UCLA

Title

Keynotes on the necessity for critical inter- and cross-disciplinary

Permalink

https://escholarship.org/uc/item/0pd9h691

Author

Carbajo, Sergio

Publication Date

2023-04-01

Keynotes on the necessity for critical inter- and cross-disciplinary

Celine Y Park[1,2], Fanqi Song [3], Najia Pan[3,4]

[1] Department of Microbiology, Immunology, and Molecular Genetics, University of California, Los Angeles; Los Angeles, California, 90095 USA

[2] Center for Community Engagement and Social Change, University of California, Los Angeles; Los Angeles, California, 90095 USA

[3] Department of Statistics, University of California, Los Angeles; Los Angeles, California, 90095 USA

[4] School of Theater, Film & Television, University of California, Los Angeles; Los Angeles, California, 90095 USA

This discussion discusses the importance of interdisciplinary thought in directing the future. People have diverse opinions and perspectives that are essential to push society to be equitable and uplifting. Different demographics of people have their own perspectives and interests that need to be protected within ecosystems of people. However, inclusion and diversity is difficult to implement due to the natural conflicts of human interaction and systemic issues. The push for diversity and inclusion is a difficult fight and considers many aspects that may be difficult to consider all at once. Although the challenges are present, the product of cross and interdisciplinary practices allows for solutions that address the roots of issues that form into long lasting and effective change.

Introduction

Upending the Hard Sciences: Queering Science and Technology is a FIAT LUX seminar that looks to discuss the importance of the intersections of hard and soft sciences. The panel "Keynotes on the necessity for critical inter- and cross-disciplinary" was the first panel held on January 26 in Eng IV, Shannon Room (#54-134). It discussed what it means to be interdisciplinary and how it applies in regular life and its importance in enacting future decisions and changes. The panellists were Dr. Anna Bradley Spain, Dr. Audrey Pool O'Neal, and Dr. Charles Alexander with Dr. Sergio Carbajo as a moderator.

Dr. Anna Bradley Spain is the Vice Chancellor for Equity, Diversity and Inclusion at UCLA and professor of law at UCLA School of Law. She specialises in international law, human rights, and dispute resolution and researching the global understanding of racism as a violation of human rights.[§]

Dr. Audrey Pool O'Neal is currently an associate professor in the UCLA's Department of Mechanical and Aerospace engineering and is the director of Women in Engineering at UCLA. She previously worked as a manager and engineer at the powertrain division of General Motors Corporation.[§§]

Dr. Charles Alexander is the Associate Vice Provost for Student Diversity and the director for the Academic Advancement Program (AAP) at UCLA. He is also an associate professor in UCLA's School of Dentistry Division of Public and Population Health. He's been a consultant and peer reviewer for federal agencies foundations universities and scholarly journals, and he recently contributed to the 2020 surgeon general's report on oral health.

Dr. Sergio Carbajo is an assistant professor in UCLA Electrical and Computer Engineering, an associate professor in UCLA Physics department, and a visiting professor in Stanford University's Photon Science Division at SLAC National Accelerator Laboratory. He is also currently an equity, diversity, and inclusion office at UCLA[1].

Discussion

Carbajo - How do you define interdisciplinary/co-disciplinary and how do you use it in your daily life?

O'Neal - Her first introduction to interdisciplinary interactions was through being a mechanical engineer at General Motors and she worked both in designing and manufacturing. She often interacted with members of the design team to discuss design choices to refine designs to be more cost effective. Her next exposure was when she watched people assemble the subcomponents she designed. She saw that certain parts were very inefficient for people to build and saw the importance of including their limitations and needs within her design practice. With her transition into academia, she found the importance of understanding the responsibility of engineers within society since their designs have direct impacts on society. She discusses that it is important to communicate with experts in different departments and studies to better inform her full decisions since there are things that just as an engineer she may not recognize right away. She believes that it is important for all people to interact with media and people that are not within a person's field of expertise.

---

[1] Carbajo, Sergio. "Queered Science & Technology Center: Volume 1." (2022). https://escholarship.org/uc/item/73x7h503

Alexander - With his background in public health, he primarily looked at diversity within health care by how different people view health care to obtain the interdisciplinary perspectives that understand the subject fully instead of understanding from limited visions. This also makes them concerned with who becomes health care providers, and do they train providers to be cognizant of the multicultural society they are treating. His introduction to interdisciplinary education was through reforming curriculum for health care providers in a university he previously worked at. Usually, medical schools teach curriculum through specific topics such as anatomy or biochemistry even though many bodily systems use knowledge from multiple disciplines. They made a new curriculum that focused on teaching one system and pulling multiple different professionals to teach in a cohesive manner. This is also applied to how people should work within a hospital. It is important to bring multiple different specialists to examine one patient for effective treatment.

