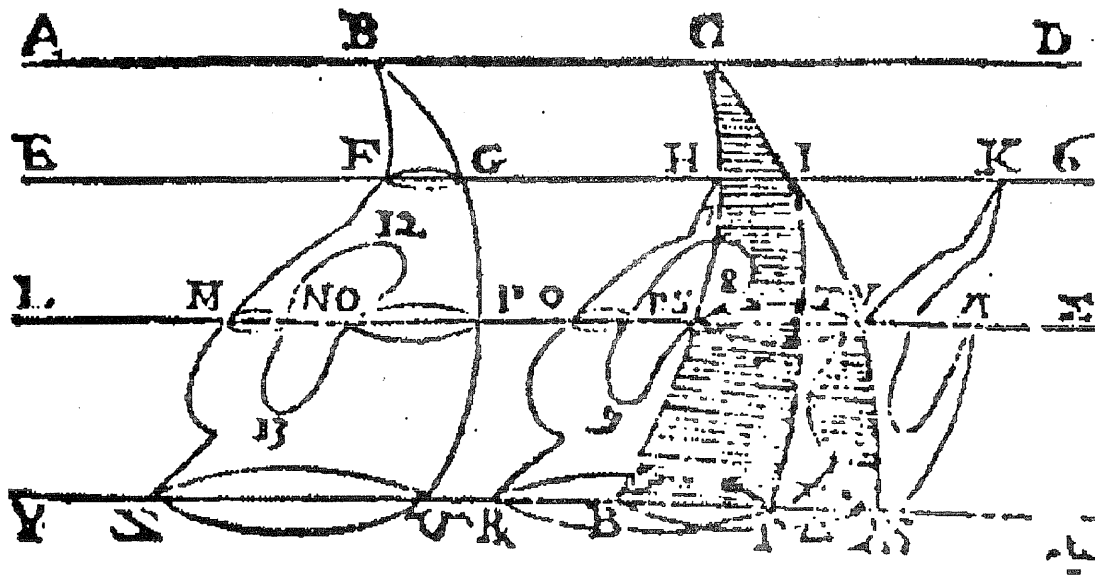


Canadian Society for History and Philosophy of Mathematics



Société Canadienne d'Histoire et de Philosophie des Mathématiques

PROGRAMME

*19^E CONGRÈS ANNUEL
30 MAI - 1 JUIN 1993*

*19TH ANNUAL MEETING
MAY 30 - JUNE 1, 1993*

CARLETON UNIVERSITY, OTTAWA

1/2

PROGRAMME
SUNDAY, MAY 30

All sessions will be held in Mackenzie Building, Room 4494

9:15 *Craig Fraser, President CSHPM/SCHPM*
Welcome

SPECIAL SESSION/SESSION SPÉCIALE
PHILOSOPHY OF MATHEMATICS

Presider, Morning: Robert Thomas

9:25 *Robert Thomas*
Introduction of Guest Speaker

9:30 *Stuart Shanker*
Turing's Influence on the Origins of AI

10:30 TEA AND COFFEE THE ET CAFÉ

10:45 *Andrew Irvine*
Experiments in Mathematics

11:45 LUNCH DÉJEUNER
(COUNCIL MEETING) (RÉUNION DU COUNSEIL)

1:30 *John Bell*
Infinitesimals and the Continuum

*Bell "Infinitesimals" Syth 1978
Kock "Synthétique Différentiel"
LMS Lecture Nov 51*

2:30 TEA AND COFFEE THE ET CAFÉ

REGULAR SESSION/SESSION ORDINAIRE

Presider, Afternoon: Craig Fraser

3:00 *Luis Radford*
An Epistemological Approach to the Study of the Emergence and Development of Algebraic Concepts and Methods

3:30 *Colin Burnett*
Mathematical Discovery as Conceptual Engineering and Reengineering

4:00 *Alejandro Garciadiego*
An Encyclopedia on the History and Philosophy of the Mathematical Sciences

*Discrete
- Leibniz
- Pierce
by a geometrical
object or analogue*

*Discrete
"Geometry"
from Euclid
Synthetic Diff Geom*

PROGRAMME
MONDAY, MAY 31

All sessions will be held in Mackenzie Building, Room 4494

REGULAR SESSION/SESSION ORDINAIRE

Presider, Morning: Francine Abeles

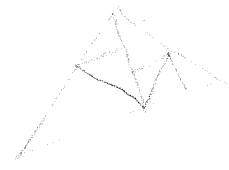
9:00 William Anglin
A New Explanation of Plimpton 322

$$(urvk)^2 + (u^2 - v^2)k^2 = (u^2 + v^2)k^2$$

9:30 Glen Van Brummelen
Lunar and Planetary Equation Interpolation Tables in Ptolemy's *Almagest*

