



THE UNIVERSITY  
of EDINBURGH

# EDUCT News

Issue 67

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The Newsletter of the Edinburgh University Club of Toronto

## In This Issue

Click the heading to go directly to the article

- EDUCT Hears from Alex Lam on Living a Longer, Healthier Life with Purpose and Meaning
- Shannon Vallor Talks to EDUCT on Her New Book: *The AI Mirror*
- EDUCT Decennial Endowment Fund: Good News
- Edinburgh Futures Institute's Wealth of Webinars Open to All
- EDUCT Geography Centenary Fund: Our Next Watson Lecture
- Jenna Shelley's Bouncing Baby Number Three
- Famous Alumni: Geoffrey Hinton
- Welcome to our new members
- Book review: Harari's Guide to Navigating the Ever-evolving Nexus of Information
- Treasurer's Report

## Tell us your news

EDUCT News is always looking for interesting alumni stories and news. We are happy to hear about what's new with you! Whether you have just returned from an interesting trip or have a memory you wish to share with your fellow EDUCT Members, we would love to hear from you.

If you have something you would like to share, please contact the EDUCT News Editor, Simon Miles at [simon-miles@sympatico.ca](mailto:simon-miles@sympatico.ca).

## Mark Your Calendars

Check out the full events listing and details on [page 2](#)

### Privatizing Health Services: Implications for the Protection of the Human Right to Health

Sunday, February 23, 2025 | 12 noon ET (Zoom)

### EDUCT Annual Dinner

Friday, April 11, 2025 | 6:30 p.m. ET  
Arts & Letters Club, Toronto

### Annual General Meeting

Sunday, May 25, 2025 | 1 p.m. ET  
Location TBA

### MEMBERSHIP FEES:

Membership fees for 2025 are due in January. If you have not yet renewed, please see [page 16](#) for details.  
We now take INTERAC e-transfers.

## Message from the President



**Welcome to our new look!** Brittany Howlett has kindly offered to format our newsletter. While we will retain the familiar layout to make navigation easy, the new appearance is Brittany's.

Last autumn we had a couple of very good talks: Alex Lam on how to achieve a healthy and meaningful life; and a fascinating online talk by Professor Shannon Vallor, of the University, on AI.

As I write this, we are about to stage our Burns Nightcap. On 23 February we will hear from Dr. Johanna Hoekstra, of the Edinburgh Law School, on the privatization of health services and its impact on the right to health, and on 11 April we will welcome Professor Cogliano to talk at our Annual Dinner about the relationship of two former occupants of the White House: Jefferson and Washington. We hope to organize a family outing in May – possibly a tour of the original City Hall, in the St. Lawrence Market building, to learn about the history of Toronto. This would be followed by a visit to a nearby pub for refreshments. If you have ideas for events, do let us know.

Wishing you a very happy new year! And, as ever, do renew your membership for 2025 ([see p. 16 for details](#)).

**Anna Voineskos**

**Our Response to COVID**

Although the public is still relaxed about Covid, we continue to learn of new variants that could well spread rapidly and that may not be as susceptible to control with our currently available vaccines. Given this air of uncertainty, and the history of waves of new variants of Covid and the ever-changing government cautions on public gatherings, we will decide how to stage each event about six weeks prior to that event. We shall retain the online format for a few events each year, given the ease of access this offers to those members living far from Toronto.

**Promoting Your Event**

If you are organizing an event or participating in an activity that would be of interest to fellow alumni in the GTA, please get in touch with our Communications Officer: Paul Bradley

**pauljfrbradley@gmail.com.**

You may also join us on LinkedIn or Facebook to submit your information directly to participating members through these networks.

**Upcoming Club and Alumni Events****Privatizing Health Services: Implications for the Protection of the Human Right to Health**

**Sunday, February 23, 2025**

**12 noon ET**

**Virtual** (Zoom)

Dr. Johanna Hoekstra and Dr. Luis Felipe Yanes, both lecturers at the Edinburgh Law School, will explore the question as to how privatization affects the state's compliance with the human right to health. Since privatization does not derogate the state's obligation to protect the right to health, the characteristics of the contracts and contractual relationships underpinning private-public partnerships are critical. Shortcomings will be addressed and recommendations made to ensure the right to health can be guaranteed in a private-public contract context.

**Cost:** \$5 members and guests

**Info:** Alan Pearson – apearson@bell.net, 416-237-9874

**EDUCT Annual Dinner**

**Friday, April 11, 2025**

**6:30 p.m.**

**The Arts & Letters Club**

**14 Elm Street, Toronto**

Dr. Frank Cogliano, Dean International, North America, and Professor of American History at the University of Edinburgh, will be our after-dinner speaker. In his talk, Dr. Cogliano will introduce us to his new book, *A Revolutionary Friendship: Washington, Jefferson, and the American Republic*, and provide us with insights into the lives of two of the most prominent Presidents of the US and their relationship. Coming shortly after what will doubtless be one of the most significant presidential elections ever held in the US, the talk should help us to regain some perspective on the office of the president of the world's most powerful country.

**Cost:** \$110 for members and guests; \$115 for non-member alumni.

**Info:** Simon Miles – simon-miles@sympatico.ca, 416-466-8793

**Annual General Meeting**

**Sunday, May 25, 2025**

**1 p.m.**

**Location TBA** (likely on Zoom)

**Cost:** There is no charge for the AGM.

**Info:** Anna Voineskos – avoineskos@bell.net, 416-826-6655

## EDUCT Hears from Alex Lam on Living a Longer, Healthier Life with Purpose and Meaning

by Anna Voineskos

“Loneliness can get in the way of a happy retirement”. “Living longer has implications for our financial well-being”. I hear a lot of statements along these lines. My sense is that many people are concerned about living a longer life. And it was this that inspired me to invite Alex Lam to give EDUCT a talk, on 6 October 2024, on the subject of his new book: “Long Life: Mapping Your Well-being with Purpose and Meaning”.

The book is about understanding wellness and well-being and how to map mindful life strategies to achieve satisfaction and contentment. Lam argues that, as we are now living longer and healthier lives, we owe it to ourselves to consider how to make the most of this gift of time, and that such contemplation can lead to further personal growth and fulfillment. Lam’s initial training in Architecture led to a career in facilities management. A later degree in Theological Studies led to his exploring how to make more of his own life.

Lam conducted extensive research in writing a book that would serve as a guide to living a longer but fulfilling life. He draws upon a diversity of cultural backgrounds as he probes into such varied fields as medicine, religious faith, and his own original experience in facilities management.

