The Surveillant University: Remote Proctoring, AI, and Human Rights

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Exam surveillance (also known as proctoring or invigilation) has traditionally been carried out by human proctors who supervise exams in a shared physical space, such as a classroom. More recently, universities have adopted technological tools for exam surveillance — in part to address the use by students of their computers to write exams, and in part to serve the growing trend in online and distance learning. In March 2020, the global COVID-19 pandemic drove learning online suddenly and on an unprecedented scale, leading to a significant boost in demand for remote proctoring services.

Remote proctoring during the pandemic has generated considerable controversy. Students have launched petitions, have sought injunctions to prevent its use, and have taken to social and other media to express their distress over its impacts. Many have maintained that remote proctoring violates privacy rights, and that it raises serious issues of discrimination against women, racialized persons, and differently-abled persons.

This paper explores the privacy and human right issues raised by remote proctoring. It proposes a necessity and proportionality approach to guide universities in their decision-making processes around the implementation of technological tools such as remote proctoring.

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I. Introduction

Exam surveillance (also known as proctoring or invigilation) is a common practice in universities around the world. Traditionally, it is carried out by human invigilators or proctors who supervise the writing of an exam in a shared physical space, such as a classroom. The proctors may include the instructor or staff hired specifically for this function. More recently, universities have adopted technological tools for exam surveillance — in part to address the use by students of their computers to write exams, even in conventional settings, and in part to serve the growing trend in online and distance learning. In March 2020, the global COVID-19 pandemic drove learning online suddenly and on

an unprecedented scale,[1] leading to a significant boost in demand for remote proctoring.[2] This has brought to the forefront concerns over such technologies.

Remote proctoring during the pandemic has generated considerable controversy. Students have launched petitions against remote proctoring,[3] sought injunctions to prevent its use,[4] and taken to social and other media to express their distress over its impacts.[5] An instructional technologist in Canada

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1 A May 2020 crowdsourced survey led by Statistics Canada showed that 17% of respondents had some of their courses moved online as a result of the global pandemic, while 75% had all of their classes moved online: "COVID-19 Pandemic: Academic Impacts on Postsecondary Students in Canada" (14 May 2020), online: *Statistics Canada* <www150.statcan.gc.ca/n1/pub/45-28-0001/2020001/article/00015-eng.htm>.

See also Terence Day et al, "The Immediate Impact of COVID-19 on Postsecondary Teaching and Learning" (2021) 73:1 The Professional Geographer 1, online: <doi.org/10.1080/00330124.2020.1823864>; Albert Fox Cahn et al, "Snooping Where We Sleep: The Invasiveness and Bias of Remote Proctoring Services" (11 November 2020) at 3, online (pdf): *Surveillance Technology Oversight Project* <static1.squarespace.com/static/5c1bfc7eee175995a4ceb638/t/5fa5a6089dac8b491dfeabe9/1604691464606/Snooping+Where+We+Sleep.pdf>.

2 The exact degree of uptake is difficult to assess. Kimmons and Veletsianos provide some data including a small sample survey, promotional statements by proctoring companies and their own Google-search based analysis. Their conclusion is that the use of such services is "increasingly ubiquitous", but they also observe that it is difficult to tell how far the usage penetrates within individual universities that have adopted these services. See Royce Kimmons & George Veletsianos, "Proctoring Software in Higher Ed: Prevalence and Patterns" (23 February 2021), online: *Educause* <er.educause.edu/articles/2021/2/proctoring-software-in-higher-ed-prevalence-and-patterns>.

3 See *e.g.* Jason Kelley, "Students Are Pushing Back Against Proctoring Surveillance Apps" (25 September 2020), online: *Electronic Frontier Foundation* <www.eff.org/deeplinks/2020/09/students-are-pushing-back-against-proctoring-surveillance-apps> [Kelley, "Students Are Pushing Back"].

4 See C/13/684665 / KG ZA 20-481 (2020), Rb. Amsterdam (NL) [Rb. Amsterdam].

5 See #ProcterrorU, online: *Twitter* <twitter.com/ProcterrorU>.

is facing a lawsuit over his attempts to publicize the inner workings of one remote proctoring service.[6] Many have raised concerns that remote proctoring breaches privacy and data protection rights, and that it raises serious issues of discrimination against women, racialized persons, differently-abled persons and those with non-conforming gender identities.

This paper explores the privacy and human rights issues raised by remote proctoring and analyzes them through a necessity and proportionality lens. Although remote proctoring is used in many forms of education, training, and certification, the focus of this paper will be on its use in universities. The goal is to provide a normative framework to guide universities in their adoption of technological tools such as remote proctoring. Part II sets the context through a discussion of the impact of the COVID-19 pandemic on the rapid and widespread adoption of remote proctoring in universities around the world. Part III identifies different types of remote proctoring. Part IV examines remote proctoring through a necessity and proportionality lens. As part of this analysis, it also considers the different impacts of remote proctoring on data protection, privacy and human rights. The paper concludes with an assessment of the necessity and proportionality of remote proctoring solutions and the place for remote proctoring in the university context.

II. Remote Proctoring and the Pandemic

Online education is not new. Dendir and Maxwell note that it grew steadily between 2002 and 2016.[7] They observe that in 2016 close to 30% of students

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6 See Monica Chin, "An Ed-tech Specialist Spoke Out about Remote Testing Software — and Now He's Being Sued" (22 October 2020), online: *The Verge* <www.theverge.com/2020/10/22/21526792/proctorio-online-test-proctoring-lawsuit-universities-students-coronavirus>; Joe Mullin, "Student Surveillance Vendor Proctorio Files SLAPP Lawsuit to Silence A Critic" (23 February 2021), online: *Electronic Frontier Foundation* <www.eff.org/deeplinks/2021/02/student-surveillance-vendor-proctorio-files-slapp-lawsuit-silence-critic>.

7 Note that 2016 was the last year in which data were available to them. Seife Dendir & R Stockton Maxwell, "Cheating in Online Courses: Evidence from

in the US were enrolled in at least one online course.[8] Even prior to the COVID-19 pandemic, they described this form of distance learning as "a mainstay of higher education in the future".[9] Remote proctoring is also used for high school online learning, employee skills training,[10] and professional certification and qualification.

The announcement by the World Health Organization of a global COVID-19 pandemic in March 2020 led to a sudden shift from in-person to online learning in many countries. University students, already in mid-semester, were asked to stay home, and courses were quickly moved to online platforms. The timing led to a sudden need to provide for the online administration of final exams, and many universities quickly adopted one of a number of different remote proctoring solutions.[11] Available options included: Respondus, Proctorio, Examity, ExamSoft, ProctorU, Verifient, and Honorlock. According to a survey by Educause in April 2020, 77% of responding universities[12]

Online Proctoring" (2020) 2 Computers in Human Behaviour Reports 100033, at 1, online: <doi.org/10.1016/j.chbr.2020.100033>.

8 *Ibid*.

9 *Ibid*.

10 There is a considerable uptake in the corporate sector of remote and online learning for employee skills training. See Bobby Chernev, "29 Astonishing E-learning Statistics for 2021" (3 October 2021), online: *Techjury* <techjury.net/blog/elearning-statistics/#gref>; and Chang Chen, "Distance Learning Statistics and Growth of Online Education in 2020" (4 March 2021), online: *Otter AI* <blog.otter.ai/distance-learning-statistics>.

11 According to data gathered by the Electronic Frontier Foundation, "ProctorU claims to have proctored 6,280,986 exams during the pandemic; Proctorio reports 20,000,000; ExamSoft reports over 75 million tests proctored total in June 2021, compared to 61 million in October 2020". See Jason Kelley, "A Long Overdue Reckoning for Online Proctoring Companies May Finally Be Here" (22 June 2021), online: *Electronic Frontier Foundation* <www.eff.org/deeplinks/2021/06/long-overdue-reckoning-online-proctoring-companies-may-finally-be-here> [Kelley, "Long Overdue Reckoning"].

12 A total of 312 institutions responded to the survey. The overwhelming majority were based in the US (294). See Susan Grajek, "EDUCAUSE COVID-19 QuickPoll Results: Grading and Proctoring" (10 April 2020), online: *Educause*

indicated that they had either already subscribed or planned to use online proctoring services as part of their pandemic response.[13] The survey also noted that the rapid adoption of these services meant that in many cases "institutions are spending money they don't have to acquire products they don't fully understand".[14]

Perhaps unsurprisingly, the sudden shift to online proctoring raised concerns and anxiety among students, who were also dealing with the challenges of both the pandemic and the shift to online learning. The sudden change meant that there was little time for universities to make choices, communicate information to students, or mitigate some of the issues raised by online proctoring. There were, in fact, a broad range of issues. Not only did accommodations need to be made for students with a range of disabilities, but also not all students had adequate internet service or quiet spaces for exam writing. Privacy was another important concern. Students also raised human rights issues, including adverse impacts of some forms of remote proctoring on women, differently-abled individuals, and racialized students. There were also issues of integrating remote proctoring with existing disciplinary codes of practice, and the potential procedural fairness issues this might engender.

The sudden shift to remote monitoring also led to resistance by students who felt blindsided by this change in practice and whose concerns included privacy, human rights, and fairness. One example of resistance was an attempt by students at the University of Amsterdam to obtain an injunction to stop the use of online proctoring at that university.[15] In the United States, the civil society organization EPIC filed a complaint about online proctoring with the Attorney

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Review <er.educause.edu/blogs/2020/4/educause-covid-19-quickpoll-results-grading-and-proctoring>. See footnote 32 below for references to additional petitions.

13 Grajek, *ibid*.

14 *Ibid*.