10:00 TEA AND COFFEE THE ET CAFE

10:20 Samuel Kutler
How the Ancient Greeks Could Have Discovered the Pascal Triangle



10:50 P. Rajagopal
Infinite Series in South Indian Mathematics, 1400–1600

11:30 LUNCH DÉJEUNER
ANNUAL MEETING RÉUNION ANNUELLE

Presider, Afternoon: Glen Van Brummelen

2:00 Erwin Kreyszig
The Calculus of Variations: Its Evolution and Impact on Contemporary Mathematics

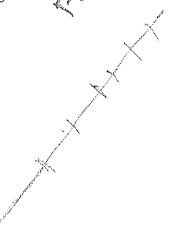
3:00 Francine Abeles
The Birth of the Automatic Calendar

3:30 TEA AND COFFEE THE ET CAFE

4:00 PANEL DISCUSSION: Teaching the History of Mathematics
Moderator: Thomas Archibald

5:00 – 7:00 PRESIDENT'S RECEPTION – CARLETON UNIVERSITY ART GALLERY

$(x+y)^2$
Area
Babylonian
Pythagorean
Triangle Table
SATANUS
Friday 14th May 1981



PROGRAMME
TUESDAY, JUNE 1

All sessions will be held in Mackenzie Building, Room 4494

JOINT SESSION/SESSION COOPÉRATIVE WITH CANADIAN
SOCIETY FOR HISTORY AND PHILOSOPHY OF SCIENCE

Presider, Morning: Thomas Archibald

9:00

William Demopoulos

Dummett on Frege's Philosophy of Arithmetic

Craig Fraser

Conceptions of the Calculus of Variations in the Nineteenth Century

Graham Solomon

Groups to Semigroups: 1901–1905

11:00

TEA AND COFFEE

THÉ ET CAFÉ

REGULAR SESSION/SESSION ORDINAIRE

Presider: J. J. Tattersall

11:15

Abe Shenitzer and Juris Steprâns

A Sketch of the Evolution of Integration

12:00

Thomas Bartlow

What Does "Marginal" Mean?

12:30

LUNCH

DÉJEUNER

Presider, Afternoon: Abe Shenitzer

2:00

Katherine Hill

Wallis and Barrow on the Composition of Continua

2:30

J. J. Tattersall

William Whiston: The Longitudinal Latitudinarian

3:00

Peter Griffiths

Multiangle and Subdivision Angle Formulas from Cardan to de Moivre

3:30

TEA AND COFFEE

THÉ ET CAFÉ

4:00

Thomas Archibald

George Green, Potentials, and Mathematical Physics

4:30

Martin Muldoon

Mathematics as Relaxation: The Case of Éamon de Valera

ABSTRACTS / RÉSUMÉS
SPECIAL SESSION ON THE PHILOSOPHY OF MATHEMATICS

J. L. Bell

University of Western Ontario

Infinitesimals and the Continuum

In this talk I discuss the concept of infinitesimal as it has arisen in the analysis of continuity. After a brief presentation of the history and some of the difficulties besetting the concept, leading to its official repudiation by most mathematicians at the beginning of this century, I describe its recent revival through work in mathematical logic and category theory. I also discuss the extent to which the rehabilitated concept of infinitesimal can provide an "autonomous" account of the continuum, i.e. one not reducing it to a discrete collection of points.

A. D. Irvine

University of British Columbia

Experiments in Mathematics

In Epistemic Logicism and Russell's "Regressive Method" (Philosophical Studies, 55 (1989), 303-327) I examined a little-known 1907 paper of Russell's in which he developed his views on the epistemology of mathematics. I concluded

(1) that the views Russell developed in 1907 were to become central, not just to his philosophy of mathematics, but to his broader epistemology as a whole,

(2) that, as a result, interpretations of Russell's logicism which depict Russell as an advocate of epistemic logicism are misguided, and

(3) that Russell's distinction between logical and epistemological foundational programs in mathematics is both sensible and capable of extension.

In this paper I develop further some of the themes underlying these earlier observations, arguing that by accepting Russell's basic mathematical epistemology it becomes easier to integrate mathematical knowledge into a coherentist picture of scientific knowledge as a whole. Specifically, by developing Russell's distinction between logical and epistemological foundational programs and his so-called "regressive method" within the context of a modern, large-scale coherentist methodology, I argue that many of this century's traditional difficulties in the philosophy of mathematics (which resulted in large measure from the famous limitative results of Gödel, Tarski, Church, et al. earlier this century) can be resolved. In particular, the worries surrounding reflexive consistency proofs (which were central to Hilbert's program) and recent results by Harvey Friedman and others (concerning the large cardinal axioms) can be dealt with in an intuitively pleasing fashion. Parallels are also drawn between Russell (Irvine), Gödel (Maddy), Zermello (Moore) and Cantor (Hallett).