The synthesis of all the information he acquired is presented in an intelligent and constructive framework to elaborate on his thesis that well-being and longevity do not depend solely on good choices of food, but, in addition, we need exercise, social interactions and a spiritual approach to life.

In his talk, Lam presented the findings of his research with masterful clarity, enhanced by clear diagrams. The essence of his argument – that body, soul and spirit are all central to a good quality of life – came across clearly. And there was a very happy ending to the talk when he prompted all of us to stand up and take a step forward, and then a step backwards – as he played ‘lambada’ music, traditionally accompanying erotic Brazilian dance. He had us dancing, each in their own fashion. His recipe: half an hour each day doing this will keep you fit.

EDUCT thanks Alex for an informative and entertaining talk.

*To purchase the book, please contact Alex Lam at [alex.lam.avimore@gmail.com](mailto:alex.lam.avimore@gmail.com). Alex is offering EDUCT members a special price of \$22.00, including courier delivery (a reduction from the standard retail price of \$29.95). Please provide your street address and your mobile number. If you would like Alex to sign and dedicate the book, please provide the names. Payment can be made by Interac eTransfer to Alex’s email.*



*Anna Voineskos welcomes Alex Lam*

### **Do you know of other Edinburgh alumni in Toronto?**

Please pass this newsletter on to anyone who might be interested.

## Shannon Vallor Talks to EDUCT on Her New Book: *The AI Mirror*

by Paul Bradley

On Sunday 24 November 2024, Professor Shannon Vallor, Baillie Gifford Chair in the Ethics of Data and Artificial Intelligence at the Edinburgh Futures Institute (EFI) at the University of Edinburgh, joined EDUCT members via Zoom to talk about her latest book *The AI Mirror: How to Reclaim Our Humanity in an Age of Machine Thinking (AI Mirror)*.

Professor Vallor approaches artificial intelligence (AI) from the philosopher's perspective to analyse and understand the moral and ethical implications of its impact on individuals and society collectively. Her work on AI forms part of her wider efforts to address humanity's current and future relationships with technology. She advocates for technology that supports human virtues, such as honesty, integrity and co-operation, rather than undermining them.



In *The AI Mirror*, Professor Vallor examines the challenges posed by the growth of AI and its subtle dehumanising effect. She does this by deploying the analogy of a mirror to expose six fundamental aspects of today's AI systems.

We can regard AI as a software-programmed simulation of human intelligence to perform tasks that traditionally required human cognition, such as decision-making, language comprehension, visual perception and pattern recognition.

At the heart of AI software are models representing the relationships between the data used to construct the model. The models are built using machine learning techniques from large collections of data. These models are typically so large – holding billions of relationships – that they are effectively opaque to the humans who build them. The current, most familiar form of AI, known as generative AI (exemplified by ChatGPT, Claude and Gemini) produces human-like text and artwork in response to our prompting.

In the introduction to her book, Professor Vallor says the following, which establishes the essential tension at the heart of AI and our use of the technology:

[...] it first helps to understand that today's most advanced AI systems are constructed as immense mirrors of human intelligence. They do not think for themselves; instead, they generate complex reflections cast by our recorded thoughts, judgments, desires, needs, perceptions, expectations, and imaginings.

Professor Vallor's concern, as set out in her book and described in the talk to EDUCT, is that we do not intuitively understand that AI systems, being created from us and by us, necessarily mirror human traits, values and flaws. She uses a mirror metaphor to describe how AI simultaneously reflects and amplifies historical patterns in human intelligence, behaviour and culture, while distorting or obfuscating other critical elements of our humanity.

In her talk, Professor Vallor examined six aspects of mirrors and of AI to elucidate her examination of how AI challenges our humanity. In brief, they are as follows.

Mirrors reveal the hidden: AI's models can uncover patterns and relationships within data that humans miss. This characteristic has huge potential for humanity as AI-based systems can aid medical diagnoses or assist in discovering drugs faster or more effectively than traditional research processes.

Mirrors can also magnify or amplify. It turns out that AI systems show themselves prone to over-confidence about predictions made from the data used to train them. The human generated datasets come with inherent biases, so AI used to support bail applications, for example, can unfairly penalize offenders based on race or gender.

Mirrors look backwards or, in Professor Vallor's terminology, they bring forward the past. In other words, they are not performing "new thinking", rather they strongly reflect our past as embedded in the material used to configure them. Ask an AI to generate new ideas for novels and it will regurgitate familiar themes from science fiction works.

Mirrors distort - objects in the mirror really are closer than they appear, and AI mirrors overrepresent the parts of humanity featured most in the training dataset. Prompt an AI model to produce images of a productive person and those images likely converge on white men sitting at office desks.



AI systems can confound us in the same way as we are confounded by a funfair hall of mirrors. They can generate specious explanations or simply make up false content and present it as fact. Apple's News service recently suspended its AI-based headline summary service, when it confabulated misleading news headlines and thoroughly confused its users.

Professor Vallor also highlights that in practice and in their implementation AI systems involve a degree of occlusion or obfuscation of how the technology has been made to work. For example, vast armies of low-paid workers have been responsible for the labelling tasks needed to reliably identify images in training data. In her talk she suggested this is analogous to the so-called mechanical Turk machines of the 17th and 18th century, that depended on concealed human labour.

Through these mirror parallels Professor Vallor uncovers a set of issues with AI that we need to understand. While noting that mirrors reveal, Professor Vallor also wants us to understand that AI systems are not entities independent of humans, they are reflections of humans (our intelligence, culture, biases and values) and our limitations.

Given the potential for AI systems to magnify and amplify flaws in their training data, we need to be concerned with the likelihood that AI will perpetuate past inequities and discriminatory behaviour when being used to assist in decision making. Given the evident lack of diversity in the backgrounds of the computer scientists and software engineers developing AI technology, we may end up with AI systems that are narrow and elitist in outlook.

Given we are aware of our flaws as human beings, Professor Vallor points out that we would be unwise to cede human agency and decision-making to AI systems as this action will diminish our ability to shape our futures.

Professor Vallor did not address AI's existential risk to humans in her talk, but *The AI Mirror* covers this topic as central to the constraint of our moral future that AI represents. Her perspective is that AI's existential threat lies not in human extinction but in humanity's losing its capacity for self-determination and ability to flourish. We risk a mechanized and dehumanized existence, unless we grasp what the growth of AI systems potentially represents.

