Andrew Witt
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Andrew Witt
Designer X Researcher
Imagination X Evidence

Architect and researcher who uniquely bridges the practice, science, and history of design engineering, design futures, computational design. Broad experience in speculative design, technology development, strategic design, teaching, and historical research. Expertise in developing methods and tools to generate new design possibilities as well as analyze, optimize, and fabricate some of the world's most ambitious construction projects. Ability to develop and articulate visions that fuse design and technology, and adept at tailoring messages to communicate broadly to diverse audiences, including business leaders, academics, donors, venture capital, and general public.

Andrew Witt is an Assistant Professor in Practice in Architecture at the Harvard Graduate School of Design, teaching and researching in the relationship of geometry and machines to perception, design, construction, and culture. Trained as both an architect and mathematician, he has a particular interest in a technically synthetic and logically rigorous approach to form.

He is also co-founder, with Tobias Nolte, of Certain Measures, a Boston/Berlin-based design and technology incubator that combines imagination and evidence for systemic and scalable approaches to spatial problems. Their clients include Audi, BMW, Futurium (the German federal museum of the future) and the Dubai Futures Foundation. The work of Certain Measures is in the permanent collection of the Centre Pompidou, and has been exhibited at the 2018 Pompidou show "Coding the World," Le Laboratoie, Haus der Kulturen der Welt, and Ars Electronica, among others. Witt's personal work has been featured at the Storefront for Art and Architecture. In 2017 Certain Measures were finalists for the Zumtobel Award in both the Young Professionals and Applied Innovation Categories.

Witt is a fellow of the Canadian Centre for Architecture and the Macdowell Colony, a Graham Foundation grantee, a World Frontiers Forum Pioneer (2018) and Young Pioneer (2017), and a 2015 nominee for the Chernikov Prize. Witt has lectured widely, including at the Venice Biennale, Library of Congress, Yale, Princeton, MIT, The Bartlett, The Berlage, Stanford, UCLA, Berkeley, ETH, and EPFL, and his research has been published in venues such as Log, Project, AD, Detail, Harvard Design Magazine, Surface, Space, Linear Algebra and its Applications, and Linear and Multilinear Algebra, and Issues in Science and Technology.

He recently published the first monograph of the Rhythmograms of German proto-computational photographic hacker Heinrich Heidersberger. He is currently preparing a single-author book "Formulations: Encoding Architecture, Mathematics, and Culture" about the historcal exchanges between design and mathematics.

He was previously Director of Research at Gehry Technologies and a director at GT's Paris, France office, where he solved complex geometric challenges for clients including Gehry Partners, Ateliers Jean Nouvel, UN Studio, and Coop Himmelb(l)au. He also developed prototypes for new software design tools such as GTeam (now Trimble Connect, acquired by Trimble in 2014).

Witt received an M.Arch (with distinction, AIA medal, John E. Thayer Scholarship, Frederick Shelden Travelling Fellowship) and an M.Des (History and Theory, with distinction) from the GSD. He has an Erdős number of 3.

Recent Work

Current **Assistant Professor in Practice, Harvard University.**
I teach and research topics on the relationship between design, science, and technology: architectural geometry, machine and human perception, and construction automation. Courses include:

STU-1231 Masters in Design Engineering - Collaborative Design Studio
2017, 2018

VIS-02224 Digital Media II
2010, 2011, 2012, 2013, 2014, 2015, 2016, 2018

SCI-06459 Mechatronic Optics
2016, 2017

SCI-06436 Expanded Mechanisms/Empirical Materialisms
2012, 2013, 2014

DES-3350 Narratives of Design Science
2016, 2017

SCI-06455 Structural Surfaces
2015, 2016

Co-Founder and Director, Geometry Lab, Harvard University.
Co-founded this research group to develop automated systems for building design and construction. Partners with industry companies and groups to accelerate innovation in geometry and fabrication. Research projects include:

Topological Discrete Shells
Robotic Spaceframe Assembly
Procedural Optimization of Urban Form
Machine Vision for Adaptive Assembly

Co-Founder, Certain Measures.
certainmeasures.com
Certain Meaures is a design and technology consultancy that works at the intersection of architecture, strategy, and science. Using quantitative methods, we solve exceptional problems and build bespoke software tools to simplify, accelerate, and expand the possibilities of design.