S. Shanker

York University

Turing and the Origins of AI

As important as Turing's version of Church's Thesis was for the evolution of AI, no less significant was the psychological thesis which provided the means for the transformation of Turing's 'slave machines' into 'intelligent automatons'. If Turing's major accomplishment in 'On Computable Numbers' was to expose the epistemological premises built into formalism, one of his main achievements in the 1940's was to recognize the extent to which this outlook both harmonized with and extended contemporary behaviourist thought.

Turing sought to synthesize these diverse mathematical and psychological elements so as to forge an internal relation between *mechanical rules* and *learning programs*. Through their joint service in the Mechanist Thesis, each would validate the other; and the frameworks from whence each derived. It is to the latter that we must look, therefore, in order to understand, not simply the genesis, but more importantly, the presuppositions of AI. For it suggests, not just that the 'computational revolution' might not be nearly as radical as the AI-theorist contends, but at an even more fundamental level, that the gulf between 'pre-' and 'post-computational mechanism' may not be quite as great as is commonly assumed.

JOINT SESSION WITH
CANADIAN SOCIETY FOR HISTORY AND PHILOSOPHY OF SCIENCE

W. Demopoulos *University of Western Ontario*

Dummett on Frege's
Philosophy of Arithmetic

This paper focuses on a major strand of Michael Dummett's recent book, *Frege, philosophy of mathematics*, viz., the role of the context principle and the contextual definition of the cardinality operator in Frege's philosophy of arithmetic. Along the way we clarify the nature and significance of the Julius Caesar problem for Frege's logicism.

C. Fraser *University of Toronto*

Conceptions of the Calculus of Variations in the
Nineteenth Century

In the first half of the nineteenth century it is possible to identify two major groups of researchers in the calculus of variations. In Königsberg Carl Gustav Jacobi started a tradition of research that was continued by Ludwig Hesse, Rudolph Clebsch and Christian G. A. Mayer. German centres of work later in the century were Berlin, Göttingen and Heidelberg. In Paris Siméon-Denis Poisson, Augustin-Louis Cauchy and Pierre-Frédéric Sarrus carried out studies on the variations of multiple integrals, studies which involved an emphasis on operator methods.

One can also examine the calculus of variations as it was understood and applied by individuals who were not strictly researchers, for example university teachers and physicists. Relevant figures here were J. H. Jellet, Ernst Mach and L. B. Carll. Implicit in their work were certain definite conceptions about the nature of analysis and its relation to applied science.

The paper will explore different conceptions of the calculus of variations in the nineteenth century, particularly as these relate to an understanding of the foundation of the subject. A central theme of the study will concern the relationship of the different algebraic and analytic techniques and modes of reasoning that were deployed by researchers in their papers and textbooks.

G. Solomon *Wilfrid Laurier University*

Groups to Semigroups: 1901–1905

A discussion of the emergence of explicit axioms for semigroup theory in the work of De Segurier and Dickson. In particular, a discussion of the plausibility of Saunders MacLane's claim that the semigroup axioms in current use emerged by a process of deletion from the axioms for group theory.

CONTRIBUTED PAPERS

F. Abeles

Kean College

The Birth of the Automatic Calendar

The development of the arithmetic equivalent of a mechanical perpetual calendar spanned almost the entire nineteenth century. Beginning with several relatively obscure articles by Carl F. Gauss, continuing in a book by Augustus de Morgan, and ending with a publication by the mathematician Christopher Zeller, the mechanisms for the modern automatic calendar emerged. Particularly interesting are the algorithms for computing calendar functions which will be traced and discussed in this paper.

W. S. Anglin

Luther College

A New Explanation of Plimpton 322

Plimpton 322 is an ancient Mesopotamian clay tablet listing 15 Pythagorean triangles. Many scholars accept the explanation of O. Neugebauer (in *The Exact Sciences in Antiquity*) as to why the scribe listed *these* Pythagorean triangles (and not some others) and why the scribe arranged them in the order in which they appear. In this paper, I show that Neugebauer was wrong, and I propose, and establish, a new explanation.

T. Archibald

Acadia University

George Green, Potentials, and Mathematical Physics

George Green (1793–1841), in his important and (eventually) influential 1828 *Essay*, created the basic structures of potential theory and the Green's function method for solving boundary value problems. This paper will review Green's career, the main achievements of the 1828 *Essay*, and will discuss some aspects of his other studies in mathematical physics.

T. L. Bartlow

Villanova University

What Does 'Marginal' Mean?