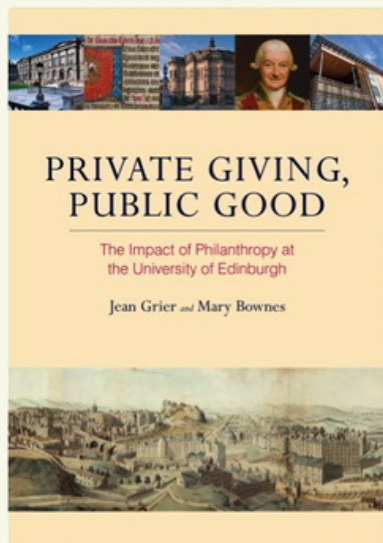


*Professor Shannon Vallor*

Consistent with her training as a philosopher and ethicist, Professor Vallor was keen to ensure that we understood that in her book she is calling for AI technology that supports human virtues such as creativity, solidarity and wisdom. We need to ensure that we maintain human agency and that AI systems are used in service of sustainable and equitable futures.

Given the current pattern of resource allocation to AI technology, the scale of investment to develop new generations of the technology and the concentration of expertise in relatively few hands, it is hard to be optimistic that Professor Vallor's concerns will be adequately addressed. This concern was further underscored when President Trump, on his second day in office, in the company of the chief executives of three of the world's largest companies with AI businesses, announced that the US was going to launch a massive increase in investment in AI.

To purchase *The AI Mirror*, the full reference is: Shannon Vallor, *The AI Mirror: How to Reclaim Our Humanity in an Age of Machine Thinking*, Oxford University Press, 2024, 272pp., ISBN 9780197759066.



### A Special Offer to EDUCT Members

Would you like to own a copy of the latest book on the University of Edinburgh?

*Jean Grier and Mary Bownes, Private Giving, Public Good: The Impact of Philanthropy at the University of Edinburgh, (Edinburgh: University of Edinburgh Press, 2014), 224 pp., £30.*

EDUCT would like to make it possible for every member to own a copy of this magnificent book on our University. We have arranged for a slight discount to be offered to members. Just how much we can offer off the market price of £30 depends on our shipping costs. If you would like to purchase a copy, or if you are planning to visit Edinburgh soon and can help with the transport of a few copies at no charge, please contact Simon Miles at 416-466-8793 or [simon-miles@sympatico.ca](mailto:simon-miles@sympatico.ca).

For a review of the book, see EDUCT News, September 2014, p.19.

## Edinburgh Futures Institute's Wealth of Webinars Open to All

by Simon Miles

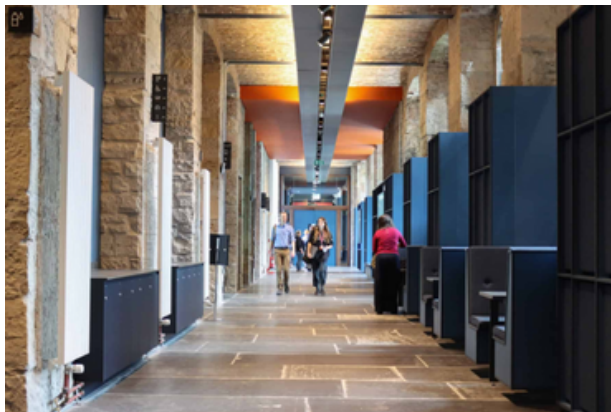
The Edinburgh Futures Institute (EFI) has been increasing the number and variety of its webinars that one can access online. While all readers of EDUCT News have doubtless heard about the EFI, it may be that you are not aware of the availability of such a wealth of webinars on all manner of themes.

To get your name on the mailing list, go to: <https://efi.ed.ac.uk/news/join-our-mailing-list/>

If you click on this link you will also see a tab "What's On" that takes you to a sample of upcoming events as well as some recordings of recent events.

The EFI's motto, Patet Omnibus, appearing over the main door of the restored building, was inherited from the Royal Infirmary. It translates as "Open to All" ... just as appropriate for the EFI as it was for the infirmary. And, of course, the internet makes the work of the EFI accessible to a truly global audience.

And the EFI's building is continuing to attract attention. In early December the EFI's building was honoured with a 'Special Prize for an Interior' in the Prix Versailles' 2024 World Titles, a series of awards made by UNESCO, in recognition of the best contemporary architecture and design projects worldwide.



*A redesigned corridor in the EFI*

## EDUCT Decennial Endowment Fund: Good News

by Simon Miles

The EDUCT Decennial Endowment Fund enjoyed another slight rise in world markets since our last report in September. As of the end of November 2024, the total investment in the Fund stood at £228,101, which is up from the £224,120 reported at the end of July 2024.

As ever, we remind all who are interested that the Fund remains open for further contributions. For details on how to donate, and to receive the appropriate form for donors from your country, please contact me at [simon-miles@sympatico.ca](mailto:simon-miles@sympatico.ca).

## EDUCT Geography Centenary Fund: Our Next Watson Lecture

by **Simon Miles**

As with the EDUCT Decennial Fund, the financial situation continues to improve. As of the end of November 2024, the total investment in the Fund stood at £126,062, which is up from the comparable figure of £124,003 for July 2024.

Other welcome news is that, following the setbacks associated with Covid, Dr. Dan Swanton has confirmed that the next J. Wreford Watson Lecture, supported by EDUCT, will be delivered on Wednesday, 19 March, at 4:00 pm UK time. In keeping with the tradition of the Watson Lectures, for which the speaker is alternately drawn from within the discipline of geography and from outwith geography, the guest lecturer for 2025 is Dr. Noreen Masud. Dr. Masud, born in Pakistan and with a D.Phil from the University of Oxford, is currently lecturer in twentieth century literature at the University of Bristol. In 2023 Dr. Masud published *A Flat Place*. It is described as a memoir. On the Penguin web site a clip from a review by the Financial Times tells us "In the flatlands of Britain, and in the memories they evoke of the flat places of Pakistan, Masud both finds a way to comprehend her own story and establishes a strong voice that confirms her as a significant chronicler of personal and national experience." The book has already received several prestigious literary awards, such as Book of the Year or equivalent plaudit, by, among others, The Guardian, The Sunday Times, and The New Yorker, and has been shortlisted for many other awards.

Dr. Swanton is hoping to arrange for the livestreaming of the lecture, and/or its being recorded. We hope to learn more about this prior to the lecture.

Additionally, we have continued to enjoy donor support. Being January, and as is our tradition, we thank our donors in the previous year. This year we extend our thanks to the following for their generosity.