Sample Clients: Audi, Mini, Centre Pompidou, Ars Electronica, Dubai Futures Foundation, Google I/O.

2013-2014 **Research Advisor, Gehry Technologies.**
I provided strategic guidance on research directions and go-to-market for GT's emerging technology products, including cloud BIM collaboration and data integration solutions.

2010-2013 **Director of Research. Gehry Technologies.**
Responsible for company-wide strategic leadership on development of new practices and technologies for design and construction. Research areas including advanced geometry optimization for fabrication, cloud

computation for environmental simulation.

Led research team of in-house and outsourced researchers addressing complex design and construction problems, including prototyping of new software and technology solutions.

Executive-level experience with pitching to investors/VCs, strategic planning, M&A assist and selection, market assesment, talent search.

Developed and initially product-managed the 3D BIM collaboration platform GTeam (Acquired by Trimble, now Trimble Connect).

Coordinator, Gehry Technologies Advisory Board.
Acted as personal liason to select group of world – design leaders including Ben Van Berkel, Wolf Prix, Greg Lynn, Moshe Safdie, and David Childs.

Lecturer, Harvard University Graduate School of Design.
Taught research-oriented courses on geometry, computation, technology development, and automated fabrication and assembly in design.

Awarded Faculty of the Year (Architecture) in first year of teaching.

2009–2010 **Director, Design Innovation. Gehry Technologies.**
Responsible for the development and implementation of new design technology practices and applications in Europe and across GT's global services team.

Work included directing project engagements of consultant teams, leading new business development with designers, engineers, fabricators and builders, prototyping development for advanced architectural geometry tools, Web 2.0 concurrent design systems, fabrication automation, generative detailing, and optimization.

Instrumental from growing team from zero to $2M revenue and 15 professional consultants.

2007–2009 **Lead Consultant, Europe. Gehry Technologies.**
Responsible for setting market and consulting strategy for Europe-wide operations: business development and execution of digital consulting services on large ($200M+) design and construction projects, totalling over $1 Billion value.

Sample Gehry Technologies Consulting Projects:

Date	Client	Project
2011	LVMH, Gehry Partners	Fondation Louis Vuitton
2010	Snohetta	KACARE
2010	UN Studio	Raffles Hotel
2009	Ateliers Jean Nouvel	Qatar National Museum
2009	Ateliers Jean Nouvel	Louvre Abu Dhabi
2008	Morphosis	Phare Tower
2008	Coop Himmelb(l)au	MOCAPE
2005	Gehry Partners	Novartis
2005	Gehry Partners	Princeton Science Library

2004–2007 Senior Project Consultant and Project Consultant, Gehry Technologies.
Consulted on major projects for Gehry Partners and for clients in UK, China, France, Switzerland, Austria and across the US on parametric design and complex facade and construction. Helped to design and develop software,

comprehensively involved in the planning, management, implementation, and bid preparation for digital 3D technology process for projects of value of exceeding $1B US.

2003 **Designer. Preston Scott Cohen Architects.**
Design Team member on competition-winning entry for Tel Aviv Art Museum. Project awarded PA Citation.

2003 **Design Researcher, IBM Research, Thomas J. Watson Research Lab.**
Developed systems for transparency in online collaboration systems, with an emphasis on design collaboration.

Work patented as US 7,356,772 “Multi-column user interface for managing on-line threaded conversations.”

Work presented at conference Designing Interactive Systems, Massachusetts Institute of Technology.

2002–2003 **Design Informatics Researcher, Center for Design Informatics**
Harvard University.

Developed distributed Web 2.0 database-driven systems for design collaboration. Included extensive development of 3D virtual environments, data-mining, and visualization processes.

Education

2007 **Master of Architecture with Distinction**
Harvard University Graduate School of Design

2002 **Master of Design Studies with Distinction (History and Theory)**
Harvard University Graduate School of Design

2001 **B.S. Mathematics, B.A. Philosophy (double major)**
Summa Cum Laude (GPA: 4.00 / 4.00)
Brigham Young University

Erdős number: 3

Academic Appointments

2018 Studio instructor, xLab summer program on Mobility, Tokyo.

2017 Co-Director, Masters in Design Studies, Technology concentration
Harvard University. Cambridge, MA.

2017 GSD Masters in Design Studies Program Council

2016 GSD Masters in Design Engineering Steering Committee

2016 GSD Masters in Design Engineering Program Council

2015 GSD Technology Platform Committee

2014–2018 Assistant Professor in Practice of Architecture
Harvard University. Cambridge, MA.