Calculus courses for students of business and economics typically define marginal revenue, cost, etc. as the derivative of revenue, cost, etc. with respect to units of production and assert that this should be interpreted as an approximation to the change in revenue, cost, etc. corresponding to a unit change in production. But the derivative is an instantaneous rate of change and approximate changes are given by the differential. What is the history of the term marginal? Have economists traditionally understood the concept as a rate of change or as an approximate change? Can history help us decide how to teach the concept?

C. R. Burnett

*Information Technology Branch
Revenue Canada*

**Mathematical Discovery as Conceptual
Engineering and Reengineering**

In order for the general strategy of constructive empiricism to have value for the mathematical discoverer the model needs to be articulated in such a way as to show how individual doubts with respect to some area of mathematics may function as a factor to his or her advantage in discovery. I provide an example of some of the classical doubts about classical mathematics which can be

formulated and analyzed. I then develop a model of how the discoverer can use the study of history, which includes an alternative metaphor for metamathematical studies. The final section of the paper sketches a problem space language to use for an analysis of the classical problems. Using this model, I begin a preliminary analysis of one of the classical problems.

A. R. Garciadiego *Ciudad Universitaria* **An Encyclopedia on the History and
(México)** **Philosophy of the Mathematical Sciences**

The main goal of this talk is to discuss the edition of a multi-volume encyclopedia on the history and philosophy of the mathematical sciences. The encyclopedia, covering from Greek mathematics up to 1930 (approximately) and divided into five main chronological periods, will contain primary and secondary sources. It will also include a comprehensive bibliography on each of the chronological periods — by individuals and themes.

P. L. Griffiths **Multiangle and Subdivision Angle Formulas from Cardan to de Moivre**

De Moivre's 1707 article states the algebraic versions of both the multiangle and subdivision angle formulas for sines. This was the culmination of a historical process beginning with Cardan's 1545 reversion of an odd power series (up to the power of 3) into two terms, one of which was effectively the reciprocal of the other.

K. L. Hill *University of Toronto* **Wallis and Barrow on the Composition of Continua**

This paper explores how John Wallis's and Isaac Barrow's views on the nature of magnitude, number, space and time were influenced by ancient and medieval work on continua. I will focus on Wallis's *Treatise of Algebra, both Historical and Practical* and Barrow's *Usefulness of Mathematical Learning*. These texts include their authors' analyses of earlier sources' views on continua concepts while simultaneously offering their own formulations. Wallis's mathematical perspective was different from Barrow's: he believed that algebra has priority over geometry because it is more abstract. Barrow, however, rejected symbolic algebra, while for him geometry was superior to other branches of mathematics. Both mathematicians supported their opinions, when possible, with historical appeals to the authority of earlier authors. Ancient and medieval doctrines were the common ground on which various seventeenth-century mathematicians built their new ideas. The question is whether Wallis and Barrow interpreted these sources in the same way.

E. Kreyszig *Carleton University* **The Calculus of Variations: Its Evolution and
Its Impact on Contemporary Mathematics**

This paper concerns major impacts of the calculus of variations (COV) on the mathematics of our century. It is motivated by the fact that there are very few books (Bliss, Goldstine, Kline, Todhunter) and articles in whole or in part devoted to the historical development of the COV, and none of these extends beyond 1900. We shall present our material in five sections as follows.

Section 1 gives an introductory outline on developments from Euler and the principle of least action to Weierstrass and early minimal surface theory. *Section 2* concerns the role of the COV in the evolution of functionals (Volterra, Hadamard, Fréchet, F. Riesz). *Section 3* discusses the impact of the famous Dirichlet principle in work of Gauss, Riemann, Weierstrass, C. Neumann, Fredholm, and Hilbert. *Section 4* concerns landmarks on Plateau's problem from H. A. Schwarz to J. Douglas's award of one of the first two Fields Medals. *Section 5* traces the roots of the COV in the large (Morse theory).

S. S. Kutler *St. John's College* How the Ancient Greeks Could Have Discovered the Pascal Triangle

After I present slides of the triangle from

- a Chinese manuscript of the 1300's AD, and
- the triangle as given by Pascal,

I shall construct the divided line that Plato proposes in his *Republic*. Then by continuing to cut the line — Plato specifically asks us not to do that — I show how the rows of the Pascal triangle emerge.

M. E. Muldoon *York University* Mathematics as Relaxation: The Case of Éamon de Valera

Éamon de Valera (1882–1975), the dominant figure in 20th century Irish politics, was unsuccessful in establishing a career in mathematics but continued to pursue it as a hobby throughout his long life. His interest in mathematics and science led to his almost single-handed foundation (1940) of the Dublin Institute for Advanced Studies.

