Abstracted power and responsibility: How to 'make it real.'

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A familiar experiment

Intention: to explore subjects' obedience to authority when directed to inflict pain on another human
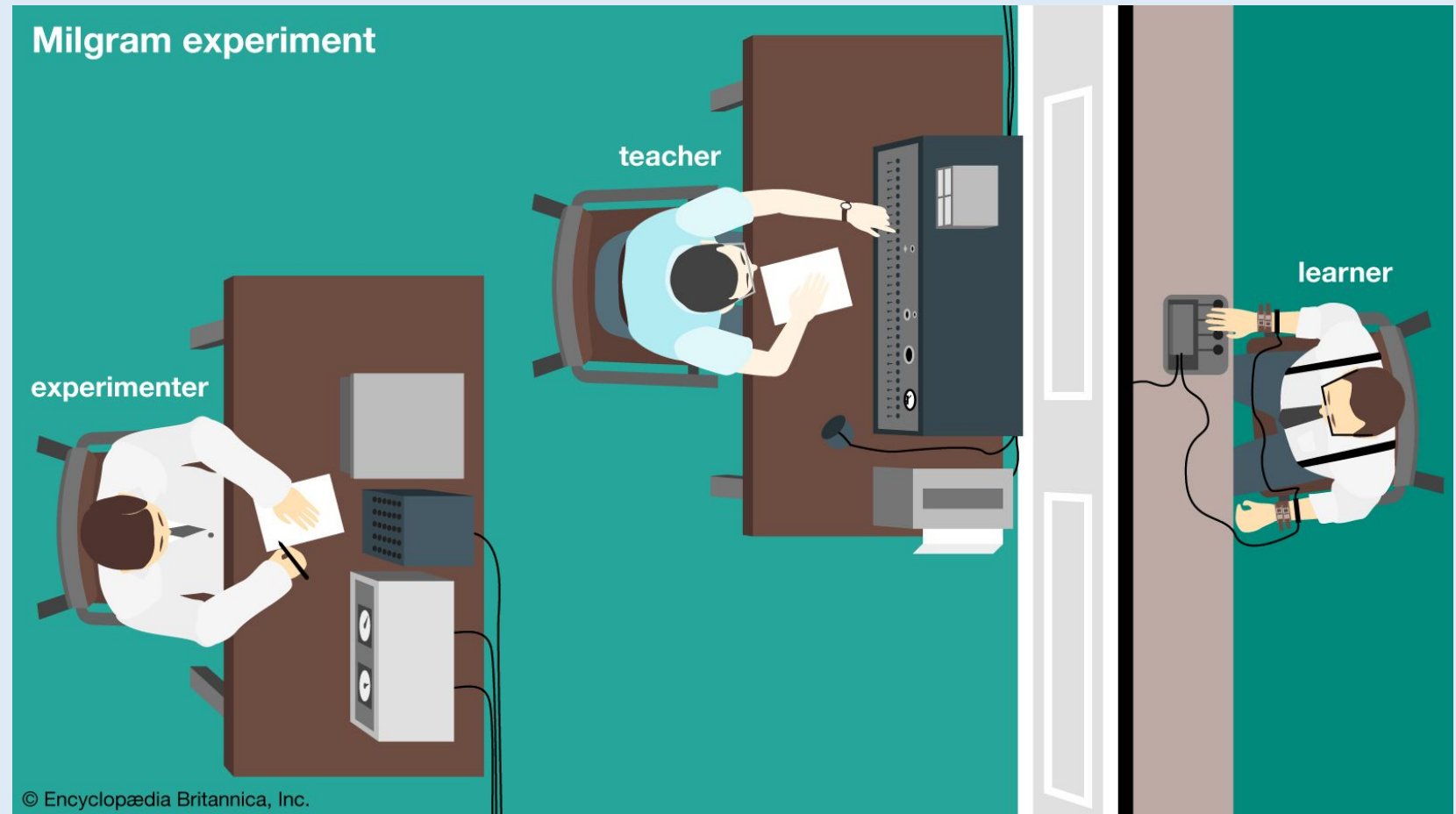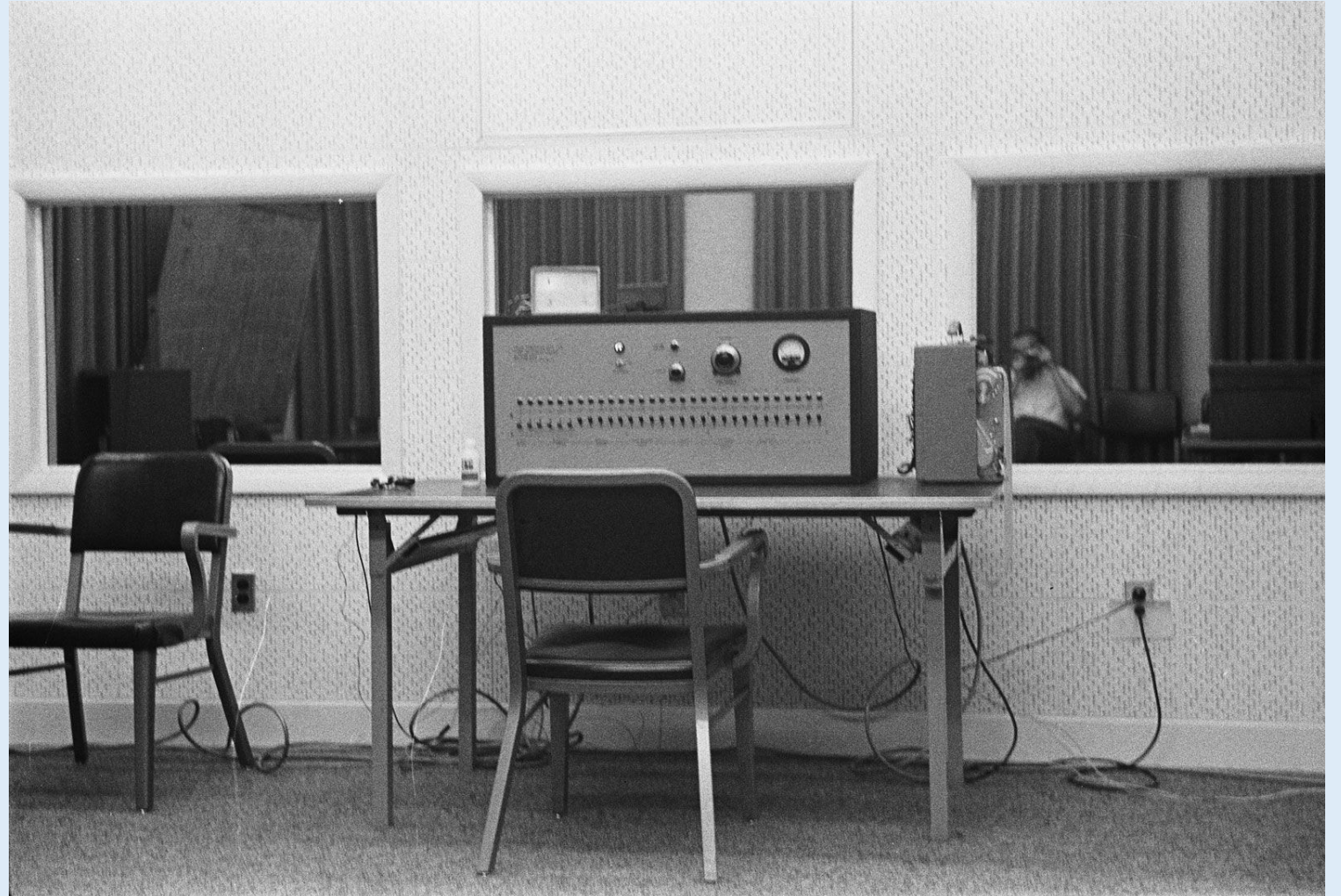