- A sixth generous donation from **Fionna Tompkinson**, of Toronto.
- A seventh generous donation from **Len Evenden**, of West Vancouver, B.C.
- An eighth generous donation from **Fraser Taylor**, of Ottawa, Ontario; and **Margaret Wyeth**, of Victoria, B.C.
- A tenth generous donation from **Ann Wilkie**, of Halifax, Nova Scotia.
- An eleventh generous donation from **Linda Mason**, of Picton, Ontario.
- A fifteenth generous donation from **Simon Miles**, of Toronto.
- And a sixteenth generous donation from **David Kemp**, of Thunder Bay, Ontario.

The impact of their donations will show up in our next report. Our thanks are extended to all.

All interested are reminded that the Fund remains open for further contributions. Any assistance you can give to help us get to the next very important milestone of £130,000 would be much appreciated by all in Edinburgh. For details on how to donate, and to receive the appropriate form for donors from your country, please contact me at [simon-miles@sympatico.ca](mailto:simon-miles@sympatico.ca).

## Jenna Shelley's Bouncing Baby Number Three

by **Simon Miles**

Jenna Shelley and her husband, Tom Crerar, recently added a third boy, Dougie, to the family. Christmas gave Jenna time for the perfect photo op ... the product of which she has kindly shared with us.

Here we see young Dougie, accompanied by doggy, a.k.a. Gus, and ably supported by the Red Devils, a.k.a. Edward (on the right) and Ralph ... the one left holding the baby, while Jenna practices her photography.

EDUCT extends its congratulations to Jenna and Tom. And the University looks forward to putting the final touches to their education just a few years from now.





## Famous Alumni

### Geoffrey Hinton

by Simon Miles

*Editor's Note: One normally has to be well and truly dead before one can qualify for coverage in our Famous Alumni column. However, we do make exceptions for Nobel Laureates.*

Very early on Tuesday morning, 8 October 2024, Geoffrey Hinton, sound asleep in a hotel in California, was awoken by a call from a stranger with a Swedish accent. At first, he thought the call could be a scam. But the accent sounded genuine, so he did not hang up. As he told Canadians on CBC later that morning, he was flabbergasted to learn that he was the co-winner of the 2024 Nobel Prize for Physics. There was little sleep that night. By his 4:30 am CBC was interviewing him ... and so it went on.

Hinton, in his self-effacing and modest way, managed to keep the lid on the media hype. In one interview he observed that his shock at winning the Nobel stemmed from the fact that, while his work has drawn on statistical physics, he isn't a physicist himself – and even “dropped out of physics after my first year in university because I couldn't do the complicated math.”

Given that Hinton is a graduate of the University of Edinburgh, EDUCT has been following his career with interest. The formal announcement of the award states that Hinton was awarded the Nobel Prize in Physics, jointly with John Hopfield, of Princeton University, “for foundational discoveries and inventions that enable machine learning with artificial neural networks.”

As the U of T News elaborated later: “Hinton was selected for the high-profile award for his use of the Hopfield network – invented by his co-laureate – as the foundation for a new network called the Boltzmann machine that can learn to recognize elements within a given type of data. The Boltzmann machine can classify images and generate new examples of the pattern on which it was trained, with Hinton and his graduate students later building on this work to help usher in today's rapid development of machine learning – a technology that now underpins a host of applications ranging from large language models such as ChatGPT to self-driving cars.”



Geoffrey Hinton

Machine learning is another term one needs to understand in order to appreciate Hinton's work. As Roseann O'Reilly Runte explains in her new book “Canadians Who Innovate”, machine learning, or deep learning, is the term used to describe a computer's ability to go beyond the identification of trends and inconsistencies based on the data available to the next step of drawing conclusions from the data available, based on the parameters that have been learned by the network. Human programming can include instructions for “learning”. Thus, as the quality, amount and characteristics of the data improve, so the conclusions will improve. O'Reilly Runte sagely adds the reference to the sense of metaphor to underscore the challenges faced in programming a computer to recognize that a word can have more than one meaning. She also rightly emphasizes the need for a clear articulation of ethical values to govern the development of AI and machine learning. It is with respect to this need for more attention to the values guiding those working on AI and machine learning that Hinton has been speaking out so forcibly.

To the outside observer, the awarding of the Nobel Prize to Geoffrey Hinton, now University Professor Emeritus of Computer Science at the University of Toronto, makes perfect sense. It is all part of a natural progression for someone who has always been ahead of his time.

Geoffrey Hinton was born in London and grew up in Bristol. He went up to Cambridge University where he explored physics and mathematics but ended up graduating, in 1970, with a B.A. in Experimental Psychology. Later, he moved to the University of Edinburgh to pursue his Ph.D. in Artificial Intelligence (AI). Edinburgh was at the forefront of AI research at that time, having established Europe's first dedicated research group on AI in 1963. Today, Edinburgh is one of Europe's largest centres for AI research, with hundreds of researchers conducting leading-edge research into different areas of AI. And it keeps abreast of critical needs in the field. For example, in 2023, the University established the Generative AI Laboratory (GAIL), which unites the University's world-leading research and innovation in AI to develop safe solutions and systems for industry and government.



But when Hinton completed his Ph.D. at Edinburgh in 1978, there were no jobs in AI in the U.K. So, he first worked as a research fellow in cognitive studies at Sussex University and then moved to the University of California, San Diego, on a fellowship which enabled him to continue his work on neural networks. By 1980, he was back at Cambridge for a couple of years working in the applied psychology research unit. Then it was back to UC San Diego, as a Visiting Assistant Professor of Psychology for six months. Carnegie Mellon University, in Pittsburgh, then offered him a faculty position where he stayed until he received an offer from the University of Toronto to join its faculty as a Professor of Computer Science in 1987.

On arrival in Toronto, Hinton became part of the Canadian Institute for Advanced Research (CIFAR) community, by being made a Fellow in CIFAR's very first programme, then known as Artificial Intelligence, Robotics & Society. With this financial support from CIFAR and the Natural Sciences and Engineering Research Council of Canada, Hinton was finally feeling a lot more secure in moving ahead with his curiosity-driven research. Until then, he had encountered much scepticism and a dearth of reliable funding. That period is now looked back on as the "AI winters."

However, Hinton still had to put effort into defending his field of enquiry. CIFAR, in a recent article on Hinton's work, notes that in 1992 he wrote a passionate defence, in *Scientific American*, of the concept of artificial neural networks.

