HISTORIC US RESEARCH STRIKE ENDS — BUT ENERGIZES A MOVEMENT

Union organizers say California stand-off is just the beginning of a push for better working conditions.

By Jeff Tollefson

Research has resumed across the University of California (UC) system, following a breakthrough in negotiations late last month that brought the largest higher-education strike in US history to a close. Tens of thousands of graduate students, postdoctoral researchers and other academic staff are heading back to work with higher wages and more benefits because of the strike, but that's not all: the revolt has injected fresh momentum into a growing unionization movement at university campuses across the United States.

"This shows that massive strikes in higher education are possible, and that people can win significant improvements in their working conditions," says Rebecca Givan, co-director of the Center for Work and Health at Rutgers University in New Brunswick, New Jersey, and chair of the union representing academic employees there. "Academic workers everywhere are taking note."

Although the deals to end the strike left some UC workers disappointed, advocates and scholars say that the six-week stand-off represents a landmark achievement for a growing labour movement. Some 48,000 employees across all 10 of the university's campuses and the Lawrence Berkeley National Laboratory will receive expanded benefits and wage increases ranging from 20% to 80%, which supporters say will help to offset rising costs for housing and health care. Union organizers also proclaimed it the very first "research strike", as graduate students, postdocs and non-tenure-track academics united to bring science at their institutions to a standstill.

There was a perception that "the work we do in the labs is not labour", says Rafael Jaime, a scholar in English literature at the University of California, Los Angeles (UCLA), and president of the union representing graduate students and undergraduate workers. "But we have changed that perception."

The word is spreading: union representatives involved in strikes at UC and other universities say that they are fielding queries from researchers at various academic institutions about how to organize unions, conduct negotiations and implement strikes. Some are even preparing workshops in the coming months to accommodate demand.

"This is a movement about hope," says Johannah King-Slutzky, a graduate student in literature at Columbia University in New York and a union organizer there, who is helping with the workshops. "When you see a success on one campus, you feel energized to take similar steps on your own."

Organizing labour

Although unusual in its size and scope, the UC strike is just the latest example of a growing protest movement in academia. Over the past year, strikes have been held at several US universities, including Indiana University in Bloomington, and Columbia University. Similar demands for higher wages and better working conditions have accompanied strikes in places such as Canada and the United Kingdom, although these countries have a longer and more-ingrained history of organized labour.

Union organizers say that the effects of such strikes are already bringing changes at some US institutions. Both Princeton University in New Jersey, and the University of Pennsylvania in Philadelphia offered historic — and unprompted — increases in research stipends for graduate students last year, citing the need to attract and maintain doctoral students. "It's hard to make a causal link, but the breadth of evidence is suggestive that the strikes are having major repercussions across academia in the United States," says Connor Jackson, a graduate researcher in agricultural economics at the Lawrence Berkeley laboratory.

As it stands, academia is now home to some of the largest growth in unionization across all sectors of the US economy. Nearly 150 unions, representing more than 600,000 academic workers, have signed a statement developed by the organization Higher Education Labor United that advocates wall-to-wall union protection for higher-education workers across the country. And unionization efforts are expanding at universities across the country, union officials say.

The surge in the academic labour movement has been decades in the making, with reductions in public funding pushing universities to rely on higher tuition fees, cheap labour and part-time or adjunct faculty members to continue functioning. Rising costs for housing and health care have only compounded the problem — particularly in places such as California, where the cost of living has rocketed in recent years. At the same time, the period that graduate students and postdoctoral workers spend in economic hardship has lengthened, as tenure-track professorships have dwindled.

"It's just getting harder and harder to justify poverty wages by saying that grad workers are apprentices, with some kind of golden ticket for a tenure-track position," says Steve Striffler, director of the Labor Resource Center at the University of Massachusetts, Boston.

The University of California strike began on 14 November last year and ended six weeks later.

MEL MELCON/LOS ANGELES TIMES VIA GETTY

Academics say this is just the beginning. The rising expectations of an emboldened labour movement were on full display on 23 December, when more than 35% of the members of two unions representing UC graduate students voted against accepting university officials' offer and ending the strike.

Missed opportunity?

One of the organizers of the vote-no campaign was Dylan Kupsh, a graduate researcher in computer science at UCLA. Kupsh was in close contact with union organizers at Columbia University, where student workers rejected an initial contract proposal and went on to secure further concessions after a ten-week strike that ended last January.

In the end, UC graduate students received a range of new benefits, including increased childcare subsidies; protections against bullying, discrimination and harassment; and a new schedule for salaries. Incoming graduate students, for example, will see their annual salary increase from around US$22,000 to $30,500. "We could have won a lot more, and it's sad that we didn't get there," Kupsh says. "We're going to have to repeat in another 2.5 years."