Bradley Spain - Law is naturally interdisciplinary because it is thinking systems and society as a whole. However, people who practise law are still subject to common shortcomings of not always having the full picture. There is always room for more critical analysis to see what is missing and who is not included in the law, and from there, how do we include them and make effective changes to do so. It is impossible to separate passion from logic.

Carbajo - How do you balance diversity and under-representation?

Spain Bradley - Critical Diversity looks to address what do people need as a group to survive and what do individuals need to thrive. Consolidating both layers of consideration is difficult to balance because there are many different backgrounds and experiences of people. This falls into providing equity for people and establishing what is best for the ecosystem of people. What rules need to be established to help push through conflict and maintain a peaceful environment? In the end, it is important to remain compassionate with each other since the whole process can be messy and difficult.

Carbajo - Many people have to work with the tension that is present in forming an ecosystem of people. How does the tension affect what you do or say and how do you navigate through it?

O'Neal - The consideration of diversity is particularly crucial in the field of engineering, as exemplified by the development of the first car air bags. Initially, air bags were designed to protect the 50th percentile male, effectively leaving out women, children, and smaller men. This oversight was a result of the lack of diversity in the design team. §§§§ Consequently, many people outside the targeted group suffered fatal consequences. To avoid such tragedies, diversity must always be a priority in engineering, as certain conditions may be overlooked without proper representation. Although it is unfortunate that it took a tragedy to bring this issue to light, it has raised awareness regarding who is missing from the table and how they can be included. Therefore, inclusivity should be reinforced as an essential element in engineering practices.

Alexander- He notes that there is a dearth of diversity among those willing to take part in clinical trials. It is crucial to have a diverse pool of participants in such trials because the effectiveness and safety of treatments and medications can vary across different backgrounds. Historically, underrepresentation and mistreatment have occurred due to a lack of willingness to participate in these trials. This is partly because minority groups have a lack of trust in medical professionals stemming from past violations, such as the

Tuskegee Experiment. §§§§§ Consequently, individuals from these groups feel unsafe and are deterred from participating.

Carbajo - Due to the wide scope of people that need to be considered, many people are still left unseen. This creates unconscious damage being done. What UCLA as a national leading institution can do to enact policy to check and protect those who are oppressed? Are there things UCLA has done to create a system of checks and balances?

Spain Bradley - The UC system has a proud tradition of community involvement, and its policies are primarily communicated through documentation. An example of this is the UC gender and name recognition policy, which was put into effect as a result of changes in California state laws. Once a new policy is established, the next step is to implement these broad concepts on campuses by updating technology and facilities. However, law and policy are typically influenced by a select group of decision-makers at a table, and often encounter real-world obstacles during implementation. Although law and policy can have a positive impact on society, they should not be relied on to drive active changes and calls from the community. If the individuals who are affected and suffering are not represented in the decision-making process, lasting change will not be achieved. The question then becomes: what is the optimal level of community participation in policy development?

Open Question Portion - the panel opened up for students to ask questions.

Student 1 - There are many practices that are outdated, such as people who are part of the LGBT community can not donate blood. Even though we know it is wrong, it is still there. How will we change that?

Alexander - Recently, blood donation is opened up for bisexual and monogamous gay men. This is a movement that are caused by people being at the table, by looking at the data and by understanding the patterns of behaviour and patterns of those particular communities. It may also be caused by individuals in the community having the scientific background to share with those who are making the rules. Therefore, it is moving in the right direction.

Student 2 - It takes a lot of time to enact policy at the college level. It feels very infuriating as college students since we are told to just wait. How can we speed up the process at an institution that is so large?

Spain Bradley - Many of the people in their positions also feel that it is slow. One big component to why it is slow is the scale of people policy changes include. The only time a quick change is implicated is during moments of crisis due to it being a couple of issues that everyone is focused on. However, when there are too many priorities to address, it becomes difficult to create the space and energy needed to address things quickly. It all boils down to how everything is organised and what to do when people disagree on priorities.

Alexander - There are differences between private and public institutions. Private institutions have a smaller decision-making time frame compared to public institutions. Public institutions have a lot of different departments that also need to be involved while private institutions have a smaller scope of people to consider. It also may vary by campus due to campus culture.

Carbajo - There is often a hierarchy of power within institutions. This power structure may actually differ from what it is on paper, and it is important to find who actually makes the calls.

Student 3 - How does one navigate through disagreement? Are there set rules or is it a case-by-case basis?

Alexander - Within a hospital setting, there may be many doctors seeing a case. They may all come and share their own ideas and opinions, but in the end, the patient often makes the call for their treatment. Disagreement may be rooted in the team, but a conclusion is in the hands of the patient.