"...Sooner or later," he wrote, "computational studies of learning in artificial neural networks will converge on the methods discovered by evolution. When that happens, a lot of diverse empirical data about the brain will suddenly make sense, and many new applications of artificial neural networks will become feasible." As we now know, his effort did pay off. His commitment to this pioneering work earned him the honorific of The Godfather of AI.

In 1998, Hinton returned to the UK to set up the Gatsby Computational Neuroscience Unit at University College London, but by 2001 he had returned to the University of Toronto. It was that year, in 2001, that the University of Edinburgh recognized his outstanding contributions to his field by bestowing on him an Honorary Doctor of Science.

In 2004, Hinton and fellow collaborators successfully proposed the launch of a new programme at CIFAR: namely, Neural Computation and Adaptive Perception (or NCAP, which today is named Learning in Machines & Brains). Hinton led NCAP for ten years. Its objectives were "to use insights from a broad range of disciplines to fully realize how the brain learns and interprets visual information and to use these insights to build computer systems and machines that are capable of learning in ways similar to humans." He remains an advisor to the programme.

In 2006, Hinton was honoured by the University of Toronto by being named a University Professor, the university's highest academic appointment.

In 2008, Hinton kindly gave a talk to EDUCT entitled "How the Brain Builds Models of the World". We were introduced to his work on building computer models – neural networks – to understand and simulate how the brain comes to make sense of all the information presented to it. It begins by recognizing patterns in the sensory data. Hinton explained how simple neural networks (known as Boltzmann machines) are able to learn the features of hand-written digits. We witnessed, for example, how, after repeated training or exposure to different kinds of 2s, the neural networks are eventually able to develop an archetype, or set of rules, of the defining features of a 2. This then allows the network to correctly classify all the 2s presented to it. Later, we were shown video footage of the machine generating its own examples of 2s. We were then introduced to what happens when a network, having been exposed only to 2s, is presented with unfamiliar 3s; it sees them as a version of 2. Hinton then showed us what more complex neural networks do when presented with words contained in thousands of documents. They develop multi-dimensional clusters of words or documents related to one another. In essence, think of your standard Google search when you enter some key words. He was remarkably clear in his explanation of where the research was standing at the time.

In 2013, Google acquired Hinton's neural networks startup, DNNresearch, which developed out of his research at U of T. He then began to spend more time at Google in the US, but retained his ties with U of T and CIFAR.

However, by 2016 Hinton was again spending more of his time in Canada. CIFAR was working with the Government of Canada to put together a Pan-Canadian AI Strategy. In essence, it was to take advantage of the critical mass of researchers in AI and machine learning that were working in Canada. Hinton became an advisor to the initiative. This led to the establishment of three National AI Institutes in Montreal, Edmonton and Toronto. The one in Toronto, the Vector Institute, was co-founded by Hinton and a colleague, Raquel Urtasun. The Institute's vision is to drive excellence and leadership in Canada's knowledge, creation, and use of AI to foster economic growth and improve the lives of Canadians. For more information on the Institute, go to <https://vectorinstitute.ai/> Hinton remains an advisor to the Vector Institute.

Not surprisingly, Hinton has received many accolades for his contributions to scientific knowledge over his career. Two stand out. In 2018, he was appointed a Companion of the Order of Canada – the highest recognition that the Governor General of Canada can bestow upon a Canadian – “for his seminal contributions to the advancement of artificial intelligence as a computer scientist and specialist in cognitive psychology”.

In 2019, along with two longtime friends and colleagues, Dr. Yann LeCun, of Facebook and New York University, and Yoshua Bengio, of Université de Montréal, Hinton received the 2018 A. M. Turing Award for “conceptual and engineering breakthroughs” in deep neural networks. This award is also known, informally, as the Nobel Prize of computing. The award is made by The Association for Computing Machinery. Google generously provides the \$1 million prize money. The award is named for Alan M. Turing, the British mathematician who articulated the mathematical foundation and limits of computing. As Hinton observed on learning of the award: “It’s very nice that the group of us have been recognized as having a big impact. It’s sort of an acceptance by the computer science community that this stuff isn’t crazy”. More information about the A. M. Turing award and the work of the three recipients can be found at <https://awards.acm.org/about/2018-turing>.

In 2023, Hinton made headlines around the world by announcing his resignation from Google to focus his efforts on getting the world to give more attention and resources to addressing the need to control AI. Coming from such a well-respected scientist, this *cri de couer* registered with the world’s media.

Seemingly, Hinton is being heard. For example, the members of CIFAR’s Learning in Machines & Brains programme, of whom Hinton is one, have expanded their inquiry to address complex ethical issues in research and training environments and in the implementation of AI. As a recent CIFAR announcement indicated, among other research questions, the areas of focus include exploring existing and future societal implications of AI research and addressing issues in AI research and implementation, including privacy, accountability and transparency. Similarly, many of the Canada CIFAR AI Chairs recruited and retained in Canada through the Pan-Canadian AI Strategy have expanded their fields of inquiry into issues related to AI safety and responsible deployment. And very recently, the Canadian government, with CIFAR’s collaboration, has established a Canadian AI Safety Institute.

Prime Minister Trudeau was among those congratulating Hinton on his latest award while also taking the opportunity to draw attention to Geoffrey’s new cause. On X, the Prime Minister wrote: “Geoffrey, we’re glad to have a mind like yours developing safe and responsible AI for the world.”

Another side of Hinton – his generosity - was revealed recently when the Government of Ontario was first threatening to permanently close the Ontario Science Centre on the grounds that a part of the roof was unsafe. The public outrage was palpable. Hinton offered \$1 million to fix the roof. His offer was declined. And when asked by that CBC interviewer, on the morning of his Nobel Award being announced, what he would say to young Canadians who may feel some despair when they see their provincial government closing their Science Centre, Hinton’s advice was to the point: “Don’t vote for a government that will close your Science Centre”!

That same generosity has led Hinton to decide to donate the money associated with the Nobel prize to various charities, including one that provides jobs for neurodiverse young adults. Already, he has made a large award to a charity providing assistance to Aboriginal groups in Canada to establish supplies of safe drinking water.

EDUCT extends its congratulations to Geoffrey Hinton, and thanks him for his championing of his cause to ensure the safe and ethically responsible development of AI and machine learning. He truly remains The Godfather of AI.

### The Story Behind EDUCT

“EDUCT” is intended to form the acronym for the Edinburgh University Club of Toronto. “Educt” is a word which means, in the language of chemists: “A body separated by decomposition from another.” In addition, there is “e-duct”, an electronic channel, which seems appropriate for all of our members receiving EDUCT News via e-mail.