15 Rb. Amsterdam, *supra* note 4. This attempt failed for reasons that will be discussed below.

General of the District of Columbia.[16] A letter from a group of US Senators demanded information regarding remote proctoring services.[17] There have also been numerous petitions from students seeking to compel their universities to reconsider online proctoring.[18]

Not all professors were comfortable with the remote proctoring solutions adopted by their universities.[19] Another form of resistance — or at least of avoidance of the issues raised by online proctoring — was a change in evaluation methods. Many professors chose to alter their modes of evaluation in order to avoid the need for exams that would have to be remotely monitored in some

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16 The Electronic Privacy Information Center, "Complaint and Request for Investigation, Injunction, and Other Relief" (2020), online (pdf): *Office of the Attorney General of the District of Columbia* <epic.org/privacy/dccppa/online-test-proctoring/EPIC-complaint-in-re-online-test-proctoring-companies-12-09-20.pdf>.

17 Richard Blumenthal, "Blumenthal Leads Call for Virtual Exam Software Companies to Improve Equity, Accessibility & Privacy for Students Amid Troubling Reports" (3 December 2020), online: *Richard Blumenthal* <www.blumenthal.senate.gov/newsroom/press/release/blumenthal-leads-call-for-virtual-exam-software-companies-to-improve-equity-accessibility-and-privacy-for-students-amid-troubling-reports>.

18 See *e.g.* Kelley, "Students Are Pushing Back", *supra* note 3; Daniel J. Rowe, "COVID-19: Concordia University Students Petition Against Final Exams Proctored Via Webcam" (5 April 2020), online: *CTV News* <montreal.ctvnews.ca/covid-19-concordia-university-students-petition-against-final-exams-proctored-via-webcam-1.4882522>; and Kirat Walia, "Students Continue Fight to Remove Proctortrack, Months after Petition Began" (8 November 2020), online: *Western Gazette* <westerngazette.ca/news/students-continue-fight-to-remove-proctortrack-months-after-petition-began/article_303e674a-0813-11eb-a287-97bc2a05baa0.html>.

19 See *e.g.* the letter from the University of California Santa Barbara Faculty Association to the University's Board of Governors which raises concerns about UCSB's adoption of ProctorU services; and the Letter from UCSB Faculty Association to Henry Yang, Chancellor (13 March 2020), online (pdf): *The Council of UC Faculty Associations* <cucfa.org/wp-content/uploads/2020/03/ProctorU_2020-1.pdf>.

way.[20] Some universities, faculties, and departments also expressly chose not to adopt these solutions or, as the pandemic progressed, to discontinue their use.[21]

As experience grew with widespread use of online proctoring for university courses, so too did news coverage of problems with the services.[22] These included data breaches, allegations of racism, gender bias, ablism, and the degrading of students through surveillance. As will be discussed in greater detail below, while the concerns raised are serious and real, their incidence varies greatly depending upon the remote proctoring solution chosen by the university and the manner of implementation.

Remote proctoring in some form or another may be here to stay. Not only does its use predate the pandemic, but there is also considerable speculation that university education may be irreversibly changed by the widespread experience

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20 See *e.g.* Grajek, *supra* note 12.

21 The faculties of law and engineering at the University of Ottawa decided that their professors would not use the Respondus exam surveillance service contracted for by the university. See Fulcrum Editorial Board, "Implementing Respondus is a Flawed and Lethargic Solution to Curbing Academic Fraud" (17 July 2020) *The Fulcrum*. In early 2021, York University announced that it was stepping away from the use of remote proctoring. See Sakeina Sayed, "York Says Goodbye to Most Online Proctoring Software" (9 March 2021), online: *Excalibur* <www.excal.on.ca/news/2021/03/09/york-says-goodbye-to-most-online-proctoring-software>. Similarly, the University of Illinois indicated that it would end the use of one particular remote proctoring service, while continuing to explore other possible options. See Monica Chin, "University Will Stop Using Controversial Remote-testing Software Following Student Outcry" (29 January 2021), online: *The Verge* <www.theverge.com/2021/1/28/22254631/university-of-illinois-urbana-champaign-proctorio-online-test-proctoring-privacy> [Chin, "University Will Stop"].

22 See *e.g.* Drew Harwell, "Cheating-detection Companies Made Millions during the Pandemic. Now Students are Fighting Back" (12 November 2020) *Washington Post* [Harwell, "Cheating-detection"]; Todd Feathers, "Schools Are Abandoning Invasive Proctoring Software After Student Backlash" (26 February 2021), online: *Vice* <vice.com/en/article/7k9ag4/schools-are-abandoning-invasive-proctoring-software-after-student-backlash>; and Kelley, "Students Are Pushing Back", *supra* note 3.

gained by faculty and students with online learning tools and technologies. The new, post-pandemic normal may include a much greater proportion of online learning opportunities for university-level students[23] accompanied by ongoing use of remote proctoring services.[24] Remote proctoring services have also been adopted for continuing education and training; they are used by certification bodies and in other professional contexts where distributed forms of evaluation make more sense than mass sit-down examinations in a prescribed location.[25]

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23 One US-based source reports that 33% of post-secondary institutions will continue to use remote and online learning post-pandemic. See Cherney, *supra* note 10. The World Economic Forum suggests that in those countries where internet access is more widely available, online learning tools could be increasingly integrated with traditional classroom learning in universities post-pandemic. See Cathy Li & Farah Lalani, "The COVID-19 Pandemic has Changed Education Forever. This is How" (29 April 2020), online: *WEForum* <www.weforum.org/agenda/2020/04/coronavirus-education-global-covid19-online-digital-learning>. Research is emerging that suggests that online learning has positive value in the university context. See *e.g.* Marwa Mohamed Zalat, Mona Sami Hamed & Sarah Abdelhalim Bolbol, "The Experiences, Challenges, and Acceptance of E-learning as a Tool for Teaching during the COVID-19 Pandemic among University Medical Staff" (26 March 2021), PLOS ONE 16(3): e0248758, online: <doi.org/10.1371/journal.pone.0248758>. See also Lindsay Mackenzie, "Students Want Online Learning Options Post-Pandemic" (27 April 2021), online: *Inside Higher Ed* <www.insidehighered.com/news/2021/04/27/survey-reveals-positive-outlook-online-instruction-post-pandemic>; and Alexandra Witze, "Universities Will Never Be the Same after the Coronavirus Crisis" (2020) 582 Nature 162.

24 Li & Lalani, *ibid*; Barbara B Lockee, "Online Education in the Post-COVID Era" (2021) 4 Nature Electronics 5; John Nworie, "Beyond COVID-19: What's Next for Online Teaching and Learning in Higher Education?" (19 May 2021), online: *Educause* <er.educause.edu/articles/2021/5/beyond-covid-19-whats-next-for-online-teaching-and-learning-in-higher-education>; and Nora Caplan Bricker, "Is Online Test-Monitoring Here to Stay?" (27 May 2021) *The New Yorker*.

25 For example, Honorlock promotes the use of its services for certification programs. See online: *Honorlock* <honorlock.com/certifications/>. See also "CSI Launches Computer-based Exams and Remote Proctoring" (14 December 2021), online: *Moody's Analytics* <www.moodysanalytics.com/about-us/press-

This type of use may continue. Thus, although the urgency of pandemic adoption may pass, there will still be a need to consider whether, and how best to adopt and implement online proctoring technologies.

III. What is remote proctoring?

At its simplest, remote proctoring is exam invigilation carried out at a distance, where students and invigilators are not in the same physical space. A 2020 Educause survey identified four specific categories of remote proctoring. These categories can be used alone or in combination. They are:

- *Passive monitoring of software* used on students' computers
- *Active restriction of software* on students' computers
- *Passive video surveillance* of students (direct monitoring by webcam)
- *Active video surveillance* of students (live proctors remotely using video cameras)[26]

The first category involves surveillance of students' activities only to the extent of noting whether a student uses other applications on their computer while they are writing an exam. The second category does not involve surveillance *per se*; rather, software is temporarily installed on the student's computer which blocks their ability to access anything other than the program required for completing the exam. These technologies were already in use at many institutions prior to the pandemic. They have been used to prevent

releases/2020-12-14-csi-launches-computer-based-exams-and-remote-proctoring>; and "Remote Proctoring", online: *Association of Energy Engineers* <www.aeecenter.org/remoteproctoring>. The California Bar Association uses remote proctoring for its exam, which has led to controversy. See Jason Kelley, "ExamSoft Flags One-Third of California Bar Exam Test Takers for Cheating" (22 December 2020), online: *Electronic Frontier Foundation* <www.eff.org/deeplinks/2020/12/examsoft-flags-one-third-california-bar-exam-test-takers-cheating>.

26 Adapted from Grajek, *supra* note 12.

cheating where students are writing computerized exams in traditional in-person exam settings.[27]

The next two categories of remote proctoring involve actual video surveillance of the exam-taker. The third category involves the student writing their exam with their web camera on; a recording is made throughout the exam period. Such recordings typically include audio and visual elements. In order to determine whether a student has cheated, someone must watch the video to look for any anomalous or problematic activity. Since reviewing videos is time- and labour-intensive, video surveillance may be combined with artificial intelligence ("AI") in order to automate the analysis of the videos to detect suspicious activity. A number of remote proctoring companies offer AI-enabled proctoring either exclusively[28] or as part of a menu of remote proctoring choices.[29]

The final category, active video surveillance, involves the student writing an exam with their web camera enabled and with a human monitoring the process in real-time. This can be implemented in multiple ways. For example, a professor could require all students to write their exam while on a platform such

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27 There have also been controversies with these technologies, as some students object to having to install software that interferes with their computer — even if temporarily. See *e.g.* Sonia Dubiansky, "Students Speak Out on Controversial Lockdown Browsers for Online Courses" (28 October 2020) *Technician*; and Sydney Thompson, "Lockdown Browser Causes Concern among Students" (22 September 2020), online: *The Carolinian* <carolinianuncg.com/2020/09/22/lockdown-browser-causes-concern-among-students/>.