2013 Co-Organizer, Dean's Design Challenge
Harvard University. Cambrdige, MA.

2010–2014 Lecturer, Harvard University. Cambridge, MA.
Awarded Faculty of the Year (Architecture Department)

2008 Visiting Faculty, Ecole Speciale D'Architecture. Paris, France.
Course: Conception Parametrique (Parametric Design).
Co-taught with Valerie Chatelet.
Topic: Critical discourse surrounding digital approaches to the built environment.

2006 Teaching Assistant, Harvard University.
Descriptive Geometry, Preston Scott Cohen
Teaching Assistant, Harvard University.
Offset Ceilings (Studio), Preston Scott Cohen

2005 Visiting Faculty, Southern California Institute of Architecture.
Los Angeles, CA.
Course: Digital Tectonics. Co-taught with Sameer Kashyup.
Topic: Parametric prototyping of building details for emergent architectural effects.

Teaching Assistant, Descriptive Geometry, Preston Scott Cohen

Awards

2018 Project "Mine the Scrap" added to the permanent collection of the Centre Pompidou

MacDowell Colony Fellowship

World Frontiers Forum Pioneer, Unpcycling in Architecture and Design

Faculty of the Year. Design Engineering
Harvard University, as voted by students.

2017 Zumtobel Award, Finalist. Young Professionals Category.

Zumtobel Award, Finalist. Applied Innovation Category.

World Frontiers Forum Young Pioneer. Architecture.

2016 Dean's Junior Faculty Research Grant, Harvard University.

2015 Canadian Center for Architecture Fellowship (Visiting Scholar).
The Formal Genealogies of Twentieth-Century Design Mathematics

Winner, Forcast Forum.
An international competition for ideas with participants from design, architecture, photography, curation, and more.
Mentor: Jurgen Meyer H.

Chernikov Prize Nominee.
The Iakov Chernikhov Prize is awarded every two years to young masters of contemporary architecture for the best architectural concept (designs, buildings, experimental works, architectural fantasies, sketches).

2014 Building Design and Construction 40 under 40.

2012 Graham Foundation Research Grant. A Mathematical History of Design, 1800–2000.

AIA Technology in Architectural Practice Award.
For project Fondation Louis Vuitton

2011 Faculty of the Year.
Architecture Department, Harvard University, voted by students.

2007 American Institute of Architects Medal.
Awarded to the graduate of the professional degree program in architecture who has shown the highest average of excellence throughout the course of study.

John E. Thayer Scholarship. Awarded to the single most meritorious scholar graduating in each of the ten graduate schools of Harvard University.

Frederick Shelden Travelling Fellowship.
Harvard University wide competition. Project on Urbanism in New Belgrade, Serbia.

Grand Prize, Storefront/Control Group Student Design Award.
Selected as best thesis from 18 schools of architecture in the northeast US.
Work in group exhibit at the Storefront for Art and Architecture, New York, NY.

Shortlist, Royal Institute of British Architects Presidents Medal.
Shortlisted for globally competitive prize for thesis “An Urban Hospital in Istanbul.”

2006 Boston Society of Architects Research Grant. One of 10 selected projects from a national competition to be funded, and the only student selected.
Proposal: CNC Adaptable Molds for Thin Shell Structures

Penny White Travelling Prize. Proposal: Territory and Tension between Hospital, City, and Landscape in Istanbul. A series of case studies on urban medical infrastructure in the city of Istanbul, Turkey.

Publications: Books

2019 Witt, Andrew.
Formulations: Encodings of Architecture, Mathematics, and Culture.
Manuscript (80,000 words). Considers the evolution of mathamatical design in the last century. Forthcoming.

2014 Witt, Andrew.
Light Harmonies:The Rhythmic Photographs of Heinrich Heidersberger.
Berlin: Hatje Cantz, 2014.

Publications: Articles

2018 Witt, Andrew. “Grayboxing.” in Log no. 43.

Witt, Andrew. “Woodland Quilting” in Harvard Design Magazine

Witt, Andrew. “Cold Colony” in Project Journal. no. 7.