## Welcome To Our New Members

by Simon Miles

### Chloé Currie

Chloé Currie is a Public Affairs Coordinator with Santis Health. Headquartered in Toronto, Santis Health, which was founded 12 years ago, also has offices in Ottawa and Vancouver. It provides consulting services in the fields of health care and the life sciences, and indeed is regarded as the leading player in health care. Santis's clients cover a broad range of institutions and corporations, including, for example, pharmaceutical companies, community service organizations, and long-term care homes. As a Public Affairs Coordinator, Chloé spends much of her time helping those clients get their messages across to governments. This involves everything from the actual lobbying of governments for financial support and for policy changes, to working with those clients to ensure they are seeking the achievable. Chloé finds the work stimulating.

So, how did Chloé end up in this field? Well, she started life in Oakville. She attended nearby Appleby College, where she was an all-round high achiever. In the arts, for which she won multiple awards, she particularly loved her time playing timpani in the school orchestra and participating in both the Chapel and Cantus choirs. In sports, she captained the school's softball team. In academics, Chloé received honours every year, and participated in multiple science expeditions for environmental science and biology, learning to scuba dive in Honduras and South Africa. And in school diplomacy, Chloé was both an inter-cultural leader, with responsibility for ensuring that all international boarders were welcomed and felt comfortable at the school, and the school's Head Student Ambassador,

which involved everything from guiding guests around campus to representing Appleby at conferences of private schools put on for the benefit of prospective students.

Given her love of music, Chloé initially thought she should apply to the Juilliard School in New York. Her mother thought otherwise! Of the several universities to which Chloé applied, Edinburgh had an inside edge, in part because her family's roots are in Dumfries, and in part because she had visited Edinburgh in the summer before she entered grade 12 and was very taken by the city.

Her Guidance Counsellor at Appleby had also underscored that the four-year undergraduate degree in Scotland is akin to that available in Canada. Chloé was accepted and opted to pursue an M.A. Honours in History. Why History? On this score her grandfather, Richard Currie, had been an influence. Richard, Chancellor Emeritus of the University of New Brunswick, and former President of Loblaw Co Ltd., is a great lover of history and, most notably, an avid reader of Winston Churchill. He had obviously impressed upon Chloé the value of having a sound appreciation of history. She loved her time at Edinburgh and is ever grateful to her grandfather for pointing her in that direction.

In her first two years at Edinburgh she covered the waterfront in terms of the range of courses she took ... from the mandatory courses in, for example, mediaeval, early, and modern history, to the electives, for which she opted to explore architectural history and theology. For her thesis, Chloé conducted research on desegregation in the southern US from 1954 to 1995. Within that, she focused on desegregation in schools, the court cases that supported it, and its impact on other elements of societal organization, such as school busing.

Outside of her studies, Chloé made good use of her time to travel around Scotland and the rest of the UK. She also got to the continent, but readily professes a preference for Rome over Paris. And back in Edinburgh she participated in the very practical Baking Society (she says she is now a very good cook!), for which she worked up an appetite by joining in the dangerous, but invigorating, activities found in the Kickboxing Club (I did not ask more!), and the more culturally-attuned, but physically demanding, Reeling Club (dancing not fishing!).

Upon graduating from Edinburgh in 2021, Chloé decided to pursue a Master's in Public Policy through the Balsillie School of International Affairs at Wilfrid Laurier University. She had done well academically at Edinburgh, and WLU offered her a scholarship. While there was no thesis called for in the one-year programme, she did have to undertake a "capstone project". This project, which was undertaken for Global Affairs Canada, offered opportunities to interact with staff at GAC. Her project was on LGBTQ rights in the Global South. Her paper was well received and published by WLU. She found this degree programme very practical, involving, as it did, lots of hands-on experience and the opportunity to delve into a wide range of public policy fields. And, not least, it introduced her to the now hot field of artificial intelligence.

Outside of her work, Chloé is giving time to painting landscapes, playing with her toy poodle Hank, and continuing her passions for music and baking.

EDUCT welcomes Chloé.



*Chloé Currie*

## Eugene Fletcher

Eugene Fletcher is an Assistant Professor of Molecular Microbiology at Carleton University, in Ottawa. He has a fascinating background.

Eugene was born and raised in Accra, Ghana. At school he loved Biology and Chemistry. Not surprisingly, therefore, when he attended Kwame Nkrumah University of Science and Technology (KNUST), in Kumasi, he opted to pursue a B.Sc. (Hons.) in Biochemistry. In his third year at the university, he was elected as the head of the Editorial Board of the Biochemistry Students Association. As Eugene kindly explained to me, biochemistry is, in essence, the study of every chemical reaction that happens in any living organism. For example, understanding how one absorbs a drug is a function of biochemistry.

After graduating from KNUST in 2009, he stayed on for a year to serve as a teaching assistant. During that time, when he was contemplating further study, a friend who was already at the University of Edinburgh happened to mention the Darwin Trust of Edinburgh. The Trust funds doctoral students in Biological Sciences, providing a stipend and covering tuition fees. Most, but not all, recipients will study at the University of Edinburgh. It was established by Professor Sir Kenneth Murray, of the University of Edinburgh, who had contributed greatly to the development of the first effective genetically-engineered recombinant vaccine against the hepatitis B virus. Murray and other scientists and venture capitalists founded Biogen. The company generated considerable wealth for Murray, and with this he established the Darwin Trust. Given EDUCT's interest in sources of funding for students at Edinburgh, readers are encouraged to find out more here. <https://darwintrust.bio.ed.ac.uk/edinburgh>

Eugene had the good fortune to be awarded a Darwin Trust Scholarship. Thus in 2010 he moved to Edinburgh. Most of his time was spent at King's Buildings, where he was based at the Institute of Cell Biology. The Institute has a broad reach in its research, which is conducted by a number of labs, each with a team of doctoral students. Eugene was in a microbiology lab and did his Ph.D. under the supervision of Professor Chris French. His Ph.D. focused on the *E. coli* bacterium and, specifically, how to engineer it to turn agricultural waste into biofuel.



