Peter Wall Institute for Advanced Studies

Annual Report
1998-1999
The Peter Wall Institute for Advanced Studies supports basic research through interdisciplinary initiatives that have the potential to make important advances in knowledge. The Institute brings together researchers from The University of British Columbia with distinguished scholars from around the world to conduct fundamental research drawing upon and contributing to a wide range of diverse disciplines. The Institute aims to create a community of scholars, composed of outstanding researchers across the whole campus, who will contribute significantly to the intellectual life of The University. Of overriding concern in all Institute activities is excellence in research characterized by being fundamental, interdisciplinary, innovative, and unique.
Director’s Message 3

Programs 8
- Major Thematic Grants 9
- Exploratory Workshops 13
- Catalytic Visitors 23
- Theme Development Workshops 23
- Weekly Colloquia 24
- Peter Wall Distinguished Professors 24
- Peter Wall Distinguished Scholars in Residence 26
- Visiting Junior Scholars 28
- Associates Events 28

Facilities and Resources 30
- PWIAS Facilities 30
- Website 31

Financial Summary 32
- Funded Programs, Expenditures and Revenues 32

People 33
- Staff 33
- Governance 34
- Faculty Associates 34
- Committees 37

Appendix A 39
- Seminars of the Crisis Points Project

Appendix B 41
- Program of the Symposium of the Electron Motion in Matter Project
This was a year of very significant changes at the Peter Wall Institute for Advanced Studies. We acquired our own facilities and consequently were able to initiate five exciting new programs. Given the campus-wide scope of our activities, we characterize the wall institute as figuratively being at the centre of the university. Now we are literally located at the University Centre, the new name for the former UBC Faculty Club which had been closed for more than four years.

The Wall Institute made the reopening of the building financially viable by paying for its own renovations and agreeing to pay a large yearly lease fee to the University. In addition, bringing an academic purpose to the building provided the basis for funding from the BC Provincial Government. Since January 1997 we had been in St. John’s College, after previously being housed in the other graduate residential college, Green College. We are grateful
to Grant Ingram, and the staff at SJC for their hospitality. At the time of the establishment of the Peter Wall Endowment in 1991, Peter Wall had taken the very enlightened position that all the endowment expenditures should go toward people and programs. In recent years, it has become apparent that having facilities of one’s own can leverage the people and programs. When the opportunity to consider the new facilities emerged, it became clear across the University that locating the Wall Institute at the University Centre was an obvious step. Facilities can make possible programs that couldn’t exist otherwise.

Of particular importance is having a place for regular Associates’ Gatherings. Faculty Associates of the Institute are those who have served on an Institute committee, have been selected for one of the residential programs, or have been Principal Investigator on a competitive award. It has been our objective to have the best researchers at UBC participate in the operations of the Institute, so this group represents a research elite. At the end of March 1999 we began with a dinner and talk by Cindy Greenwood about the Crisis Points project. Because this was the first collaborative project the Institute funded, it was fitting that at the first Associates’ gathering we heard about how the Crisis Points Group was established and how it had been functioning. We then began alternating dinner and lunch meetings to give an opportunity for top researchers around the campus to come together on a regular basis to share ideas. This concept is facilitated by the excellent meals specially prepared for us by the Sage Bistro (which occupies the main floor of the building) and by our own wine cellar.

Our conference and residential rooms give us a chance to support departments which bring in outstanding researchers. Through the Weekly Colloquium, we provide free lecture space, host a lunch, and provide a residential suite to a distinguished visitor. The University of Miami philosopher Susan Haack, a President’s lecture series speaker, was the inaugural speaker for this program.

It is often difficult to bring together scholars from very different areas to work on a common thematic project. To aid in this process we established the Theme Development Workshops in conjunction with the Office of the Vice
President, Research. The first one, on Creativity and Design, was held shortly after moving into the University Centre. We provided the meeting space and a lunch for the participants.