Witt, Andrew. “Ron Resch and the Laboratories of Design Media”
Canadian Centre for Architecture ePublications.

Witt, Andrew. “Ralph Knowles and the Natural Forces Laboratory.”
Canadian Centre for Architecture ePublications.

Kintsugi++, in Issues in Science and Technology, Summer, 2018.

2017 Witt, Andrew. “Landscapes, Spaces, Meshes.” in Architecture is All Over.
Esther Choi, Marrikka Trotter, Eds. New York: Columbia Books on
Architecture and the City, 2017

Witt, Andrew. “Expanded Mechanisms: The Signalization of Material”
in Lineament: Material, Representation and the Physical Figure in
Architectural Production, Gail Peter Borden and Michael Meredith, Eds.
New York: Routledge, 2017.
“

Witt, Andrew. “The Machinic Animal 1970” in When is the Digital in Architecture?
Andrew Goodhouse, Ed. New York: Sternberg Press, 2017.

2016 Witt, Andrew. “Cartogrammic Metamorphologies; or, Enter the Rowebot.”
in Log Journal of Architecture. no. 36, Winter 2016.

Witt, Andrew. “Edge Cases” in All that is Solid. (Article)

2015 Data-Driven Design and Construction (Book Interview)
“Data-Enabled Project Teams”

Witt, Andrew. “Archeology of the Digital” (Exhibition Review)

2014 Witt, Andrew and Tobias Nolte. “Gehry Partners’ Fondation Louis Vuitton:
Crowdsourcing Embedded Intelligence” in AD: Architectural Design.
Special Issue: High Definition.January/February 2014

2013 Witt, Andrew. “Form Logics” in 306090 vol 15: (Non-) Essential knowledge for
(new) architecture. David Hays, Ed. New York: 306090, 2013.

2012 Witt, Andrew, Jacques Reynaud et al. “How Irregular Geometry and Industrial
Process Come Together: A Case Study of the Fondation pour la
Creation, Paris.” in Advances in Architectural Geometry 2012.

Witt, Andrew and Peter Boyer. “Euclid: A Cross-Platform Geometry Optimizer”
in Advances in Architectural Geometry 2012.

Witt, Andrew, Frederic Imbert, et al. “Concurrent Geometric, Structural, and
Environmental Design: Louvre Abu Dhabi” Advances in Architectural Geometry
2012.

Interview: “Translating Design” in Mark Magazine.

2011 Witt, Andrew. “Script and Proof – The Design of Fact and Objectivity.”
in Scripting the Future.

Witt, Andrew. “Design Hacking: The Machinery of Visual Combinatorics.”
in Log Journal of Architecture. no. 23.

Witt, Andew and Dennis Shelden. “Continuity and Rupture.”
in AD: Architectural Design.

2010 Witt, Andrew. “A Machine Epistemology in Architecture.”
in Candide: The Journal of Architectural Knowledge. no.03, 2010.

2009 Witt, Andrew, Dennis Shelden and Tobias Nolte. “Large-scale Concurrent Design: The Case of Fondation Louis Vuitton”
in Proceedings of the Design Modeling Conference. Berlin: 2009.

2008 Witt, Andrew, Charles Johnson and Brian Sutton.
“Implicit Construction of Multiple Eigenvalues for Trees”
in Linear and Multilinear Algebra.

Witt, Andrew. “An Urban Hospital in Istanbul” in Archistorm.

2007 Space Magazine.
Project “Seoul Long Beach” published in international design journal.

Surface Magazine.
Project “An Urban Hospital in Istanbul” published in international design journal.

2006 GSD Studio Works.
Work selected for annual publication of outstanding student projects.

2004 Proceedings of the 5th conference on Designing interactive systems.
“Chat Spaces”with Werner Geyer et al.

2003 Witt, Andrew, Charles Johnson and Brian Sutton. On the Relative Position of Multiple Eigenvalues in the Spectrum of a Hermitian Matrix with a Given Graph,” in Linear Algebra and Its Applications.

Exhibitions

2018 Mine the Scrap. in the exhibition “Coding the World.” at Centre Pompidou, Paris.

Cloudfill. at Futurium, Berlin.

Cloudfill. at Angewante Innovation Lab, Vienna, Austria.