*Eugene Fletcher*

To improve this process, Eugene was employing synthetic biology to 'train' *E. coli* to become more resistant to the biofuel so that the cells did not get poisoned in the process of making the biofuel. Synthetic biology, in essence, is a multidisciplinary field that draws on a broad range of methods to redesign organisms and biological systems to give them new abilities to contribute to the resolution of problems in medicine, agriculture, industry, etc. Eugene and his colleagues inserted new genes into *E. coli* cells, including a gene that pumps out butanol (a biofuel) from the cells, increasing the cells' resistance to the biofuel. Although, in essence, this is the same process that is applied by bacteria in developing antibiotic resistance, it was regarded as a breakthrough. All this helps to understand the work that went into producing the thesis with the rather demanding title: "Application of novel methods using synthetic biology tools to investigate solvent toxicity in bacteria".

Perhaps because Sir Kenneth Murray was also so keen to promote science education through outreach activities, it is not surprising that there were opportunities for students to make contributions in this way. Eugene was active in a group called the Postgraduate Science Communication Team, that was based at King's Buildings. The team published audio podcasts on the Institute's web site. It also helped out at the Edinburgh Science Festival which is held every April, around the Easter break, with the aim of rendering science understandable to, and interesting for, school children and the lay public. For example, Eugene set up microscopes for kids to view plant cells to play upon the children's curiosity.

Additionally, because one of his advisers was involved with iGEM (the International Genetically Engineered Machine) Competition, Eugene served as an adviser to the Edinburgh team of biology students for three years. In 2011, the team's project won a gold medal and the Best Model Prize at the European Jamboree held in Amsterdam. With this, the team moved on to the World Championships where it won the prize for Best Human Practices.

And, of course, Eugene found time, while at Edinburgh, to explore the Highlands and, given those cheap flights, much of western Europe. His only disappointment: he never did get to see the Loch Ness Monster!

After graduating with his Ph.D. in cell and molecular biology in 2014, Eugene's first post-doc was at Chalmers University of Technology, in Gothenburg, in Sweden. In this two-year undertaking he was part of a team collaborating with Samsung, which wanted to produce lactic acid, via fermentation with yeast, to make biodegradable plastics. Essentially, the challenge was to make yeast cells more resistant to the lactic acid so that they would not be poisoned. They succeeded.

In 2016, Eugene moved to the Technical University of Denmark (DTU), outside Copenhagen at Kongens Lyngby, for a second post-doc, of about 18 months.



Here, the challenge was to better understand the effects of antibiotics on the microbiome of the gut. The work continues to this day. In the time he had spent in Sweden and Denmark, Eugene had the opportunity to see much of Scandinavia, and to learn how to ski ... quite an experience for a Ghanaian! He decided it was time to return to an English-speaking country. While Scotland was initially appealing, Brexit put a damper on that. So, he opted for Canada. In 2017, he secured another post-doc at the Ottawa Institute of Systems Biology, at the University of Ottawa, this time, among other things, to engineer a yeast strain that would be tolerant to toxic fermentation inhibitors. Again, his research was successful. Indeed, a provisional US patent has been acquired for this yeast strain.

In 2020, Eugene decided he should like to spend some time in an industrial setting and he joined a privately-funded laboratory in Guelph which was engineering yeasts to improve the flavours and aromas of beers. He stayed with this company for three years before seeing an advertisement for a post at Carleton University. He was offered the job and is now pursuing research in microbiology. As an Assistant Professor in Microbiology, in the Department of Biology, he is also cross-appointed to the Institute of Biochemistry. He has received funding from the Natural Sciences and Engineering Research Council of Canada (NSERC), the Ontario Ministry of Agriculture, and Carleton University to undertake a project aimed at converting plastic and dairy waste to biofuels, and is currently busy assembling his research team. This research aims to address two global challenges: eliminating plastic pollution and producing clean fuels to support a green bioeconomy and mitigate climate change.

EDUCT wishes Eugene every success in his career and hopes that he will remain in Canada. The world needs more research scientists like Eugene!

## Books

### Harari's Guide to Navigating the Ever-evolving Nexus of Information.

by Chloé Currie

Yuval Noah Harari, *Nexus: A Brief History of Information Networks from the Stone Age to AI* (Toronto: McClelland & Stewart - Penguin Random House Canada, 2024), 528 pp., ISBN 0771019661 (hardback). Also available in paperback, e-publication and audiobook. Cdn\$45.00 (hardback).

Yuval Noah Harari's *Nexus: A Brief History of Information Networks* offers a compelling journey through the development and evolution of communication systems and their profound impact on human societies. Harari, known for his complex analyses in his other works, including *Sapiens* and *21 Lessons for the 21st Century*, outlines the intricate web of information exchange that has shaped civilizations in an engaging and profound way.

In this book, Harari traces the origins of information networks back to early human history, emphasizing how these systems enabled collaboration, innovation, and power dynamics, while also providing commentary on the modern use of artificial intelligence (AI) and its impacts on these networks. The central thesis of *Nexus* revolves around the idea that humanity's progress has always been tied to the sophistication of its communication and information-sharing capabilities. Harari organizes the narrative into three key sections: human networks, the inorganic network, and computer politics.

#### Human Networks

This first section explores how early human societies developed basic information networks. Harari discusses the role of oral traditions, cave paintings, astrology and, later, written language. Harari connects all of these innovations to the rise of empires, emphasizing how the ability to collect and disseminate information gave these civilizations an advantage in administration and warfare. Harari then transitions to the industrial era in later chapters, detailing how the printing press, telegraph, and other communication technologies transformed societies. He describes the way printed books democratized knowledge, contributing to movements such as the Enlightenment and the French Revolution. The invention of the telegraph, Harari argues, marked the dawn of instantaneous communication, enabling global trade networks and the rise of industrial capitalism.

Additionally, within this first section, Harari outlines the root definitions of what information is and how we as human beings use it. A standout definition he outlines within the first few pages of the preliminary chapter is that "most information in human society does not represent anything" (*Nexus*, 7), rather information is used as a depiction of reality rather than the truth. While reading *Nexus*, I found myself stopping at multiple points to contemplate my own view of reality, and how the information I know is merely a retelling of realities from different human perspectives. Harari's discussion and definition of stories, documents, errors, and decisions in the first chapter already had my former historian brain enthralled with his examples of how humans have used these concepts to wield power since our beginning and at the most basic level of communication.