28 Note that ProctorU has discontinued its fully automated proctoring services, moving to human review. See "ProctorU Will Become the Largest Test Security Provider to Use Trained Human Proctors for Every Test Session" (24 May 2021), online: *ProctorU* <www.proctoru.com/industry-news-and-notes/proctoru-to-discontinue-exam-integrity-services-that-rely-exclusively-on-ai>.

29 For a sense of the scope of these choices, see "Examsoft, Proctorio, ProctorU Responses to Senate Letter" (2022), online: *Electronic Frontier Foundation* <www.eff.org/document/proctoring-companies-responses-senate-letter> [EFF, "ProctorU Responses"].

as Zoom with their web cameras on. The professor (or his or her designates) then watches the multiple windows to look for suspicious activity. This is closer to in-class proctoring since the proctor shifts their gaze from one student to another; no one is under constant direct surveillance for the full duration of the exam. This type of surveillance does not require the services of a proctoring company. Another implementation of active surveillance is more invasive; this involves one-to-one surveillance. The student writing the exam leaves his or her camera on, and they are watched for the duration of the exam by an invigilator — typically supplied by a proctoring company. In either case, the proctoring session can be recorded or not; the recording of a session raises more privacy and data protection issues.

As noted earlier, implementations of remote surveillance can mix and match from the different categories. Thus, it is possible to have passive video surveillance combined with active restrictions on students' computers.[30] It is also possible, with the active surveillance model, to have a recording of the exam session made for later consultation, should it be necessary.

It is also important to note that AI-enabled proctoring goes beyond the observation that human surveillance provides. AI-enabled services may offer keystroke monitoring (*e.g.* measuring the rhythm and typing speed of the student to detect anomalies), as well as face detection, the monitoring of eye movements, and background sound analysis.[31] Remote proctoring services that rely upon AI to detect behaviours linked to cheating have proven to be the most controversial.[32] Cahn et al describe AI-enabled remote proctoring technologies

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30 For an example of the suite of services available through Proctorio, see "Online Proctoring" (2022), online: *Proctorio* <proctorio.com/products/online-proctoring> ["Online Proctoring"].

31 See EFF, "ProctorU Responses", *supra* note 29.

32 Popular petition website Change.org features numerous student petitions against the use of remote proctoring services. For a sample from different countries, see "Stop Proctoring Exams Through Proctorio at UIUC" (2021), online: *Change.org* <www.change.org/p/uiuc-stop-proctoring-exams-through-proctorio-proctoru>; D Anon, "Stop CSUF from Using Invasive Programs like Proctorio" (2021), online: *Change.org* <www.change.org/p/california-state-

as "exquisitely suspicious, flagging a wide range of innocent behaviors for investigation".[33]

Another feature of remote proctoring is identity verification. Identity verification is typically also part of in-person exam proctoring since a student having someone else take an exam for them is a known cheating behaviour.[34] Remote proctoring companies often carry out identity verification by requiring the student to provide a valid identity document (either by holding it up to the camera or by sending a scanned image) which is then matched against the

university-fullerton-stop-csuf-from-using-invasive-programs-like-proctorio>; Katrina Martin, "Stop the Use of Online Proctoring Exams of the University of Minnesota" (2021), online: *Change.org* <www.change.org/p/amy-klobuchar-stop-the-use-of-online-proctoring-exams-at-the-university-of-minnesota>; ANUSA Environment Officer, "Tell ANU: Students Say NO to Proctorio" (2020), online: *Change.org* <www.change.org/p/australian-national-university-tell-anu-students-say-no-to-proctorio>; Students of University of Canberra (UC), "No Proctorio at the University of Canberra" (2020), online: *Change.org* <www.change.org/p/university-of-canberra-no-proctorio-at-the-university-of-canberra>; David Walsh, "UBC Must Ban Proctorio, University-wide" (2021), online: *Change.org* <www.change.org/p/the-university-of-british-columbia-ubc-must-dissociate-from-proctorio-at-the-highest-level>; Sam Hunter, "Ban Surveillance Software Proctorio from Warwick University" (2021), online: *Change.org* <www.change.org/p/warwick-university-ban-surveillance-software-proctorio-from-warwick-university>; and Sebastian Dumbrava, "Stop the Use of Privacy-Invading Exam Proctoring Software – Delft University of Technology" (2020), online: *Change.org* <www.change.org/p/delft-university-of-technology-stop-the-use-of-privacy-invading-exam-proctoring-software-delft-university-of-technology>.

33 Cahn et al, *supra* note 1 at 3.

34 For example, the University of Sydney characterizes this behaviour as "Contract Cheating". See "Academic Dishonesty and Plagiarism" (2 February 2021), online: *University of Sydney* <www.sydney.edu.au/students/academic-dishonesty/contract-cheating.html>. See also Ashley Wadhwani, "Student, Impersonator Arrested for Alleged Cheating during Final Exams at SFU" (18 December 2019) *Victoria News*; and Charlotte Drewitt & Chris Herhalt, "Alleged Exam Cheating Scam is Rare but Not Anything New" (19 December 2014), online: *The Record* <www.therecord.com/news/waterloo-region/2014/12/19/alleged-exam-cheating-scam-is-rare-but-not-anything-new>.

student's face as seen on their camera. Identity verification systems may or may not involve a particular category of facial recognition technology — one that matches a face to a single image (as opposed to a face with a database of images).[35]

In addition to the diversity of remote proctoring tools and techniques, there are also different university-level implementations which raise their own concerns. As will be discussed below, a university can purchase an institutional licence, or students can be required to register directly with the company in order to write their exams. The latter choice pushes the cost of proctoring onto the student, which also means that the student must provide credit card information and other personal data to the company, raising their personal risk in the case of data breach.[36] In the latter implementation, students are also left with the one-size-fits all privacy policies of the service providers. University-level implementation can provide greater privacy protection if the university negotiates its own terms, including providing for data localization.[37]

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35 For example, Proctorio requires students to hold up identity documents to be recorded on camera. The instructor then matches the image on the identity document to the image of the test-taker. It also offers a "live" identity verification system where an employee compares the ID with the face of the test-taker prior to the start of the exam. See EFF, "ProctorU Responses", *supra* note 29. ExamSoft uses facial recognition technology to verify identification. See "Online Proctoring", *supra* note 30.

36 See *e.g.* ProctorU experienced a significant data breach, which has led to the filing of a class action lawsuit. See Kirsten Errick, "Students Sue Online Exam Proctoring Service ProctorU for Biometrics Violations Following Data Breach" (15 March 2021), online: *Law Street Media* <lawstreetmedia.com/tech/students-sue-online-exam-proctoring-service-proctoru-for-biometrics-violations-following-data-breach>.

37 See *e.g.* "Privacy" (2021), online: *Western Remote Proctoring* <remoteproctoring.uwo.ca/privacy>.

IV. A Necessity and Proportionality Approach to Online Proctoring

Remote proctoring has raised privacy and human rights concerns in many countries[38] where it has been adopted. Rather than ground this paper's analysis in the laws of one particular jurisdiction as they apply to remote proctoring, or attempt a comparative analysis across the diverse laws of different countries, this paper instead uses a 'necessity and proportionality' framework to guide inquiries into the legitimacy of the adoption and implementation of online proctoring.[39] The necessity and proportionality framework, developed in international human rights law, has also been adopted as part of the analysis of both privacy[40] and human rights[41] issues in countries around the world. It offers a normative

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38 In addition to Western countries, Proctorio indicates that its services are used in India, Nigeria, the Philippines, Ethiopia, Kenya, South Korea, Ghana, China, Indonesia, Mexico, and Colombia. EFF, "ProctorU Responses", *supra* note 29.

39 The EFF, for example, has used a necessity and proportionality framework to consider communications surveillance issues. They did so because of the relevance of overarching human rights frameworks and the cross-jurisdictional nature of many of the issues. See "Necessary and Proportionate: International Principles on the Application of Human Rights Law to Communications Surveillance" (May 2014), online (pdf): *Electronic Frontier Foundation* <www.ohchr.org/documents/issues/privacy/electronicfrontierfoundation.pdf>.

40 See *e.g.* Canada's privacy commissioners adopted the necessity and proportionality framework to guide their analysis of issues such as privacy and facial recognition technology. See *e.g.* "Draft Privacy Guidance on Facial Recognition for Police Agencies" (10 June 2021), online: *Office of the Privacy Commissioner of Canada* <priv.gc.ca/en/about-the-opc/what-we-do/consultations/gd_frt_202106>. See also Daniel J Therrien, "Incorporating Privacy into Statistical Methods — Necessity and Proportionality" (2 March 2020), online: *Office of the Privacy Commissioner of Canada* <www.priv.gc.ca/en/opc-news/speeches/2020/sp-d_20200303> [Therrien, "Incorporating Privacy"]. Necessity and proportionality also underpins European approaches to data protection: "Necessity and Proportionality" (2022), online: *European Data Protection Supervisor* <edps.europa.eu/data-protection/our-work/subjects/necessity-proportionality_en>.

41 See *e.g.* in Canada, s 1 of the *Canadian Charter of Rights and Freedoms*, Part I of the *Constitution Act, 1982*, being Schedule B to the Canada Act 1982 (UK),

framework for universities in choosing to adopt and implement remote proctoring.