Kintsugi++. at Le Laboratoire, Cambridge, MA.

Quilting++. at Le Laboratiire, Cambridge, MA.

Horizons. in the exhibition “Art as Insight“ at Heritage Space, Hanoi, Vietnam.

Horizons. in the sxhibition “See-ing” at Univerisity of Nort Caroline, Charlotte

2017 Chronorhythms. at BSA Space, Boston.

Mine the Scrap. at Ars Electronica Export, Berlin, Germany.

2016 Mine the Scrap. at Haus der Kulturen der Welt, Berlin, Germany.

2012 Building Geometry: Mathematical Models and the History of Surface.
Harvard GSD Exhibition.

Protosurfaces: Topological Experiments in Spatial Design.
Harvard GSD Exhibition.

2011 DigitalFUTURE Exhibition. CAUP Exhibition Space, Tongji University, Shanghai.

2007 Storefront for Art and Architecture. Store/Control Group Student Design Award.

GSD Studio Works. Harvard GSD, Cambridge, MA.

2006 GSD Studio Works. Harvard GSD, Cambridge, MA.

Invited Lectures

2018	Nonstandard Reality	Venice Biennale
	Certain Measures	Centre Pompidou
	Untitled	Yale School of Architecture
	Infrastructure / Architecture	Japanese Museum of Technology and Innovation (Miraikan)
	Certain Mesasures	UCLA xLab (Tokyo)
	Your New Eyes	Univesity of Houston
2017	Your New Eyes	Buildings 2.0 Conference, Chicago, IL
	The Machine Lens	Massachusetts Institute of Technology
	A Particular History of Solar Design	Università della Svizzera italiana
	Forensic Archives	Library of Congress / National Gallery of Art
	The Machine Lens	Le Laboratoire, Cambridge, MA
	Recent Work	IDEO, Cambridge, MA
2016	Four Elements for a New Design	Georgia Institute of Technology
	Heuristic Ecology of Heliomorphism	Harvard University Symposium on Heliomorphism
	Digital Archives	Society of Architectural Historians Annual Conferece
2015	Singular Mathematics in Design	Ohio State University
	Edge Cases	Harvard University Symposium on Architecture
	Edge Cases / Hacker Ingenuity	Rensselaer Polytechnic Institute
	The Crystalline and the Hypercubic	Canadian Center for Architecture
2014	Analytic Geometries	Princeton University
	Public, Private, Protected Symposium	University of California, Berkeley

	Deep Ancestry of Computation	Harvard GSD (Symposium Organizer)
2013	Pseudonym/Pseudocode	Princeton University
	Gehry Technologies: Case Studies	BIM Futures Conference, USC, Los Angeles
	Gehry Technologies: Case Studies	Revit Technology Conference
	Mechanism/Materialism	The Bartlett, UCL, London, UK
	Mechanism/Materialism	Princeton University
2012	Computational Infrastructure	Paulson Institute Cites of the Future Conference
	The Future of Design Technology	Harvard Design School Los Angeles Alumni Event
	Inverse History of Mechanized Drawing	Yale School of Architecture
	SuperNumeracy	Aalto University – Helsinki
	Form Logics	Berlage Institute – Rotterdam
	Concurrencies: Surface Conversations	University of Cincinnatti
	Euclid: Cross-Plaform Geometry Optimizer	Advances in Architectural Geometry
	Fondation Louis Vuitton	AIA National Convention
	Architecture and Technology	AIA LA Design Awards
	BIM & Manufacturing Lifecycle Systems	Construct 2012 Convention
	Recent Work	Tunghai University
2011	Wikification of Design	Ecobuild Conference
	Open Concurrent Design	AEC Technology Futures Conference
	Gehry Technologies – Recent Work	University of Southern California
	Concurrent Design	Harvard University
2010	Notes on Geometry in Architecture	Ecole Nationale Supérieure d’Architecture
	Generative Parametrics and Optimization	Stanford University
	Material Geometry Constraints	Harvard University
	Feedback Systems & Concurrent Design	Swiss Federal Institute of Technology (EPFL)
	Constraint Spaces ^ their Geometries	Massachusetts Institute of Technology