L. Radford *Laurentian University* An Epistemological Approach to the Study of the Emergence and Development of Algebraic Concepts and Methods

We propose to consider, from an epistemological point of view, a *theory* or *system* of (mathematical) knowledge τ , as an ordered triplet $\tau = (\Omega, \Pi, \Sigma)$, where Ω is a set of concepts, Π is a set of problems and Σ is a set of problem-solving methods. The study of the relations between the components of τ (for instance the relations between the problems in τ and the concepts in τ) gives us a possibility of better understanding the scope and significance of the system τ in question. But the study of the relations between the components of τ also gives us a possibility of better understanding the conceptual basis and the obstacles that led to conceptual changes in the *system*. Considering τ as an algebraic system, our communication emphasizes some features concerning the emergence and development of algebra. We take some examples from Diophantus, al-Khwarizmi and Fibonacci and we try to characterize the *form of thinking* behind the algebraic system.

P. Rajagopal *York University* Infinite Series in South Indian Mathematics, 1400–1600

There was a flourishing mathematical tradition in South India. Between 1400 and 1600 some of the results by the scholars of this tradition include series expansions for $\pi/4$, and some circular functions. Their derivations use a geometric approach and are intuitive in their appeal.

The series for $\pi/4$ arose out of a practical need to compute the value of π accurately. It comes equipped with a variety of remarkable estimates for the error term.

In this contribution a sketch of the development of these series is presented.

A. Shenitzer and J. Stepráns *York University* A Sketch of the Evolution of Integration

Integration is rooted in the Greek quadrature problem: given a figure construct a square of equal area.

The problem is easily solved for polygons. In the fifth century BC Hippocrates squared a few lunules. In the third century BC Archimedes squared a parabolic segment. *Given a spiral*, Archimedes could rectify a circle and square its area. In establishing the connection between the areas of a turn of the spiral $r = a\theta$ and the circle of radius $2\pi a$ Archimedes made masterly use of upper and lower approximating sums — the key elements of the definite integrals of Riemann and Darboux.

In the 17th century Cavalieri managed to evaluate what we now write as $\int_0^1 x^k dx$ for $k = 1, \dots, 9$ and conjectured the value of $\int_0^1 x^k dx$ for k a positive integer. Fermat used a single computation to evaluate $\int_0^a x^{p/q} dx$ for p, q positive integers. Gregory St. Vincent established the connection between the natural logarithm function and the area under the hyperbola $xy=1$.

In the 18th century Newton and Leibniz invented the calculus but neither gave a definition of $\int_a^b f(x) dx$ independent of antiderivatives.

In the 19th century Cauchy defined $\int_a^b f(x) dx$ and proved its existence for continuous f . Riemann worked with general functions, but his integral was far from satisfactory. A "perfect" integral was introduced by Lebesgue in the beginning of the 20th century.

The Lebesgue integral is based on the Lebesgue concept of measure which is invariant under translation and countably additive. While the Lebesgue integral is more comprehensive than the Riemann integral, there are functions f for which $L \int_a^b f(x) dx$ does not exist.

Attempts were made in this century to prove the existence of measures on \mathbf{R} that are countably additive and total, that is, assign a measure to *all* subsets of \mathbf{R} . We now know that it is impossible to prove the existence of such measures. Indeed, if such a measure existed, then set theory could be shown to be consistent. This is ruled out by Gödel's incompleteness theorem.

J. J. Tattersall *Providence College* William Whiston: The Longitudinal Latitudinarian

Whiston taught experimental courses in physics with Roger Coates, Francis Hauksbee, and Humphry Ditton. He attempted to develop a method to determine longitude based on the dip of a

compass needle. He was Newton's protégé and later his successor in the Lucasian Chair at Cambridge. Whiston was later removed from the Lucasian position for his Arian beliefs. He was characterized by many of his contemporaries as being narrow-minded, dogmatic, and intolerant. Nevertheless, he was diligent in his Lucasian duties and is often credited with making Newton more accessible to the scientifically minded public. This paper describes what is known of Whiston's background and discusses his mathematical and scientific accomplishments.

G. Van Brummelen *The King's College* **Lunar and Planetary Equation Interpolation Tables in Ptolemy's *Almagest***

Claudius Ptolemy's *Almagest* contains a mathematical exposition of the epicyclic models of planetary motions. As part of this project, Ptolemy includes a series of mathematical tables allowing the reader to compute planetary positions with minimal effort. Ptolemy builds these tables with the aid of a special method of interpolation to aid in the tabulation of functions of two or more arguments. This requires an auxiliary table of an interpolation function for each planet. The interpolation tables' entries are extremely inaccurate, and while these errors do not greatly affect planetary position calculations, their absolute magnitude is anomalous. I provide an explanation of the errors and reconstruct tables underlying the interpolation tables' construction, arriving at some insight into Ptolemy's numerical methods.