Typically, a necessity and proportionality analysis is part of an inquiry into the constitutionality of a law or measure adopted by a government.[42] It may also be applied in other contexts where there is an evaluation of the appropriateness of measures adopted, typically by governments or their agencies. For example, privacy commissioners in Canada have used necessity and proportionality as a lens through which to assess the adoption and implementation of facial recognition technologies by police services.[43]

Universities are generally not organs of the state, although they may receive considerable state funding, charters or degree-granting status from the state, and may also be subject to other public-sector governance mechanisms.[44] Using a necessity and proportionality framework in the context of universities and their decisions to adopt remote proctoring solutions is not a suggestion or conclusion that they are state actors in a constitutional law sense. Universities are unique communities with many public dimensions. They set the rules that govern their programs and campuses. Institutions of higher learning have a degree of social and moral responsibility not shared by private sector actors. They are expected to lead in terms of ethics, diversity and inclusion, intellectual honesty, and

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1982, c 11, permits the justification of a limit on a *Charter* right or freedom set out in it. The Supreme Court of Canada has interpreted this as essentially a two-stage inquiry which largely maps onto necessity and proportionality. See *R v Oakes*, (1986) 1 SCR 103 (SCC) at paras 69–70 [*Oakes*]. New Zealand's *Bill of Rights Act 1990* adopts a similar approach in s 5. Article 52(1) of the *Charter of Fundamental Rights of the European Union* incorporates necessity and proportionality. It reads: "[…] [s]ubject to the principle of proportionality, limitations may be made only if they are necessary and genuinely meet objectives of general interest recognised by the Union or the need to protect the rights and freedoms of others".

42 See *Handyside v United Kingdom* (1976), ECHR 5, 1 EHRR 737 [*Handyside*].

43 See Therrien, "Incorporating Privacy", *supra* note 40.

44 See *e.g.* in Canada, most universities are subject to provincial public-sector data protection legislation.

freedom. In this context, necessity and proportionality is an appropriate framework by which to assess decisions to adopt remote proctoring solutions.

A further reason to adopt a necessity and proportionality framework is to avoid the fragmenting of legal issues raised by remote proctoring into 'baskets' defined by the legal siloes that have evolved in many jurisdictions. For example, some remote proctoring issues are data protection issues, but data protection laws only address one piece of a larger picture. Similarly, while framing the issues as discrimination captures significant problems with remote proctoring; other issues remain. Fragmented legal regimes often push those seeking remedies towards one recourse or another, depending upon what best fits the complainants' particular facts. The analysis below takes a more comprehensive approach in which the bundle of privacy and human rights issues raised by remote proctoring is considered and weighed against the necessity urged by adopters of these technologies.

The necessity and proportionality analysis in this context requires the posing of two main questions:

A. Is the adoption of remote proctoring necessary; and
B. Is the measure chosen proportional to the demonstrated need?

A. Necessity

The necessity inquiry considers whether the party introducing the measure can demonstrate that it was introduced because it was necessary to achieve a sufficiently pressing and important objective. The party adopting the measure is not required to demonstrate that it is necessary in the sense of indispensable.[45] It must be reasonably necessary in the circumstances. In the case of the rapid shift to online learning during the pandemic, one issue is whether a necessity analysis should also take into account the public health crisis. For example, public health guidance in Canada during the COVID-19 pandemic specifically suggested that remote proctoring could be one mitigation strategy adopted by

[45] See *e.g. Handyside*, *supra* note 42 at paras 48–49.

universities seeking to implement social distancing.[46] The pandemic context could therefore factor into the necessity analysis. Nevertheless, remote proctoring was used before the pandemic and likely will be afterward. Thus, it is also relevant whether remote proctoring can be justified as necessary in relation to online university-level instruction more generally.

A key justification for the introduction of remote proctoring is the need to ensure academic integrity in student evaluations. Cheating, which has been defined as "any action taken before, during or after the administration of a test or assignment, that is intended to gain an unfair advantage or produce inaccurate results",[47] can have an adverse reputational impact on universities.[48] Academic integrity is an important concern for universities. Dyer et al note that "academic integrity is a core tenet of the fabric of higher education".[49] Most universities have adopted rules regarding academic integrity and have procedures in place to enforce them, thus demonstrating their awareness and concerns regarding cheating. Baijnath and Singh underscore the risks that cheating poses to the reputation of institutions and the integrity of higher education.[50]

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46 "Guidance for Post-secondary Institutions during the COVID-19 Pandemic" (24 July 2020), online: *Government of Canada* <www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/guidance-documents/covid-19-guidance-post-secondary-institutions-during-pandemic.html>.

47 Gregory J Cizek, "Ensuring the Integrity of Test Scores: Shared Responsibilities" (Paper delivered at the annual meeting of the American Educational Research Association, Vancouver, 2012), cited in Jarret Dyer, Heidi Pettijohn & Steve Saladin, "Academic Dishonesty and Testing: How Student Beliefs and Test Settings Impact Decisions to Cheat" (2020) 4:1 Journal of the National College Testing Association 1 at 3.

48 Dyer et al, *ibid* at 4. See also Narend Baijnath & Divya Singh, "Examination Cheating: Risks to the Quality and Integrity of Higher Education" (2019), 115:11/12 South African Journal of Science 26, online: <doi.org/10.17159/sajs.2019/6281>.

49 Dyer et al, *ibid* at 3.

50 Baijnath & Singh, *supra* note 48.

Cheating clearly adversely impacts universities. It can also affect society if it undermines the quality of education or casts doubt on the credentials of graduates. Students may also fear that cheating by others will devalue their own achievements, giving cheaters unfair advantages both before and after graduation. Cheating at university may lead to less well-prepared or competent employees.[51] Dyer et al suggest that students are often more focused on getting jobs than performing well in them, noting that many students commented that getting good grades was more important to their futures than actual knowledge.[52] The impacts of university-level cheating are such that Dyer et al have warned that "it is imperative that universities and colleges not only hold accountable those students who are caught cheating, but also take steps to systemically limit the prevalence of cheating".[53]

Although the research on cheating at university is uneven,[54] and primarily based on self-reporting, the results suggest that there is actually a strong basis for concern. For example, based on research conducted at North American universities between 2002 and 2005, Donald McCabe found that approximately 21% of graduate and undergraduate students had engaged in a serious form of cheating on tests or exams.[55] The same study found that one in

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51 Dyer et al, *supra* note 47 at 5; Aurora AC Teixeira & Maria F Rocha, "Cheating by Economics and Business Undergraduate Students: An Exploratory International Assessment" (2010) 59:6 Higher Education 663.

52 Dyer et al, *supra* note 47 at 17.

53 *Ibid* at 5.

54 McCabe notes that there is no consensus as to what cheating is, particularly when it comes to assignments. Seeking advice from former students in a course or from tutors on how best to complete an assignment might be seen as good preparation by some and as cheating by others. Donald L McCabe, "Cheating among College and University Students: A North American Perspective" (2005) 1:1 International Journal for Educational Integrity 7. See also Peter Ashworth, Philip Bannister & Pauline Thorne, "Guilty in Whose Eyes? University Students' Perceptions of Cheating and Plagiarism in Academic Work and Assessment" (1997) 22:2 Studies in Higher Education 187.

55 The data in this study was collected by surveys over a three-year period from students at 67 US and 16 Canadian campuses. See McCabe, *ibid*.

twenty students reported using electronic devices to cheat. McCabe hypothesized that this understates the problem and that it is likely to grow over time. A 2020 study found that 62% of the undergraduate students surveyed admitted to cheating at least occasionally.[56] The same study showed a sharp increase in cheating in non-proctored as compared to proctored exam environments.

Cheating is prevalent in online learning; in fact, some research indicates that it occurs at greater levels in that context. Dyer et al note that "[w]ith the advent of online learning, that ability for students to engage unseen with faculty has grown, as has the ability for students to cheat and rarely get caught".[57] In a pre-pandemic article, Srikanth and Asmatulu suggest that cheating is widespread in online courses, and that measures are not in place to detect it.[58] Hylton et al link cheating in online exams to the opportunities they present to use "unauthorized resources".[59] Bilen and Matros posited that rates of cheating would rise dramatically with the COVID-19 shift to online learning.[60] Dendir and Maxwell carried out an experiment in two online courses that were identical except for the use of online proctoring in one and no proctoring in the other. They found strong evidence of cheating in the unmonitored course based on outcomes after using a regression analysis to account for possible confounding factors.[61] Researchers in Bulgaria have hypothesized that the face-to-face setting for exams may seem more formal and serious than online equivalents, perhaps

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56 Dyer et al, *supra* note 47.

57 Dyer et al, *ibid* at 4.

58 Madhulika Srikanth & Ramazan Asmatulu, "Modern Cheating Techniques, Their Adverse Effects on Engineering Education and Preventions" (2014) 42(2) International Journal of Mechanical Engineering Education 136.

59 Kenrie Hylton, Yair Levy & Laurie P Dringus, "Utilizing Webcam-based Proctoring to Deter Misconduct in Online Exams" (2016) 92 Computers & Education 53 at 53.

60 Eren Bilen & Alexander Matros, "Online Cheating Amid COVID-19" (2020), online (pdf): *Social Science Research Network* <ssrn.com/abstract=3691363>.