### The Inorganic Network

This second section addresses the darker aspects of information control, including propaganda and censorship, which were utilized to maintain power. Within this section, Harari delves into the development and impact of non-human information systems, particularly AI. Harari argues that AI represents a transformative leap in information networks, as it can process information and make decisions independently, unlike previous tools that required human direction. Harari also warns that, without proper oversight, AI could lead to unintended consequences, such as the erosion of personal freedoms and the rise of authoritarian surveillance states. Harari refers to George Orwell's 1984 multiple times within this section. 1984 is one of the works often used as a talking point when discussing the adoption of AI, given that, with the increase in use of surveillance cameras, facial recognition technology, and large language models, AI has the potential to enable the kind of surveillance and control depicted in the novel. To combat this, Harari emphasizes the importance of developing self-correcting mechanisms within information networks to ensure they promote truth and wisdom rather than misinformation and manipulation. He suggests that the increasing complexity and autonomy of AI-driven networks necessitate a re-evaluation of how societies manage and interact with information.

A message I took away from this section was the importance of public awareness and engagement in discussions about AI's role in society. When it comes to discussions of AI, people are often scared of the extremes like 'killer robots,' and do not think about the possible benefits of AI use.

When used for good, AI models can help to uplift society and get people out of creative ruts, but that does not mean that all AI tools can do so. Overall, I think that Harari's main message in this section is that humans should be cautious of AI and its dangers when it comes to abuse of power, while also maintaining a dialogue of how it can be beneficial for society.

### Computer Politics

In the final section, Harari explores how modern information networks, powered by computers and algorithms, have revolutionized almost every aspect of life, and discusses the double-edged sword of connectivity - how it has democratized knowledge while also enabling surveillance and the spread of misinformation.

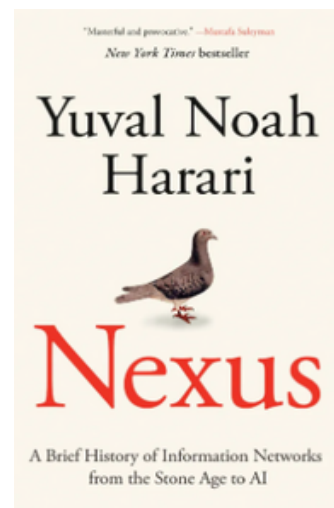
One of Harari's main focal points within this third section is his outlining of AI's capacity to process vast amounts of data and make autonomous decisions, and thus to reshape governance, economics, and personal freedoms. The dangers surrounding AI are that it can be exploited to manipulate public opinion, enhance surveillance, and concentrate power within authoritarian regimes, which we have already witnessed in various areas of activity and in different parts of the world. For AI to be used in an ethical way, the AI system needs to be transparent and accountable to governments, corporations, and civil society. Ensuring that happens will be complicated and difficult on the global stage but must be done to provide confirmation that AI is not being abused.

### In Conclusion

In my opinion, Nexus is a masterful blend of history, technology, and sociology. Harari's writing is accessible yet deeply thought-provoking, making complex topics understandable to a broad audience. One of the book's strengths is its ability to draw connections between historical and contemporary issues, allowing readers to see the continuity and transformation in human communication systems.

Overall, I think the book serves as both an historical account and a cautionary tale, reminding readers of the power and responsibility that comes with managing information networks. Harari leaves us with a clear message: the future of humanity hinges on how we navigate the ever-evolving nexus of information.

*Editor's Note: EDUCT thanks Chloé Currie, a new member of EDUCT, for preparing this review. More can be learned about Chloé in the profile of her to be found in this newsletter, in the section Welcome To Our New Members.*



### Are you a fan of Scottish writing?

Do you enjoy reading novels and non-fiction by Scottish authors? How about books about Scotland or Scots? If so, EDUCT would welcome your views and opinions for publication in EDUCT News.

Please contact the EDUCT News Editor, Simon Miles at [simon-miles@sympatico.ca](mailto:simon-miles@sympatico.ca).



**EDINBURGH UNIVERSITY CLUB OF TORONTO (EDUCT)  
UNAUDITED ANNUAL FINANCIAL STATEMENT 2024**

As of December 31, 2024

<b>BALANCE SHEET</b>	<b>2024</b>	<b>2023</b>
Total Member Funds Being:	\$12,109	\$11,808
Cash in Bank:	\$12,109	\$11,808
<b>INCOME STATEMENT</b>		
<b>Income:</b>		
- Membership Fees (in year)	\$2,305	\$2,520
- Events	\$8,009	\$7,785
- Donations	\$5	\$20
- Off Year Membership fees and Early Event Payments that will carry into the next year.	\$15	\$235
<b>Total Revenue:</b>	<b>\$10,334</b>	<b>\$10,560</b>
<b>Expenses:</b>		
- Events	\$6,841	\$5,306
- Newsletter	\$1,170	\$1,221
- Bank Charges	\$72	\$72
- Donations to the University	\$1,740	\$0
- Refund to Member for event missed with notice	\$210	\$0
<b>Total Expenses:</b>	<b>\$10,033</b>	<b>\$6,599</b>
<b>Net Gain/Loss:</b>	<b>\$301</b>	<b>\$3,961</b>
<b>Opening Funds:</b>	<b>\$11,808</b>	<b>\$7,847</b>
<b>Closing Funds:</b>	<b>\$12,109</b>	<b>\$11,808</b>

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January 15, 2025

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Annual membership fees are due in January of each year. If you have not yet renewed for this year, please send \$35 to our Treasurer, Fiona Tompkinson either by Interac e-Transfer, via **educt.treasurer@gmail.com** or by cheque, payable to EDUCT, and marked "membership". For mailing details, please call Fiona at 416-728-4254.

Your promptness in this regard greatly lightens the load on our volunteer Board and is thus much appreciated. Thank you, in advance, for your payment.

## Friends of EDUCT

Friends of EDUCT are recognized by virtue of the generosity they demonstrated when, as nonmembers, they donated to the University of Edinburgh through an EDUCT-initiated special fund.

## Carlyle Circle Members in Canada

EDUCT wishes to acknowledge the generosity of alumni and friends of the University of Edinburgh who have decided to leave a bequest to the University in their wills. They are recognized by the University as Carlyle Circle members. The following persons are Carlyle Circle members living in Canada who are known to EDUCT. We extend our gratitude to each of them. If you are a member of the Carlyle Circle or know of such members, you are encouraged to contact us.

## Honorary Members of EDUCT

Recipients of Honorary Degrees from the University of Edinburgh who reside in Canada are invited to become Honorary Members of EDUCT.

### Are you on our list?

We know of over 240 alumni in the Toronto area. As of 31 January 2025, we have 172 members, most of whom are in the Toronto area. If you would be interested in joining EDUCT, please do not hesitate to contact the EDUCT President or the Club Treasurer.

EDUCT News is published three times a year in January, May and September. Please send submissions or ideas for articles to the Editor:  
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