PANEL DISCUSSION: TEACHING THE HISTORY OF MATHEMATICS

Moderator: T. Archibald

Many members of the society teach courses in the history of mathematics to a variety of audiences and at various levels. In this discussion several people will offer a brief description of their courses, evaluation methods, and approaches. Discussion will follow.

CANADIAN SOCIETY FOR THE HISTORY
AND PHILOSOPHY OF SCIENCE: PROGRAMME

JUNE 1

<p style="text-align: center;">TOPICS IN EPISTEMOLOGY THÈMES EN ÉPISTÉMOLOGIE 9:30-11:00 – TORY 290</p> <p>Benoît Pépin, <i>Université de Québec à Montréal</i> Épistémologie et histoire des sciences: difficultés et limites de la naturalization</p> <p>Murray Clarke, <i>Concordia University</i> Natural Selection and Knowledge</p> <p>Violaine Arés, <i>York University</i> Is the Switch from Research Programmes to Research Traditions Progressive?</p>	<p style="text-align: center;">EARLY MODERN SCIENCE 9:00-11:00 – TORY 281</p> <p>Bryce Bennett, <i>University of Western Ontario</i> On Kepler's <i>Apologia Pro Tychone Contra Ursum</i></p> <p>Pierre Boulos, <i>University of Western Ontario</i> Descartes, Newton and the Nature of Body</p> <p>Stuart Pierson, <i>Memorial University</i> Was Isaac Newton an Empiricist?</p> <p>Maurice Gagnon, <i>Sherbrooke University</i> Aristotle and Leibniz on Space and Time</p>
<p style="text-align: center;">THE FOUNDATIONS OF MATHEMATICS (JOINT SESSION WITH CSHPM) 9:00-11:00 – MACKENZIE 4494</p> <p>William Demopoulos, <i>University of Western Ontario</i> Dummett on Frege's Philosophy of Arithmetic</p> <p>Craig Fraser, <i>University of Toronto</i> Foundations of the Calculus of Variations in the Nineteenth Century</p> <p>Graham Solomon, <i>Wilfrid Laurier University</i> Groups to Semigroups: 1901-1905</p>	<p style="text-align: center;">PHILOSOPHY OF TIME (JOINT SESSION WITH CANADIAN PHILOSOPHICAL ASSOCIATION) 9:00-12:30 – ROOM TBA</p> <p>Steven Savitt, <i>University of British Columbia</i> The Replacement of Time</p> <p>Richard Arthur, <i>Middlebury</i> Three Chronic Errors in the Usual Accounts of Time's Arrow</p> <p>Robert Disalle, <i>University of Western Ontario</i> The Epistemology of Time and General Relativity</p>
<p style="text-align: center;">EVIDENCE AND TRUTH 11:30-12:30 – TORY 290</p> <p>Tyrone Lai, <i>Memorial University</i> Theory-Ladenness and Underdetermination: Two Puzzling Questions</p> <p>John Nicholas, <i>University of Western Ontario</i> Deflated Truth and Improper Pragmatism of the Second Kind</p>	<p style="text-align: center;">TOPICS IN THE SOCIAL SCIENCES THÈMES EN SCIENCES SOCIALES 11:30-12:30 – TORY 281</p> <p>Jean-Sylvain Gauthier, <i>Université de Québec à Montréal</i> Wittgenstein and the Social Studies of Science: Does 'Social' Imply Sociological Explanation?</p> <p>Jean-Pierre Beaud/ Jean-Guy Prévost, <i>UQAM</i> Comment classer les âges: réflexion sur la genèse d'un outil statistique</p>

CANADIAN SOCIETY FOR THE HISTORY
AND PHILOSOPHY OF SCIENCE: PROGRAMME

JUNE 1, CONTINUED

<p>TOPICS IN MATHEMATICS 2:00-3:30 – TORY 290</p> <p>Louis Marinoff, <i>University of British Columbia</i> A Resolution of Bertrand's Paradox</p> <p>Colin Burnett, <i>Revue Canada</i> A Helpful Model of Discovery in Mathematics</p> <p>Augustus Butterfield, <i>University of Western Ontario</i> Berkeley's <i>Analyst</i> and the History of Calculus</p>	<p>GENDER ISSUES IN SCIENCE 2:00-3:30 – TORY 281</p> <p>Debra Lindsay, <i>University of Manitoba</i> Kinshp, Labour and Community: Science in the Nineteenth Century</p> <p>Edrie Sobstyl, <i>University of Alberta</i> Gender and Knowledge: Some Disquiet About the Masculine Mind of Science</p> <p>Sharyn Clough, <i>Simon Fraser University</i> Just the Facts Ma'am: The Relation Between Evidence and Essentialism in Feminist Critiques of Science and Technology</p>
<p>RACISM AND IMPERIALISM IN THE HISTORY OF SCIENCE 3:45-4:45 – TORY 281</p> <p>Douglas Korimer, <i>Wilfrid Laurier University</i> Professor A. H. Keene and the Popularization of Scientific Racism in Late Victorian and Edwardian England</p> <p>Lesley Cormack, <i>University of Alberta</i> Geography and the Creation of Imperial Ideology in Early Modern England</p>	<p>SEVENTEENTH CENTURY RATIONALISM (JOINT SESSION WITH CANADIAN PHILOSOPHICAL ASSOCIATION) 2:00-4:30 – TORY 273</p> <p>Ann MacKenzie, <i>York University</i> Descartes' Use of Innate Ideas</p> <p>Patricia Easton, <i>University of Western Ontario</i> A Cartesian Argument Against Innate Ideas</p> <p>Peter Morton, <i>Mt. Royal College</i> Leibniz: Reason, Reflection and Representation</p>