61 Dendir & Maxwell, *supra* note 7.

contributing to a higher rate of cheating in online contexts.[62] There is evidence that some students may use online subscription services to assist them in cheating on remote examinations.[63] In research involving over 734 students, Dyer et al determined that not only were the opportunities for cheating different in online environments, the perceptions of students as to the seriousness of cheating online were also different.[64] Dyer et al highlight the importance of online proctoring, stating that "[i]n no situation is an institution more vulnerable to scandal and controversy related to academic dishonesty than in online education".[65]

Dyer et al note that rates of reported cheating increase in non-proctored exams. In fact, they report from a qualitative study that "if an exam was not proctored, it was assumed that students would use all resources at their disposal".[66] Dyer et al concluded that "[t]he lack of proctoring was essentially considered permission to collaborate and use whatever resources students had available".[67] They caution that "[f]aculty and staff should not make the egregious mistake of believing an honor code, signed statement of integrity, verbal acceptance of syllabi expectations, or other tacitly communicated acceptance is alone enough to sway academic dishonesty in online courses".[68]

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62 Peytcheva-Forsyth et al, "The Impact of Technology on Cheating and Plagiarism in the Assessment —The Teachers' and Students' Perspectives" (2018), online (pdf): *AIP Conference Proceedings* <doi.org/10.1063/1.5082055>.

63 Susan Adams, "This $12 Billion Company Is Getting Rich Off Students Cheating Their Way Through Covid" (28 January 2021), online: *Forbes* <forbes.com/sites/susanadams/2021/01/28/this-12-billion-company-is-getting-rich-off-students-cheating-their-way-through-covid/?sh=5d441d1d363f>.

64 Dyer et al, *supra* note 47.

65 *Ibid* at 20.

66 *Ibid* at 16.

67 *Ibid*.

68 *Ibid* at 19.

Faucher & Caves also suggest that reduced surveillance creates cheating opportunities.[69]

Data regarding cheating and its impacts is relevant to the necessity analysis. Interestingly, the issue of necessity with respect to online proctoring was assessed in the context of an application for a preliminary injunction to stop the University of Amsterdam from engaging an online proctoring service to monitor exams from the start of the COVID-19 pandemic.[70] When university education shifted to fully online, the University of Amsterdam contracted with the service Proctorio for online proctoring. Students objected to the use of this service and their central legal grounds for objection related to privacy.

In considering the necessity of online proctoring, the court noted both the situation created by the pandemic (with courses moving to entirely online offering and evaluation) and the need for proctoring to prevent and detect academic fraud. The court emphasized the need to protect the quality of the education and the value of the degree offered. It noted that preventing academic fraud was an ongoing concern of the institution, as demonstrated by its regulations and procedures relating to academic integrity. It observed as well that there were multiple opportunities for cheating in non-proctored online exam environments.

It is important to note that the court's necessity inquiry addresses, but is not limited to, the pandemic context. Academic integrity is a pressing issue for colleges and universities. Cheating occurs in both in-person and online contexts, although the evidence suggests that it may be even more problematic in online-learning. While the pandemic created an unprecedented shift to online learning, the necessity element will be present in online learning even after the pandemic. What may change is the urgency of adoption; with more time to reflect on

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69 Dina Faucher & Sharon Caves, "Academic Dishonesty: Innovative Cheating Techniques and the Detection and Prevention of Them" (2009) 4:2 Teaching and Learning in Nursing 37; see also Dendir & Maxwell, *supra* note 7.

70 Rb. Amsterdam, *supra* note 4.

options, there should be a greater burden on universities at the proportionality stage.

Overall, it would be difficult to challenge the necessity of the adoption of measures to address cheating in online courses since there is considerable evidence that cheating is a real issue and that universities already take steps to either prevent it or impose penalties when it occurs. It is perhaps also important to note that in-person exams have long been proctored in universities. This reflects both on the perceived necessity of some form of proctoring and the general acceptance of at least this level of monitoring. Of course, there are significant differences between in-person proctoring and remote surveillance technologies. While a necessity analysis might justify some form of proctoring it does not follow that all forms can be justified. The most important questions, therefore, are most likely to arise in assessing the proportionality of measures taken to address the problem in the online context. These issues are considered next.

B. Proportionality

Once the necessity of a measure has been assessed, the next step is to determine whether it is proportional to the demonstrated need. In other words, one can ask whether it has been properly adapted to the circumstances and minimally impairs the rights at issue. The proportionality analysis acknowledges that necessity alone cannot drive policy or practice; there must also be a careful tailoring of the measures adopted to the demonstrated need. As the Supreme Court of Canada noted in *R v Oakes*:

[t]here are, in my view, three important components of a proportionality test. First, the measures adopted must be carefully designed to achieve the objective in question. They must not be arbitrary, unfair or based on irrational considerations. In short, they must be rationally connected to the objective. Second, the means, even if rationally connected to the objective in this first sense, should impair "as little as possible" the right or freedom in question: [citation omitted]. Third, there must be a proportionality between the effects of

the measures which are responsible for limiting the *Charter* right or freedom, and the objective which has been identified as of "sufficient importance".[71]

There is no one-size-fits-all proportionality analysis for remote proctoring. This is largely because there is no single type or implementation of this service. This means that proportionality will have to be assessed on a case-by-case basis, taking into account the nature of the service adopted, and the way in which it is implemented by the university, including any alternatives provided to students.

The analysis that follows begins by assessing the rights and interests that are impacted. Overall, remote proctoring may impact a number of different rights and interests that include but go beyond data protection and privacy. The assessment of the rights affected is followed by a consideration of implementations of remote proctoring.

1. Rights and Interests Implicated by Remote Proctoring

Remote proctoring implicates privacy and data protection rights as well as other human rights, particularly the right to be free from discrimination. Privacy and data protection rights are often conflated in the discussion of remote proctoring. Data protection governs how governments or organizations collect, use, and disclose personal information, and it is a particular subset of privacy. Privacy rights in this context relate to the autonomy and dignity of students who are subject to surveillance.

i. Data Protection

Data protection is recognized as a right in article 8 of the *Charter of Fundamental Rights of the European Union*.[72] The human right requires that personal data:

> be processed fairly for specified purposes and on the basis of the consent of the person concerned or some other legitimate basis laid down by law. Everyone

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71 *Oakes*, *supra* note 41.

72 26 October 2012, 2012/C 326/02 (EU).

> has the right of access to data which has been collected concerning him or her, and the right to have it rectified.[73]

Not all jurisdictions have established data protection as a fundamental right. Nevertheless, data protection laws are common in many countries outside the EU, including Canada,[74] Australia,[75] New Zealand,[76] and the United Kingdom.[77] While there is no overarching national data protection law in the US, there is a growing patchwork of state laws that may apply to public or private universities,[78] establishing certain norms for the collection and use of personal data.

Data protection laws do not outlaw the collection and use of personal data; rather they set the rules and conditions under which these practices may take place, recognizing that for some products or services, personal data collection is required. In order to assess the impact of remote proctoring on data protection rights, it is important to consider what data are collected by the university and/or the proctoring service, using what means, and at what stages of the process. In the first place, many remote proctoring services convert the entire exam writing process into data of various kinds, including audio and video recordings, key-stroke data, data about perceived anomalies, and so on. Other important considerations include how the data are stored, how they may be accessed and by whom. Data retention and data security measures are also relevant.[79] It

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73 *Ibid*, art 8(2).

74 In Canada, data protection laws are found at the provincial and federal level for both public and private sector data. For the federal, private sector, see *e.g. Personal Information Protection and Electronic Documents Act*, SC 2000, c 5; and for the public sector in Ontario, see *Freedom of Information and Protection of Privacy Act*, RSO 1990, c F.31.

75 *Privacy Act 1988*, 1988/119 (AU).

76 *Privacy Act 2020*, 2020/31 (NZ).

77 *Data Protection Act 2018*, UK Public General Acts, 2018, c 12.

78 For a helpful catalogue of such laws, see "State Student Privacy Laws" (2022), online: *Student Privacy Compass* <studentprivacycompass.org/state-laws/>.

79 A class action lawsuit launched in relation to the ProctorU data breach claims that biometric data dated as far back as 2012, notwithstanding the company's

should be noted that there is already a lucrative secondary market for data about students,[80] making data protection issues increasingly important in a context in which students may have little choice but to surrender sensitive[81] personal data in the online proctoring context.

In the EU, the *General Data Protection Regulation* ("*GDPR*")[82] also provides certain rights with respect to automated decision systems or AI-enabled decision making. As a general principle, *GDPR* article 22(1) provides that "[t]he data subject shall have the right not to be subject to a decision based solely on automated processing, including profiling, which produces legal effects concerning him or her or similarly significantly affects him or her". There are exceptions to this general rule, but these are subject to protections being put in place for the individual. In some applications of remote proctoring, AI is used to flag suspicious conduct or activity during proctoring. The impact on rights may be different depending on whether each flagged incident is reviewed by a human decision-maker, or whether it automatically triggers a disciplinary response. Most implementations of remote proctoring services provide for

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claims that it kept videos no more than two years. See the class action compliant from the United States District Court for the Central District of Illinois, Urbana Division, in "Thakkar, Gonigam, and Kohlenberg v ProctorU Inc." (12 March 2021), online: *Docket Alarm* <www.docketalarm.com/cases/Illinois_Central_District_Court/2--21-cv-02051/Thakkar_et_al_v._ProctorU_Inc/1>. See also concerns raised about ExamSoft security in Becca Salamacha, "Pennsylvania Bar Applicants Request Investigation after Exam Software Data Breach" (10 September 2020), online: *Jurist* <www.jurist.org/news/2020/09/pennsylvania-bar-applicants-request-investigation-after-exam-software-data-breach>.

80 See *e.g.* N Cameron Russell et al, "Transparency and the Marketplace for Student Data" (2019) 109:3 Virginia Journal of Law and Technology 107.

81 Sensitive personal data includes financial data for those students who pay directly for proctoring services, as well as biometric data, and scans of identity documents.