O'Neal - Although diversity is encouraged, it is still very difficult. It is much easier to work with people that are similar. However, the outcome of working with different people is always better. People all bring something unique to the table, and that is something very valuable. When she entered General Motors, there were not a lot of women in the space. She was told to keep her head down and be just like the other guys. Now, she tells women in engineering to bring their authentic selves because they bring something that the field needs. She acknowledges that it will be hard and messy, but their will eventually be a worthwhile outcome.

Spain Bradley - When she was an environmental science major, she learned how to resolve conflicts, mediation, and learning the skills on how to separate people from problems. Conflict with people will always be present, but that is what is needed to make relationships with people. People should not be afraid to get in conflict with each other, but the most important is to be able to get through to the other side in order to become more connected. She recommends "Dignity" by Donna Hicks and describes the 10 things that humans need to know to be humane with each other.

Student 4 - What are steps students can take to live interdisciplinary lives?

O'Neal - One way is to get involved with student groups. It is difficult for departments to work with other departments, but it is more practical for students to connect with each other over similar interests to hear different perspectives.

Spain Bradley - Maybe it is important to make resources for people to find each other. Having a map of student groups would be beneficial for people who have a hard time finding other people to connect with.

Student 5 - There are an endless number of groups and people that are unrecognised or acknowledged. How do you find all the people who are slipping through the cracks when their lack of presence may not be blatantly obvious.

Cabajo - People can learn from the queer community even though it is not a perfect system. It is constantly evolving and adding to try and include all intersections of gender, sexual preference, and identities. It is one realm that is constantly fighting for representation and visibility. There is always tension in labelling. The queer community is a good model to look at something that is established, what are some individual assumptions, and how to challenge those assumptions. This connects back to his work as a physicist. The process is messy, and it is much easier to stick with what is already established or expected, but the results will not be as good.

Spain Bradley - When creating something, there will always be disagreement between different groups. There will always be something missing and people may leave unhappy. In the end all people can do is care and be kind to each other.

Alexander - In population health, it is known that people are not represented sometimes, so people must go out and find those people and engage. For example, the homeless are often overlooked and conversations need to be held. People who are at the table need to make the active steps to find and include them.

O'Neal - She likes to apply the engineering process to solve real world problems. She categorises the known, the unknown, the initial conditions, and the boundaries. This makes the problem complicated because of the number of conditions that need to be considered. The pathway is not linear, and considering only one thing takes away the effectiveness of the final solution. Having a nuanced understanding makes everything more difficult, but it is worth the results since it solves the problem.

Student 6 - How to make interdisciplinary employment?

O'Neal - Women in Engineering created a curriculum called awareness to action. Many students are looking to take interdisciplinary classes, but there are not enough resources for all of the students who are interested to be able to take them. The resources are out there, and people are becoming more open to taking interdisciplinary classes.

Carbajo - Some people are more susceptible to thinking purely based on logic. It takes time and money to ask questions, so it is important for people to advocate for these interdisciplinary questions.

Student 7 - What are your opinions on Affirmative Action? What do you know about it now?

Spain Bradley - At the end of day, everyone wants the USA to be a place where merit and hard work creates success, however, it has never been like that. Affirmative action is made to uplift people to reach a good ecosystem of people. Many things in politics need to be depoliticized and have deep conversations about the needs of others.

Conclusions

This conversation opened opportunities to discuss the importance of diversity and intersectionality within all disciplines and life. Because people naturally gravitate towards ideas that are similar to their own and have limited perspectives, it is essential for open conversations to be present in all disciplines. Without diversity, people can be negatively impacted. However, systemic issues like the abuse of power within the medical field in clinical trials for minority groups or the politicisation of topics that should not be political are obstacles that are difficult to overcome. It is important to actively seek out solutions and include people who are not at the table because it is the only way to create solutions that have profound meaning and results. There will always be conflict between people due to differing opinions and circumstances, but it is important to seek out ways to resolve problems together to form relationships and communities. Although government policy and law can be a way to ensure protection and inclusion, members of the community still need to find ways to remain involved. The rules that govern society need to shift with the focus of multiple different communities and is only possible with conscious effort of interdisciplinary considerations and actions.

Acknowledgements

this discussion. We would also like to thank the FIAT LUX program at UCLA.

Notes and references

§ https://law.ucla.edu/faculty/faculty-profiles/anna-spain-bradley
§§ https://samueli.ucla.edu/audrey-oneal/
§§§
§§§§https://www.washingtonpost.com/archive/lifestyle/wellness/1996/11/05/air-bag-bias/d534bee8-b9b9-4ff7-98fd-a57b1bd74bf8/
§§§§§ Tuskegee Experiment: The Infamous Syphilis Study - HISTORY