JUNE 2

<p>HISTORY AND PHILOSOPHY OF BIOLOGY 9:00-10:30 – TORY 290</p> <p>Eduardo Wilner, <i>University of Guelph</i> Experiments and Reality: Artificial Selection and Darwin's Conception of the Nature of Hereditary Variation</p> <p>Don Ross, <i>Ottawa</i> / Ted Zawitski, <i>Sussex</i> Intentionality, Information and Natural Selection</p> <p>Yu Dong, <i>McMaster University</i> The Structure of Experiments</p>	<p>PHILOSOPHY OF PHYSICS LA PHILOSOPHIE DE LA PHYSIQUE 9:00-11:30 – TORY 281</p> <p>Kent Peacock, <i>University of Western Ontario</i> Signal Locality and the Roy-Singh Inequalities</p> <p>Don Robinson, <i>University of Toronto</i> The Relation Between Quantum Mechanics and Quantum Field Theory</p> <p>Yvon Gauthier, <i>Université de Montréal</i> Les Limites de l'Approche Empiriste en Mécanique Quantique: Étude Critique de l'Ouvrage de Bas C. van Fraassen, <i>Quantum Mechanics</i></p> <p>John Leslie, <i>University of Guelph</i> Philosophical Issues in Cosmology</p>
---	--

CANADIAN SOCIETY FOR THE HISTORY
AND PHILOSOPHY OF SCIENCE: PROGRAMME

JUNE 2, CONTINUED

<p>TOPICS IN NEWTON'S <i>PRINCIPIA</i> 9:00-11:00 — TORY 273</p> <p>William Harper, <i>University of Western Ontario</i> Isaac Newton and the Philosophy of Science</p> <p>Richard Arthur, <i>Middlebury</i> Newton's Parallelogram Law and its Relation to the Calculus</p> <p>Brian Baigrie, <i>University of Toronto</i> Method in Newton's <i>Principia</i></p> <p>Craig Fraser, <i>University of Toronto</i> Mathematical Technique in Newton's <i>Principia</i></p>	<p>BIOLOGY AND MORAL NATURALISM (JOINT SESSION WITH CANADIAN PHILOSOPHICAL ASSOCIATION) 9:00-12:30 — ROOM TBA</p> <p>Mohan Matthen, <i>University of Alberta</i> What is Moral Intuition?</p> <p>Paul Thompson, <i>University of Toronto</i> Is the Is/Ought Distinction a Barrier to Evolutionary Ethics?</p> <p>Richmond Campbell, <i>Dalhousie University</i> Can Biology Make Ethics Objective?</p> <p>Arthur Ripstein, <i>University of Toronto</i> Unnatural Facts</p>
<p>HISTORY OF MEDICINE 11:00-12:30 — TORY 290</p> <p>Michael Curtis, <i>University of Toronto</i> Not the Real Thing: The Standardized Patient (The Development of the Use of Patient Simulations in Medical Teaching and Clinical Skills Assessment)</p> <p>Terrie Romano, <i>University of Toronto</i> Germ Theory in Britain</p> <p>Ghislaine DuPlanty, <i>University of Toronto</i> Violence and the History of Psychiatry</p>	<p>ENLIGHTENED AESTHETICS AND THE APPROPRIATION OF NATURE 2:00-3:30 — TORY 290</p> <p>Ernst Hamm, <i>University of Toronto</i> An Enlightened Account of What Counts in Nature</p> <p>Michael Bravo, <i>Cambridge</i> Panoramas of Natural History: The Aesthetics of the Open Polar Sea in Regency Britain</p> <p>Gordon McOuat, <i>Cambridge</i> Natural History and the Making of Nature</p>
<p>EARLY TWENTIETH CENTURY PHILOSOPHY OF SCIENCE 2:00-3:30 — TORY 280</p> <p>A. M. Adam, <i>York University</i> Early Twentieth Century Philosophy</p> <p>Jagdish Hattiangadi, <i>York University</i> Philosophy in the Turn of the Century</p> <p>Hans Pols, <i>Pennsylvania</i> Between the Laboratory and the Field: Psychology in the Early Twentieth Century</p>	<p>CONTEMPORARY ISSUES AND THE HISTORY OF SCIENCE 2:00-3:30 — TORY 273</p> <p>Ian Hacking, <i>University of Toronto</i> Archeology, Geneology, Historical Epistemology and Other Philosophical Abuses of the Past</p> <p>Robert Disalle, <i>University of Western Ontario</i> Historical Theories and Their Modern Foundations</p> <p>Carl Matheson, <i>University of Manitoba</i> Meta-Theory-Ladenness</p>
<p>4:00-5:00 — DRAKE LECTURE: William Shea, <i>McGill University</i></p>	