82 *(EC) 679/2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC*, [2016] OJ, L 119/1.

human review — usually by the instructor — before disciplinary procedures are initiated, although the practice may vary.[83]

Compliance with the requirements of data protection law is only one element in addressing proportionality concerns. Since remote proctoring impacts rights beyond data protection, compliance with data protection norms may be necessary, but not sufficient to establish proportionality. This is important since many universities in jurisdictions that require privacy or data protection impact assessments have carried out personal data impact assessments.[84] However, compliance with data protection law should not be the end of the necessity and proportionality assessment.

ii. Privacy

Privacy rights relate to basic human dignity and autonomy and are implicated in remote proctoring in a number of ways depending on the implementation. The experience of being under constant, direct surveillance has been cited by some as a distressing and disruptive aspect of some forms of remote proctoring.[85]

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83 Note that ProctorU announced an end to its AI-only services in part because it determined that instructors frequently acted on alerts without reviewing them. See EFF, "ProctorU Responses", *supra* note 29.

84 See *e.g.* Meike Davids, "Data Protection Impact Assessment (DPIA): Proctoring" (2020), online (pdf): *University of Twente* <www.utwente.nl/remote-exams/students/proctoring/dpia-proctoring.pdf>. PIAs have also been carried out at Canadian universities. See *e.g.* Trudi Wright, "Privacy & Information Security Impact Assessment Report: Online Proctoring: Respondus" (2020), online (pdf): *McMaster University* <secretariat.mcmaster.ca/app/uploads/PIA-Report-Online-Proctoring-Respondus.pdf>.

85 See *e.g.* Simon Coghlan, Tim Miller & Jeannie Paterson, "Good Proctor or "Big Brother"? Ethics of Online Exam Supervision Technologies" (2021) 34 Philosophy & Technology 1581; Monica Chin, "Exam Anxiety: How Remote Test-proctoring is Creeping Students Out" (29 April 2020), online: *The Verge* <www.theverge.com/2020/4/29/21232777/examity-remote-test-proctoring-online-class-education>; and Anushka Patil & Jonah Engel Bromwich, "How It Feels When Software Watches You Take Tests" (29 September 2020) *New York Times*.

Students have experienced anxiety at the fact that physical movements including head and eye movements or changes in typing speed might be interpreted as cheating.[86] Some remote proctoring services do not allow bathroom breaks or allow them only after a certain amount of time has passed.[87] Such issues adversely impact the dignity of students who must share information about their need to go to the bathroom, justify using the facilities outside of the prescribed time periods, or who are forced to urinate into inappropriate receptacles.[88]

Students have also expressed concerns about remote proctoring services that create recordings not just of the student and their actions, but also their private spaces. These recordings can be viewed and reviewed by others.[89] Particularly during the pandemic where students have had little choice but to write remote exams from home, the recording of intimate spaces may be unavoidable. In addition to recording, some remote proctoring services involve continual live-proctoring of students. In these circumstances, students are observed one-on-one in real time by proctors. This can be even more intrusive in terms of privacy,

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86 Harwell, "Cheating-detection", *supra* note 22.

87 See *e.g.* Staci Zaretsky, "Law Students Forced To Urinate While Being Watched By Proctors During Remote Ethics Exam" (18 August 2020), online: *Above the Law* <abovethelaw.com/2020/08/law-students-forced-to-urinate-while-being-watched-by-proctors-during-remote-ethics-exam/>.

88 Harwell, "Cheating-detection", *supra* note 22.

89 In its FAQs for faculty on the use of Respondus Monitor, the University of Ottawa responds to the question "[c]an a teacher view all the videos, even those where there was no suspicious activity report?" with "[a]bsolutely", followed by information on how to access videos. See "Respondus FAQ for Instructors and Students: Instructors FAQ" (2022), online: *University of Ottawa Teaching and Learning Support Services* <uottawa.saea-tlss.ca/en/transition-to-remote-teaching/respondus-faq#instructors> ["Respondus FAQ"].

as students may feel not just watched in real time, but also judged and assessed.[90] Women in particular, have expressed concerns over this form of proctoring.[91]

iii. Discrimination

The right to be free from discrimination is also implicated in online proctoring in a number of ways. As noted earlier, there can be gendered dynamics to surveillance; women may be far more uncomfortable about continual online surveillance. There are reports that some women have run into difficulties with requirements to remove head coverings at the identification phase; in one case, a Muslim woman reportedly had to postpone an exam because a female proctor was not available to verify her identity (a process that required her to remove her head covering).[92]

Some students may have disabilities or medical conditions that lead to movements or behaviours being flagged by proctors — or by AI analysis — as suspicious.[93] This can include atypical eye movements or movements of the

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90 See *e.g.* Daniel Woldeab & Thomas Brothen, "21st Century Assessment: Online Proctoring, Test Anxiety, and Student Performance" (2019) 34:1 International Journal of E-Learning and Distance Education 1.

91 See *e.g.* Emily Blobaum, "Melissa Vine: A Proctor Sexually Harassed Me While I Was Taking the LSAT" (18 April 2021), online: *Fearless* <fearlessbr.com/a-proctor-sexually-harassed-me-while-i-was-taking-the-lsat>; and Coghlan et al, *supra* note 85.

92 Aishah Hussain, "BPTC Student 'Forced to Defer' Exams over Fears She'd Have to Remove Headscarf for Male Invigilator" (14 August 2020), online: *Legal Cheek* <www.legalcheek.com/2020/08/bptc-student-forced-to-defer-exams-over-fears-shed-have-to-remove-headscarf-for-male-invigilator/>. Note that Proctorio indicates that its response to concerns over identity verification and headscarves or facial coverings is to provide rapid access to human support services. See EFF, "ProctorU Responses", *supra* note 29.

93 See Lydia XZ Brown, "How Automated Test Proctoring Software Discriminates Against Disabled Students" (16 November 2020), online: *Center for Democracy and Technology* <cdt.org/insights/how-automated-test-proctoring-software-discriminates-against-disabled-students/>. The requirements that diabetics may have for glucose testing or snacks during exam taking can raise flags. See *e.g.* Joe Patrice, "Bar Examiners Ask Applicants To

head, restlessness, or other non-mainstream physical movements.[94] Some universities address this issue by allowing students to request accommodation prior to the exam, but students have objected to having to submit medical documentation and request accommodation for conditions that do not impact their ability to perform the evaluation, but rather that trigger the technology used to surveil it.[95] Students who need frequent bathroom breaks may also run into difficulties.[96] In a survey carried out in the early days of the pandemic, Grajek noted that "26% of institutions use some products that don't meet their accessibility standards, and 8% did no accessibility vetting at all".[97] In a study of the impact of online proctoring on students who struggled with anxiety issues, Woldeab and Brothen concluded that these technologies adversely impacted the performance of these students relative to their peers.[98] They found that live, one-on-one proctoring created the most anxiety.[99]

Racial discrimination is also an issue. There are reports that some Black students have been required to change their exam writing location or lighting because face-detection software could not function properly otherwise.[100] Being

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Kindly Stop Being Diabetic For A Couple Days" (3 September 2020), online: *Above the Law* <abovethelaw.com/2020/09/bar-examiners-ask-applicants-to-kindly-stop-being-diabetic-for-a-couple-days/>.

94 Blumenthal, *supra* note 17; and Harwell, "Cheating-detection", *supra* note 22.

95 Chaelin Jung, "Big Ed-Tech Is Watching You: Privacy, Prejudice, and Pedagogy in Online Proctoring" (6 December 2020), online: *Brown Political Review* <brownpoliticalreview.org/2020/12/big-ed-tech-is-watching-you-privacy-prejudice-and-pedagogy-in-online-proctoring/>.

96 Harwell, "Cheating-detection", *supra* note 22; and Zaretsky, *supra* note 87.

97 Grajek, *supra* note 12.

98 Woldeab & Brothen, *supra* note 90.

99 *Ibid* at 8.

100 Harwell, "Cheating-detection", *supra* note 22; Rebecca Walsh, "Incident Highlights Issues with ProctorU Online Testing" (3 October 2020), online: *University of Utah* <attheu.utah.edu/facultystaff/incident-highlights-issues-with-proctoru-online-testing/>; Avi Ascher-Schapiro, "Online Exams Raise Concerns of Racial Bias in Facial Recognition" (17 November 2020), online: *Christian Science Monitor*

asked to move or change lighting — often just prior to the start of an exam — can be stressful and upsetting, and could impact exam performance. AI-enabled proctoring software also raises concerns over the now common bias issues with respect to Black faces.[101] It would be important to understand whether skin colour is linked to an increased rate of flagging of suspicious conduct in those online proctoring systems that use AI.[102] However, transparency issues mean that there is little available data other than anecdotal accounts.

Remote proctoring can have adverse impacts on students with low socio-economic status, living in remote or rural locations, or facing other constraints such as child care obligations or close-quarter living spaces.[103] As Cahn et al

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<www.csmonitor.com/Technology/2020/1117/Online-exams-raise-concerns-of-racial-bias-in-facial-recognition>; and Shea Swauger, "Software That Monitors Students during Tests Perpetuates Inequality and Violates Their Privacy" (7 August 2020), online: *MIT Technology Review* <www.technologyreview.com/2020/08/07/1006132/software-algorithms-proctoring-online-tests-ai-ethics/>. Issues of AI and discrimination are increasingly well documented. See *e.g.* Virginia Eubanks, *Automating Inequality* (New York: St. Martin's Press, 2017); Safiya Umoja Noble, *Algorithms of Oppression: How Search Engines Reinforce Racism* (New York: New York University Press, 2018); and Cathy O'Neil, *Weapons of Math Destruction* (New York: Crown Publishing, 2016). A student researcher documented specific issues with the facial detection software used by Proctorio. See Todd Feathers, "Proctorio Is Using Racist Algorithms to Detect Faces" (8 April 2021), online: *Motherboard* <www.vice.com/en/article/g5gxg3/proctorio-is-using-racist-algorithms-to-detect-faces>; and Drew Harwell, "Federal Study Confirms Racial Bias of Many Facial-recognition Systems, Casts Doubt on Their Expanding Use" (19 December 2019) *Washington Post* [Harwell, "Federal Study"].

