenges of AI to our bicentennial celebration and the rollout of the “Next Lives Here” strategic direction. In its 200-year history, UC has had to confront many historic changes and always has been able to survive by adapting and changing our curriculum, the way we teach, our research objectives, and the way we interact with and serve our region, our state, and our country. It’s clear that the development of A.I. and related technologies poses huge challenges to the university. We will have to rethink how we achieve our mission and change what we do and how we do it – maybe dramatically. However, Nelson is confident UC will continue to thrive and believes that the “Next Lives Here” strategic direction points the way for future success. The Provost emphasized the key role
faculty members will play in assuring that UC responds appropriately to the advent of A.I. and expressed the hope that the forum will be a first step in a powerful, faculty-driven conversation about how UC can seize the opportunities that A.I. brings, while positioning us to overcome its threats.

Dr. Nelson thanked UC Forward for convening the forum and commended CET&L, and the Taft Research Center for their co-sponsorship of it. She extended special thanks to Otto Budig and Buck Niehoff for their financial support for the program.

**Follow-Up Steps**

This Forum continues a year-long topical engagement by UC Forward on the Future of (no) Work and Artificial Intelligence. UC Forward issued a Call for interdisciplinary faculty collaborative proposals on this topic and awarded grant funding to a faculty team representing Philosophy, Political Science, and Economics. Work of that team will be presented at an end of semester event Fall 2019 which will be open to all faculty. To learn more about this interdisciplinary faculty collaborative and other UC Forward programs, contact UC Forward Director frank.russell@uc.edu

In addition to this, starting summer 2019, interested UC faculty may continue the conversation on how the university will respond to the challenges of AI and their impact on the our student’s future workplace through programs at CET&L. CET&L will follow-on this Forum, by convening and supporting faculty study groups that will focus on new curriculum, pedagogy and research initiatives relevant to the topic. To participate in one of these study groups, contact CET&L Director Bryan Smith at smbr@ucmail.uc.edu.

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UC Forward joins Provost Nelson in thanking donors Otto Budig and Buck Niehoff for their generous support of the forum. It also extends thanks to CET&L and the Taft Research Center for their co-sponsorship, to David Adams for taking on the role of M.C., to Pew Research for making it possible for Lee Rainie to join us, to faculty responders Julia Heath, Richard Harknett and Terry Grundy for their thoughtful contributions to the conversation, and to the faculty members who participated in the UC Talks competition. Special appreciation goes to Niehoff Studio Resident Urbanist Terry Grundy for recognizing the importance of this topic and for conceiving of and organizing this event.
# AGENDA

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<tr>
<th>TIME</th>
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<tbody>
<tr>
<td>2:00</td>
<td>Call to order, framing the purposes of the workshop, agenda review</td>
<td>David Adams</td>
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<tr>
<td>2:10</td>
<td>Introduction of Keynote Speaker: Aaron Smith, Associate Research Director, Pew Research</td>
<td>David Adams</td>
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<tr>
<td>2:15</td>
<td>Keynote speech (with Q&amp;A if time permits)</td>
<td>Lee Rainie, Pew Research Center</td>
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<tr>
<td>3:00-3:05</td>
<td>Introduce three UC “responders” (to reflect on the curricular implications of keynoter’s speech)</td>
<td>David Adams</td>
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| 3:05-3:35 | Response presentations:  
- UC curriculum in a post-AI economy of work  
- UC curriculum that addresses public policy challenges  
- UC curriculum that prepares students for “post-work” identity and meaningful roles |  
  - Julia Heath, UC Economics Center  
  - Richard Harknett, Department of Political Science  
  - Terry Grundy, School of Planning |
| 3:35   | Introduction to “UC Talks” *                                             | Udo Greinacher                   |
| 3:40-4:30 | “UC Talks” 1-5 (each 10 min. max.)  
  1. Aaron Bradley  
  2. Donna Chrobot-Mason  
  3. Jessica Furgerson  
  4. Michael Jones  
  5. Zvi Biener | Presenters                   |
| 4:30   | Secret ballot vote by attendees to award one winner’s prize.  
Jury (which will be given results of ballot) withdraws to vote on 2nd winner | Udo Greinacher                   |
| 4:35   | Brief reception with nibbles and drinks while jury deliberates           |                                  |
| 4:55   | Announcement of two UC Talk winners                                       | David Adams                      |
| 5:00   | “Call to Action”                                                          | Kristi Nelson                    |
| 5:15   | Thanks and adjournment – with invitation to stay for more reception      | David Adams                      |