CANADIAN SOCIETY FOR THE HISTORY
AND PHILOSOPHY OF SCIENCE: PROGRAMME

JUNE 3

<p>ROUND-TABLE — RECENT CHANGES IN HISTORIOGRAPHY OF ECONOMICS: ANY PLACE LEFT FOR METHODOLOGY? 9:00-11:00 — TORY 290</p> <p>Scott Gordon, <i>Indiana</i></p> <p>Jean-Sylvain Gauthier, <i>Université de Québec à Montréal</i></p> <p>Robert Leonard, <i>Université de Québec à Montréal</i></p> <p>Benoît Pépin, <i>Université de Québec à Montréal</i></p> <p>Margaret Schabas, <i>York University</i></p>	<p>SCIENCE AND TECHNOLOGY 9:00-11:00 — TORY 281</p> <p>James Hull, <i>Okanagan College</i> The Restructuring of Knowledge in the Second Industrial Revolution</p> <p>Martha Langford, <i>University of Calgary</i> Industrial R & D: Survival in the Canadian Climate (Case of Shawinigan Chemicals' Polyvinyl Acetal Resins Between the Wars)</p> <p>Janis Langins, <i>University of Toronto</i> The Teaching of an Ephemeral Science: Fortification at the Early École Polytechnique</p> <p>J. E. Kennedy, <i>University of Saskatchewan</i> Airy Correspondence Held at the National Archives of Canada</p>
<p>MAKING UP MIND: THE SOCIAL USE OF PSYCHOLOGY OF KNOWLEDGE 2:00-3:30 — TORY 290</p> <p>David McGee, <i>University of Toronto</i> Making Up Mind: The Sociology of Science and Invention in the 1920's</p> <p>Andre Leblanc, <i>University of Toronto</i> The Patient as Model of the Therapist: Morton Prince and the Case of BCA</p> <p>Katherine Hill, <i>University of Toronto</i> Sex Differences in Mathematical Skills: Science and the Representation of Women's Minds in the Popular Press</p>	<p>PHILOSOPHY AT THE TURN OF THE CENTURY 2:00-3:30 — TORY 281</p> <p>Jean Leroux, <i>University of Ottawa</i> Helmholtz and Modern Empiricism</p> <p>David DeVidi, <i>University of Western Ontario</i> The Roots of Tolerance: It's Time for Friedman to Stop ReKanting Carnap and Start Recanting on Carnap</p> <p>Nebosja Kujundzic, <i>University of Waterloo</i> Thought Experiments: Architecture or Economy of Thought?</p>
<p>SCIENCE AND CONTEMPORARY SOCIETY 9:00-11:00 — TORY 273</p> <p>Stephen Bocking, <i>University of Toronto</i> Ecosystem Ecology and Great Lakes Environment Policy</p> <p>Charles Davis, <i>IDRC</i> Between Heaven and Hell: Canadian Adolescents' Iconography of Science in 1990</p> <p>Chris Finlayson, <i>Cornell University</i> Constructing Success, Accounting for Failure: A Critical Analysis of Histories of Fisheries Science</p> <p>Robert Gualtieri, <i>Carleton University</i> Whatever Happened to the Republic of Science: The Evolution of Science Policy in Canada</p>	<p>SEVENTEENTH CENTURY MECHANICAL PHILOSOPHY / LA PHILOSOPHIE MÉCANIQUE DU DIX-SEPTIÈME SIÈCLE 2:00-3:30 — TORY 273</p> <p>Olivier Lagueux, <i>Yale University</i> Le Mythe de l'Homme-Horloge: Modèles et Analogies de la Physiologie Cartésienne</p> <p>John Heng, <i>University of Toronto</i> God's Well-Ordered Machines: Niels Steensen and Method in Anatomy</p> <p>Jane Jenkins, <i>University of Toronto</i> Theology and Vacuum in Seventeenth Century Natural Philosophy</p>