101 Harwell, "Federal Study", *ibid.*

102 Affect recognition tools, for example, may incorporate bias. See Kate Crawford, *Atlas of AI* (New Haven: Yale University Press, 2021) at 177. See also Lauren Rhue, "Emotion-reading Tech Fails the Racial Bias Test" (2019), online: *The Conversation* <theconversation.com/emotion-reading-tech-fails-the-racial-bias-test-10840>.

103 The digital divide — linked not just to socio-economic status but also to geographic location — is a factor for remote proctoring and for online education more generally. See *e.g.* Li & Lalani, *supra* note 23. However, while

note, "[a]cademic surveillance technology requires reliable and high-speed Internet access, up-to-date computer hardware including a functioning webcam and microphone, and a testing environment with sufficient space and quiet".[104] As noted earlier, such students may have more difficulty finding appropriate private spaces in which to write their exams, including spaces where external noise will not trigger exam flags.[105]

2. An Implementation of Remote Proctoring that Minimally Impairs Privacy and Human Rights

The proportionality part of a necessity and proportionality analysis focuses on the measures chosen to address the necessity, and the extent of their impact on human rights. This evaluation takes into account alternative means to address the problem that might have a less adverse impact on human rights. The overall issue here is whether the response is proportionate to the need. It is possible to have implementations that address data protection, privacy and human rights concerns as well as implementations that leave these concerns unmitigated. The implementation chosen by a university may therefore determine the outcome of a necessity and proportionality analysis.

Although surveillance is an accepted part of in-person exam proctoring, there are significant differences between in-person surveillance and some implementations of remote proctoring. In-person proctoring is rarely one-on-one and usually involves a general surveillance of students by one or more proctors who either sit at the front of the room or occasionally patrol it. In such a context, no student is subject to constant surveillance. In-person proctoring also does not involve recording and storing images of students, nor does it involve AI-enabled analysis of students' movements. Further, in-person surveillance occurs in spaces provided by the university — typically classrooms.

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some forms of distance learning can accommodate poor or unstable internet access (for example, asynchronous learning models), remote proctoring solutions often require real-time audio and video monitoring.

104 Cahn et al, *supra* note 1 at 9.

105 Harwell, "Cheating-detection", *supra* note 22.

It does not take place in a student's private space and does not involve the filming or recording of that space. There is, therefore, no simple analogy between in-person and remote proctoring.

The proportionality assessment may be impacted by issues of urgency.[106] In other words, the sudden onset of pandemic-related shutdowns in mid-semester placed universities in a situation in which they were scrambling to move courses and evaluations online. Most of these courses and their evaluations had not been designed for this context, and universities sought quick solutions to the problem of proctoring a large number of now-online exams. This context is considered by the court, for example, in the case of the University of Amsterdam.[107] Once the urgency has passed, however, there may be a need to reconsider solutions adopted at a time of crisis. It is arguable, therefore, that after that first disrupted semester, there was more time to plan and adapt courses for subsequent semesters of teaching. In fact, one can see reconsiderations of the measures adopted in a number of universities.[108]

One implementation issue is whether remote proctoring is mandatory or optional for students. Some universities made online proctoring optional for students during the pandemic.[109] However, to be truly optional, alternatives

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106 See *e.g.* Liz Hicks & Sangeetha Pillay, "Proportionality, Rights and Australia's COVID-19 Response: Insights from the India Travel Ban" (16 August 2021), online (blog): *Australian Public Law* <auspublaw.org/2021/08/proportionality-rights-and-australias-covid-19-response-insights-from-the-india-travel-ban>; and Eric C Ip, "Courts, Proportionality and COVID-19 Lockdowns" (23 September 2021), online (blog): *International Association of Constitutional Law* <blog-iacl-aidc.org/2021-posts/2021/9/23/courts-proportionality-and-covid-19-lockdowns-f2apb>.

107 See Rb. Amsterdam, *supra* note 4.

108 See *e.g.* Sayed, *supra* note 21; and Chin, "University Will Stop", *supra* note 21.

109 See *e.g.* the University of Ottawa allows students to refuse to use Respondus Monitor. See "Respondus FAQ", *supra* note 89. In such cases, the instructor must offer alternatives to the student. It is unclear what those alternatives might be. For a strong view opposing opt-out solutions. See Derek Newton, "Research: Students May 'Opt Out' Of Online Test Monitoring, With Big Catch" (30 September 2020), online: *Forbes*

must be safe and realistic. Options that require the students to take health risks (for example, taking public transit before vaccines are available in order to write an exam in-person on campus), travel long distances, or occasion serious additional burdens to arrange, may not be fair — although the evaluation of fairness might be affected by how carefully the remote proctoring options are implemented. In other words, if the university has taken steps to ensure that remote proctoring options are minimally invasive and that safeguards are in place to protect student rights, there may be less of an onus to provide in-person alternatives or make them highly user-friendly.

Implementation of online proctoring is also key to determining the impact on data protection rights. In some cases, students must create their own accounts with online proctoring service providers. In doing so, they enter into a contractual relationship with the service provider in which they are subject to the standard terms and conditions, including those relating to privacy.[110] Under such arrangements, students may be required to provide the company with payment and account information. They may also be required to keep a scan of an identity document on file for identity verification purposes. This data is collected and stored by the company according to its terms of service, and may be used in different ways, again, subject to 'take-it-or-leave-it' terms and conditions. Such implementations have been adopted at some schools in the US.[111]

<forbes.com/sites/dereknewton/2020/09/30/research-students-may-opt-out-of-online-test-monitoring-with-big-catch/>. However, 'opt-out' does not necessarily mean no monitoring. Students might be given options involving alternative modes of proctoring, including in-person on-campus proctoring.

110 Cahn et al, *supra* note 1 at 14–5, discuss the broad and unsatisfactory terms of some of these privacy policies.

111 See *e.g.* the menu of costs for students using remote proctoring at the University of Illinois, Springfield in "Center for Online Learning, Research and Teaching, Examity Pricing Guide" (1 July 2020), online: *University of Illinois, Springfield* <www.uis.edu/colrs/teaching/technologies/examity-online-video-proctoring>; see also "ProctorU Fees" (9 December 2021), online: *Athabasca University* <registrar.athabascau.ca/exams/proctoru_fees.php>.

By contrast, some universities have chosen to purchase a campus-wide licence.[112] This eliminates the need for students to create their own accounts with the service provider, although they will still have to provide ID for identity verification. Implementations can also be enhanced in jurisdictions that have privacy frameworks applicable to universities. For example, since most Canadian universities are governed by provincial public sector data protection laws, universities have been legally obliged to ensure that their contracts with the service providers address the collection, use, and disclosure of student personal data in a legally compliant manner.[113] The same is true for universities and *GDPR* compliance in the EU.[114] Some implementations may address data localization requirements.[115] They may also place strict limits that allow access to and use of data only by designated university personnel. These implementations offer greater data protection for students than direct contractual agreements between students and the company.

In short, implementation should take into account data protection considerations, including what data are collected, using what means, and at what stages of the process. How these data are stored and accessed, and to whom access is provided, is also important. Data retention should be considered, as well as security measures to ensure that students are protected against data breaches. A further consideration is whether AI is used to analyze collected data

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112 See *e.g.* the pricing schedule for campus-wide licences for Respondus in "Respondus 4.0 – Pricing + Free Trial" (2022), online: *Respondus* <web.respondus.com/he/respondus/pricing>.

113 See *e.g.* Queen's University in Ontario states in its student FAQs: "The terms Queen's has negotiated are more stringent than, and take precedence over, the information posted publicly about Proctortrack on Verificient's website". See "Frequently Asked Questions (FAQs) – Proctortrack" (2022), online: *Queen's University* <www.queensu.ca/registrar/students/examinations/exams-office-services/remote-proctoring> ["FAQs – Proctortrack"].

114 See *e.g.* the privacy impact assessment carried out by University of Twente in compliance with *GDPR* requirements in Davids, *supra* note 84.

115 See "FAQs – Proctortrack", supra note 113. See also Davids, *ibid*.

and whether students' data may be subject to secondary uses by the proctoring company for training their AI or developing new products and services.

Privacy issues relating to dignity and autonomy may also be mitigated by implementations of remote proctoring that avoid intensive surveillance methods, such as video recording, live one-on-one proctoring, or AI-enabled tools to detect suspect behaviours. York University, for example, has recently announced that it is shifting to the use only of active restrictions on computers (browser lockdown), barring exceptional circumstances.[116]

Another implementation issue relates to how remote proctoring services are integrated with university disciplinary procedures.[117] In principle, AI-enabled services use technology to flag suspicious incidents. Some services allow for calibration by universities in order to identify which behaviours will trigger alerts. Typically, the proctoring services flag issues, leaving it up to the university to determine how they will be addressed. In many implementations, for example, it is left to the course instructor to review flagged incidents. In theory, this creates a 'human-in-the-loop' for decisions about which incidents merit discretionary intervention. However, there is mounting evidence that many instructors do not review the flags that they receive.[118] A review system should also require safeguards to ensure that access to flagged videos is limited only to those with a valid reason to view them and that there are procedures in place for

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116 Sayed, *supra* note 21.

117 Jason Kelley, Bill Budington & Sophia Cope, "Proctoring Tools and Dragnet Investigations Rob Students of Due Process" (15 April 2021), online: *Electronic Frontier Foundation* <www.eff.org/deeplinks/2021/04/proctoring-tools-and-dragnet-investigations-rob-students-due-process>.