For Barry Eidlin, a sociologist at McGill University in Montreal, Canada, who studies the labour movement, the scale of the vote-no campaign is yet another sign of changing expectations in academia. "In the past, academic workers have felt like they should just keep their heads down and be grateful they have a job," he says. "The idea that people now expect more, and are willing to fight for more, seems to me a welcome shift in perspective."

ABSTRACTS WRITTEN BY CHATGPT FOOL SCIENTISTS

Researchers cannot always differentiate between AI-generated and original abstracts.

By Holly Else

An artificial-intelligence (AI) chatbot can write such convincing fake research-paper abstracts that scientists are often unable to spot them, according to a preprint posted on the bioRxiv server in late December[1]. Researchers are divided over the implications for science.

"I am very worried," says Sandra Wachter, who studies technology and regulation at the University of Oxford, UK, and was not involved in the research. "If we're now in a situation where the experts are not able to determine what's true or not, we lose the middleman that we desperately need to guide us through complicated topics," she adds.

The chatbot, ChatGPT, creates realistic text in response to user prompts. It is a 'large language model', a system based on neural networks that learn to perform a task by digesting huge amounts of existing human-generated text. Software company OpenAI, based in San Francisco, California, released the tool on 30 November, and it is free to use.

Since its release, researchers have been grappling with the ethical issues surrounding its use, because much of the chatbot's output can be difficult to distinguish from human-written text. Scientists have published a preprint[2] and an editorial[3] written by ChatGPT. Now, a group led by Catherine Gao at Northwestern University in Chicago, Illinois, has used ChatGPT to generate artificial research-paper abstracts to test whether scientists can spot them.

The researchers asked the chatbot to write 50 medical-research abstracts based on a selection published in *JAMA*, *The New England Journal of Medicine*, *The BMJ*, *The Lancet* and *Nature Medicine*. They then compared these with the

> "If the experts are not able to determine what's true, we lose the middleman to guide us through complicated topics."

original abstracts by running them through a plagiarism detector and an AI-output detector, and asked a group of medical researchers to spot the fabricated abstracts.

Under the radar

The ChatGPT-generated abstracts sailed through the plagiarism checker: the median originality score was 100%, which indicates that no plagiarism was detected. The AI-output detector spotted 66% of the generated abstracts. But the human reviewers didn't do much better: they correctly identified only 68% of the generated abstracts and 86% of the genuine abstracts. They incorrectly identified 32% of the generated abstracts as being real and 14% of the genuine abstracts as being generated.

Wachter says that, if scientists can't determine whether research is true, there could be "dire consequences". As well as being problematic for researchers, who could be pulled down flawed routes of investigation, because the research they are reading has been fabricated, there are "implications for society at large because scientific research plays such a huge role in our society". For example, it could mean that research-informed policy decisions are incorrect, she adds.

But Arvind Narayanan, a computer scientist at Princeton University in New Jersey, says: "It is unlikely that any serious scientist will use ChatGPT to generate abstracts." He adds that whether generated abstracts can be detected is "irrelevant". "The question is whether the tool can generate an abstract that is accurate and compelling. It can't, and so the upside of using ChatGPT is minuscule, and the downside is significant," he says.

Irene Solaiman, who researches the social impact of AI at Hugging Face, an AI company with headquarters in New York and Paris, has fears about any reliance on large language models for scientific thinking. "These models are trained on past information and social and scientific progress can often come from thinking, or being open to thinking, differently from the past," she adds.

The authors suggest that those evaluating scientific communications, such as research papers and conference proceedings, should put policies in place to stamp out the use of AI-generated texts. If institutions choose to allow use of the technology in certain cases, they should establish clear rules around disclosure. This month, the Fortieth International Conference on Machine Learning — which will be held in Honolulu, Hawaii, in July — announced that it has banned papers written by ChatGPT and other AI language tools.

Solaiman adds that in fields where fake information can endanger people's safety, such as medicine, journals might have to take a more rigorous approach to verifying information as accurate.

Narayanan says that the solutions to these issues should not focus on the chatbot itself, "but rather the perverse incentives that lead to this behaviour, such as universities conducting hiring and promotion reviews by counting papers with no regard to their quality or impact".

1. Gao, C. A. *et al.* Preprint at bioRxiv https://doi.org/10.1101/2022.12.23.521610 (2022).
2. Blanco-Gonzalez, A. *et al.* Preprint at https://arxiv.org/abs/2212.08104 (2022).
3. O'Connor, S. & ChatGPT. *Nurse Educ. Pract.* **66**, 103537 (2023).