	Gehry Technologies– Recent Work	UPenn Paris
	Gehry Technologies – Recent Work	Oslo Association of Architects
2009	Large–Scale Concurrent Design	Design Modeling Symposium Berlin
	Material Geometry Constraints	Harvard University
	Digital Detailing Methods	Swiss Federal Institute of Technology (ETH)
	Constraint Spaces & their Geometries	Massachusetts Institute of Technology
	A Machine Epistemology in Architecture	RWTH Aachen University
2008	Material Geometry Constraints	Harvard University
	Constraint Spaces and their Geometries	Massachusetts Institute of Technology
	Sustainability and Parametric Control	Swiss Federal Institute of Technology (EPFL)
	Parametric Design Methods and Cases	Swiss Federal Institute of Technology (EPFL)
2007	Constraint Spaces and their Geometries	Massachusetts Institute of Technology
2006	Constraint Spaces and their Geometries	Massachusetts Institute of Technology
	Material Geometry Constraints	Harvard University
2005	Constraint Spaces and their Geometries	Massachusetts Institute of Technology
	Material Geometry Constraints	Harvard University

Guest Critic

2018	University of Applied Arts (Angewante der Kunst)	Vienna, Austria
	Yale University	New Haven, Connecticut
2017	Massachusetts Institute of Tachnology (MIT)	Cambridge, Massachusetts
2016	Yale University	New Haven, Connecticut
	Cornell University	Ithica, New York
2015	University of Toronto	Toronto, Canada
	University of California, Los Angeles (UCLA)	Los Angeles, California

	Massachusetts Institute of Tachnology (MIT)	Cambridge, Massachusetts
2013	University of California, Los Angeles (UCLA)	Los Angeles, California
	Massachusetts Institute of Tachnology (MIT)	Cambridge, Massachusetts
2012	Berlage Institute	Rotterdam, Netherdlands
	University of California – Los Angeles (UCLA)	Los Angeles, California
	University of Southern California (USC)	Los Angeles, California
	Massachusetts Institute of Tachnology (MIT)	Cambridge, Massachusetts
	Southern California Institute of Architecture	Los Angeles, California
2010	Ecole Polytechnique Federale de Lausanne (EPFL)	Lausanne, Switzerland
	ENSA Malaquais	Paris, France
	Massachusetts Institute of Tachnology (MIT)	Cambridge, Massachusetts
2009	Ecole Speciale d'Architecture – Paris	Paris, France
	Ecole Polytechnique Federale de Lausanne (EPFL)	Lausanne, Switzerland
	University of Applied Arts (Angewante der Kunst)	Vienna, Austria

Patents

2015 US9152743B2.
Computer process for determining best-fitting materials for constructing architectural surfaces.

2008 US7356772B2.
Multi-column user interface for managing on-line threaded conversations.

Research Funding

$50,000	ESRI Fund – for development of next-generation geographic design systems
$40,000	Geometrica Fund – for development of automated assembly processes for complex geometry
$10,000	Dean's Junior Faculty Grant
$8000	Graham Foundation
$5000	Canadian Centre for Architecture (Fellowship Value)

Thesis Advisees

2018	Hyojin Kwon	MArch
	Esther Bang	MArch

	Joanne Cheung	MArch	
	Alexander Porter	MArch	Digital Design Prize
	Tom Ishida	MArch	
	Eliza Pertigkiozoglou	MDes	
	Yuan Mu	MDes	
	Nate Peters	MDes	
	Betty Chen	MDes	
	Jasmine Roberts	MDes	
	Jonah Ross-Marrs	SMarch, MIT	
2017	Claire Kuang	MArch	
	Gavin Ruedisueli	MArch	
	Olivia Heung	MArch	
	Cody Glen	MDes	
2016	Zeina Koreitem	MDes	Digital Design Prize
	Aziz Barbar	MDes	
	Akshay Goyal	MDes	
	Joelle Bitton	DDes Committee	
2015	Catherine Soderberg	MArch	
	Drew Seyl	MArch	
	Zach Seibold	MDes	
2014	Michael Burton	MArch	
	Patricia Correa	MDes	
	Tim Sullivan	MDes	
2013	Aurgho Jyoti	MDes	

Additional Skills

Languages English (native fluency), French (business fluency)

Lived in United States, France, Russia, Hong Kong.

Worked in United States, France, Germany, Hong Kong, China, United Kingdom, Netherlands, Austria, Switzerland, Canada.