Image source: Encyclopaedia Britannica

What if…

The window had been transparent?

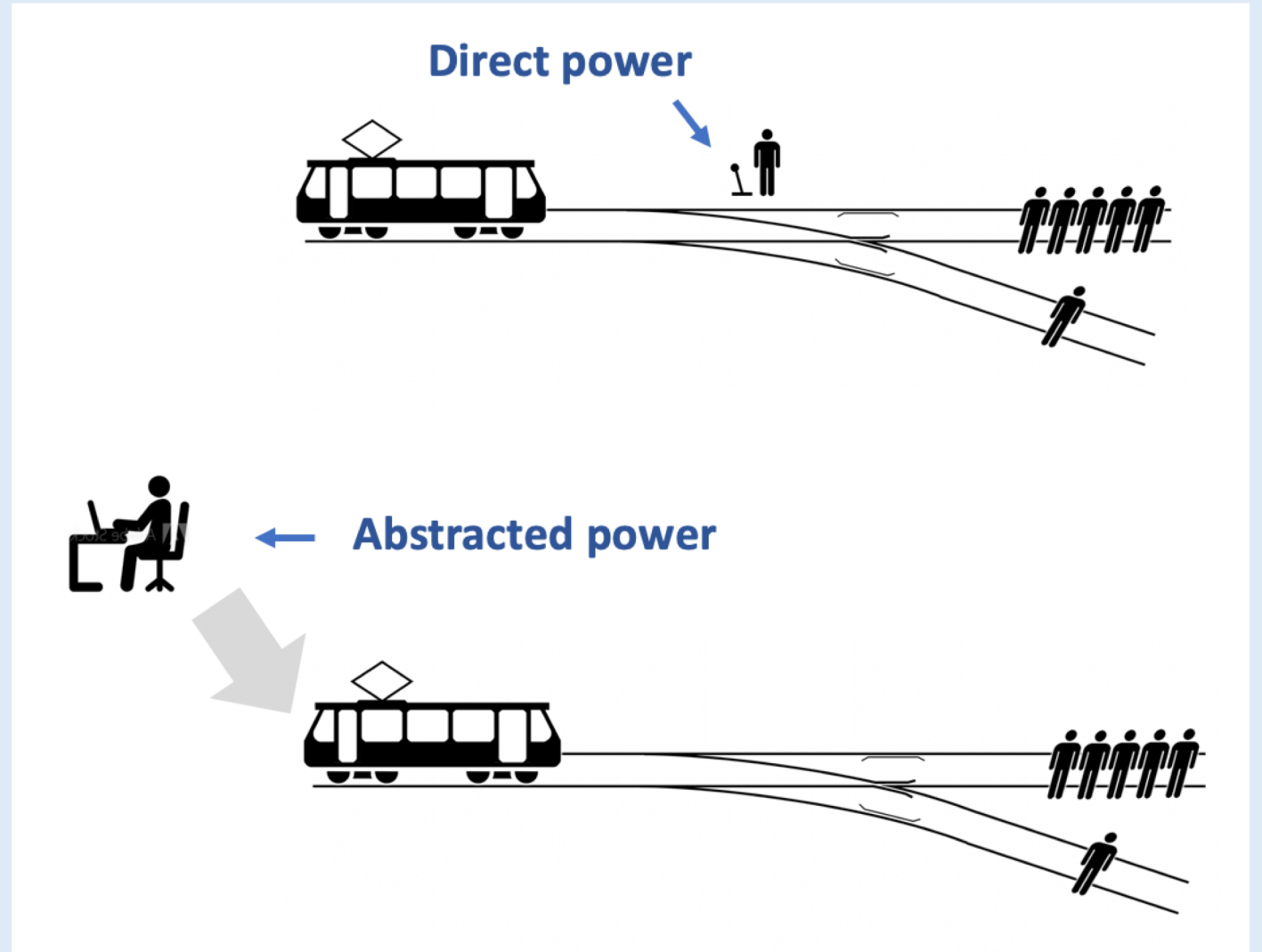The person 'giving' the shocks had been able to see the person 'receiving' them?

Image source: the estate of Alexandra Milgram—Stanley Milgram Papers (MS 1406). Manuscripts and Archives, Yale University Library, via Encyclopaedia Britannica

Abstracted power is "a human actor's influence or control over a system, process, or dataset which, as a function of the technology that enables it, obscures or distances the human actor from consequences of that influence or control."

T. L. Peterson, R. Ferreira and M.Y. Vardi, "Abstracted Power and Responsibility in Computer Science Ethics Education," in *IEEE Transactions on Technology and Society* (Early Access, 2023).

Conceptualizing abstracted power

We use the Trolley Problem but give it a twist

Direct power

Abstracted power

Student examples of power abstracted by technology

Operators of military drones

Posters of online restaurant reviews

Anonymous commenters in online discussion spaces

Factors contributing to abstraction of power <u>in computer science</u>

Technological intermediation: Technologies {software, joystick, keyboard, user interface} allow their creators and users to influence others from a great distance.

Computational thinking: Computation <u>requires</u> thinking in terms of variables, data types, and algorithms rather than the human beings or complex stories behind them.

How AI contributes to abstraction of power

AI generative models such as DALL-E hide the human creators of art, their emotions, and their labor

Machine learning systems that base predictions on past human decisions enable automated decision-making with life-altering consequences

How can we de-abstract?
How can we make it real for students?

In my classroom I add <u>friction</u> to shift students' perspectives and to cause productive discomfort.

Morrison and Wallace (2022) apply the apt term "defamiliarization" to disrupt habitual perceptions of technology and consider it in new ways.

A. Morrison and C. Wallace, "Making It Strange: Disrupting Assumptions About Technology and Ethics in Engineering and Computing Education," in *IEEE Technology and Society Magazine*, vol. 41, no. 3, pp. 81-90, Sept. 2022.

Ways to introduce friction and de-abstract the power of technology

Assign them to 'program' an autonomous vehicle that's doomed to crash; they have to decide who/what is hit

Take their favorite apps away for 24 hours and ask them to write about the experience

Ways to introduce friction and de-abstract the power of technology

Assign them to watch specific 'Black Mirror' episodes and write about the technology portrayed

Assign them to interview a human stakeholder about an automated/AI-based system they have to use as part of their job

De-abstraction can move people to care

Statistics can be accurate, but they tend to leave people emotionally cold.

Charities have long known that personal narratives, names, and photos of their beneficiaries move donors to give more.

De-abstraction of power and responsibility is a vital 'correction'

We cannot possibly add all the human details back into models used in computing – it would be difficult and counterproductive.

Rather, we should cultivate de-abstraction as a mode of critical thinking – it can serve as an antidote/supplement to computational thinking and technological intermediation.

Do you recognize abstracted power in your field?

What do you do to address it?

Pink Floyd
'On the Turning Away'

Momentary Lapse of Reason
(1987)