118 See *e.g.* Kelley, "Long Overdue Reckoning", *supra* note 11. In their announcement of discontinuing of AI-only proctoring, ProctorU revealed that "only about 11% of test sessions tagged for suspicious activity by AI tools are reviewed by the school or testing authority". See EFF, "ProctorU Responses", *supra* note 29. They also indicated that an independent review at the University of Iowa showed that only 14% of instructors actually reviewed flags. A failure to review removes the 'human-in-the-loop'. ProctorU indicated that it now plans to provide human review by trained proctors.

safe destruction once they are no longer needed. Professorial discretion can raise its own issues, and the closed environment in which such discretion may be exercised could be problematic. In an implementation in which the professor of a course views flagged videos, the professor's own biases or past interactions with students may influence his or her decision-making about whether a video clip reveals conduct that should be sent for further review or discipline. The potential for racialized, gendered, or other biases to impact outcomes (combined also with the potential for algorithmic bias in the AI flagging process) suggests that universities might wish to implement measures to safeguard against disciplinary results that replicate such biases. Assuming the legitimacy of the adoption of AI-enabled tools in the first place, a university should collect and audit data regarding flagged incidents, including those sent for discipline, those dismissed, and the disciplinary outcomes. They should analyze these data for patterns that indicate bias or other systemic flaws both in the AI and in the human oversight.[119] It is becoming increasingly difficult to ignore the growing body of literature about AI and bias.[120] Transparency is also a recurring issue with the implementation of AI.[121] Both should be of concern in the university context.

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119 This practice is recommended, *e.g.* in Canada's *Directive on Automated Decision Making*, which was designed to apply to ADM systems adopted by the federal government. Although not applicable to universities, the Directive is an example of how safeguards can be built around technologies that play a role in decision-making about individuals. Clause 6.2.3 of the directive requires "[d]eveloping processes to monitor the outcomes of Automated Decision Systems to safeguard against unintentional outcomes and to verify compliance with institutional and program legislation, as well as this Directive, on a scheduled basis". See Canada, Treasury Board of Canada, *Directive on Automated Decision-Making* (Policies, directives, standards and guidelines), April 2021 update, online: <www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=32592> (Government of Canada).

120 See *e.g.* O'Neil, *supra* note 100; Eubanks, *supra* note 100; and Noble, *supra* note 100.

121 Transparency is a concern at the level of both algorithms and data (see *e.g.* Frank Pasquale, *The Black Box Society* (Cambridge, Mass: Harvard University Press, 2015). Recognizing that algorithmic transparency may not always be possible, there can be other forms of transparency including with respect to

The process by which a matter proceeds from an incident being flagged to its resolution is also important. Giving students an opportunity to respond to flagged incidents prior to a disciplinary proceeding might help to mitigate some of the human rights concerns raised about live and AI-enabled monitoring. While this may allow students to avoid being subject to the stress of defending themselves in full disciplinary proceedings, it is nevertheless traumatic (and stigmatizing) to be asked to explain oneself after one's monitored behavior is flagged as anomalous.[122]

A further implementation issue relates to adaptability and responsiveness to complaints and concerns. For example, Canada's Western University issued a statement reaffirming its commitment to providing remote proctoring solutions for those instructors who felt it was necessary for their courses. However, they also indicated that they carefully chose their service provider and, in response to concerns expressed by faculty and students, had worked with the company "to implement new functionality that further enhances data security and privacy".[123] Taking a different approach, York University announced that it would end the use of remote proctoring — save for exceptional circumstances[124] — as a response to concerns raised by students over privacy and equity.[125] The

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results, and audits of outcomes. See *e.g.* Mike Ananny & Kate Crawford, "Seeing without Knowing: Limitations of the Transparency Ideal and its Application to Algorithmic Accountability" (2016) 20:3 New Media and Society 973.

122 Harwell, "Cheating-detection", *supra* note 22; see also Sam Skolnik, "Ninety Percent of Suspected Cheaters Cleared by California Bar" (30 December 2020), online: *Bloomberg Law* <news.bloomberglaw.com/business-and-practice/ninety-percent-of-suspected-cheaters-cleared-by-california-bar>.

123 "Update on Remote Proctoring Vendor Selection - September 17, 2021" (17 September 2021), online: *Western Remote Proctoring* <remoteproctoring.uwo.ca/statement>.

124 These circumstances include "courses where there is a requirement for proctored tests or exams by an accreditation body or professional association, or has learning outcomes that cannot be assessed without online proctoring". Sayed, *supra* note 21.

125 Sayed, *ibid*.

University of California Berkeley has also banned the use of third-party proctoring services with one small exception: it allows professors to use Zoom to remotely monitor students writing exams.[126]

An overarching proportionality issue is whether it is appropriate at all to use AI-enabled remote proctoring. This is an interesting issue. AI, in theory, allows for greater efficiency and cost savings (closer surveillance of each student at less cost than hiring individual one-on-one proctors). It may also promise a greater ability to detect suspicious behaviours, especially as new modes of cheating may be facilitated at a distance. However, as noted above, it presents a range of serious data protection, privacy, and human rights issues. The seriousness and scale of these issues make such implementations difficult, if not impossible, to justify on a necessity and proportionality analysis. In the university context — where important institutional goals encompass equity, diversity and inclusion — AI-enabled remote proctoring, at least in its current forms and implementations, may simply pose too many unacceptable risks to be an appropriate solution.

A proportionality analysis considers less intrusive alternatives to the measures adopted. Just as there are different possible implementations of remote proctoring solutions, there are also alternatives to remote proctoring.[127] During the pandemic, some professors altered their modes of evaluation to avoid the use of remote proctoring services. Others developed banks of exam questions that could be used to administer unique tests to each student. It was also possible for professors to ask a class to write their exam using Zoom with cameras on so that the professor could, while using the Zoom gallery view function, roughly simulate in-person exam proctoring.[128] Some professors shifted to modes of

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126 "Remote Proctoring FAQ" (2022), online: *Berkeley Center for Teaching and Learning* <teaching.berkeley.edu/remote-proctoring-faq>.

127 See *e.g.* the University of Windsor directed its faculty to consider alternatives to exam-based evaluations. See "Remote Online Proctoring and Online Assessment" (2022), online: *University of Windsor* <www.uwindsor.ca/openlearning/503/online-exam-proctoring>.

128 Such a solution addresses some concerns with remote proctoring, although it still allows for 'intrusion' into private student spaces, and does not resolve issues raised by poor or unreliable internet access.

evaluation other than examinations. The extent to which universities have supported professors in developing and implementing alternate modes of evaluation is a proportionality consideration.

V. Conclusion

This paper has applied a necessity and proportionality analysis to the adoption of remote proctoring services by universities with a view to assessing such adoptions through a more holistic human rights lens. Data protection alone is an insufficient lens through which to consider the impacts of the adoption and use of technologies of remote surveillance — and ones with AI components — in the university context.

The necessity part of the analysis demonstrates that universities have a real concern about cheating. The problem is long-standing, has evolved with technology, and can manifest itself in new ways in the online context. Cheating harms the reputations of universities, and can adversely impact students who do not cheat, as well as society more broadly where higher-education credentials cannot be fully trusted. The rapid shift to online evaluation driven by the COVID-19 pandemic also added urgency to the necessity analysis. In many cases, solutions had to be found rapidly, pushing universities towards remote proctoring services. An important question is whether, once the urgency of a mid-semester shift to online learning has passed, solutions justified on an emergency basis are still acceptable.

Universities have long used in-person proctoring to control cheating in exam settings, making remote proctoring seem like a logical step in the online exam context. However, there is no easy equivalence between in-person and remote proctoring. Remote proctoring technologies collect vast quantities of data, raising data protection and data security issues. The constant, direct surveillance of students writing exams has also prompted significant anxiety among students. AI tools have raised concerns about bias and discrimination. Such technologies also rely on student access to adequate internet and computing equipment, creating inequities along the digital divide. The poor integration of the

technological tools with university disciplinary processes also raises significant due process concerns.

Although there is a body of literature on cheating in universities to support the necessity part of the argument, reports of the privacy and human rights impacts of these technologies are currently largely anecdotal. That said, the anecdotes are mounting and are highly compelling. There is clear evidence of resistance by students and faculty. Some universities have already moved away from remote proctoring either altogether or by limiting the circumstances for use and the technological tools that will be used. One remote proctoring company has also abandoned AI-only proctoring services, noting the importance of a 'human-in-the-loop' and the inability to rely upon university instructors to perform that role.

A proportionality approach typically examines particular implementations to see if they minimally impair human rights. There is a vast range of potential implementations of online proctoring. An examination of these implementations requires consideration not just of the types of technological tools adopted, but also the ways and contexts in which they are used, how student concerns are accommodated, and how the systems are integrated with university disciplinary processes. Any implementation should also give serious attention to alternatives to remote proctoring, and to the university's role in supporting innovations in course evaluation that could improve evaluation methods and avoid the imposition of technological surveillance tools. Implementations should also include transparency and accountability mechanisms. Universities should collect data that will allow them to determine if these systems are fair and equitable in their implementation.

The rapid adoption of remote surveillance technologies in universities during the pandemic risks normalizing surveillance. To a large extent, examining these services through privacy impact assessments and adjusting data protection requirements also risks normalizing the surveillance. Universities must be accountable more broadly for these types of technologies and must undertake to recognize and address the full range of harms they may cause. As institutions of higher learning — many of which have explicitly expressed commitments to

the principles of equity, diversity, and inclusion — universities must play a role in questioning the impacts of the adoption of these unproven and potentially harmful technologies.