With office space of our own, we were able to consider having researchers on site on a regular basis. In Fall 1998, all tenure track faculty at UBC were invited to apply to be a Peter Wall Distinguished UBC Scholar in Residence. From the excellent applications, four outstanding faculty members were chosen to occupy research offices at the Institute, thus bringing a new dimension of intellectual life to the Institute. The first cohort in this new program includes: Michael Chandler (Psychology), Sarah Otto (Zoology), Alan Richardson (Philosophy), and Dolph Schluter (Zoology).

In anticipation of having our own residential space, yet another new program was announced in Fall 1998—the Peter Wall Visiting Junior Scholars program. UBC academic units were invited to identify the rising stars in their fields anywhere in the world and the Institute would sponsor up to 10 of them to come to UBC for a month in the summer. The UBC departments provide a disciplinary base but the main responsibility is for the junior scholars to interact on a regular basis with each other to push the boundaries of their work and their knowledge. The first group of these outstanding scholars will be coming to campus in July 1999. We will dedicate our residential facilities to them for the whole month—and the conference space as well.

The initiation of the new programs described above did not mean a lessening of attention to the existing programs. The year saw a continuation of the two current Major Thematic Grants. The Crisis Points project, while technically started in Spring 1996 has only been active since mid 1997. The Electron Motion project was funded in late 1997. This past year has represented peak times for both projects. The Crisis Points team has been evolving and members have adopted the very useful strategy of having one of the core team give a directed studies course to PhD students—with most of the other core faculty sitting in. It has proven to be an excellent way to enhance communication across disciplinary boundaries. The Electron Motion project has been very productive from the start in terms of publishing in top journals.

Hence we must all believe that all the sciences are interconnected, that it is much easier to study them all together than to isolate one from all the others. If, therefore, anyone wishes to search out the truth of things in serious earnest, he ought not to select one special science, for all the sciences are cojoined with each other and interdependent.

RENÉ DESCARTES
The Exploratory Workshop program, which had been initiated last year, was enhanced by being able to provide both conference and residential facilities for the participants. The workshops that took place have been on a wide range of topics from “Superbugs” to “Women, Food and Autobiography”, from “Molecular Biophysics” to “Social Determinants of Health”, and from “Coastal Zone Management” to “Quantum Gravity”. This listing nicely illustrates the range of research that we are committed to supporting.

Michael Smith and Raffi Amit continue as Peter Wall Distinguished Professors. They have continued their active individual research programs and have played a major role in developing the University’s research agendas in genetics and entrepreneurship, respectively. They were both very supportive in helping to acquire our new facilities. In particular, the University Centre building has special memories for Michael as a place where he regularly gathered with key colleagues. Many good ideas and good times came out of these informal meetings.

An important administrative initiative was hiring Chris McGill as Assistant to the Director. Growing up in a diplomatic environment, he travelled the world extensively in his earlier years, so has the appropriate global perspective. He has held very responsible positions as teacher and Headmaster at private schools in the Maritimes and Vancouver. Being here allows both Chris and his wife Barbara Crocker, operations manager at Green College, to be on campus together. Chris will help out on all aspects of the Institute’s operations but will have special responsibilities for the facilities. In addition to using the facilities for our own programs, we rent out both the conference and the residential space when not in use for our activities. A sad administrative change was the departure of Marlean Martin who had been the Secretary at the Institute since early 1996. She decided that she wanted to work in proximity to family and long-time friends and so moved back to Toronto in June. Dale MacCrostie continues as Systems Coordinator, responsible for the web site operation and keeping all computers functioning.

We look forward to the next year. With the disruptions of the move behind us and the collaborative possibilities
ahead, it will be an exciting time. In the near future we will focus on developing our new and ongoing programs further to realize the potential of the Institute.
The programs of the Institute can be characterized into two main categories: thematic and residential. Thematic programs involve establishing an overall research theme within which scholars with the relevant expertise are gathered together.

The first thematic program is the Major Thematic Grant which provides funding of up to $500,000 over three years to a broadly-based interdisciplinary team. The program was announced in 1994 but the first award was not made until 1996.

In 1997, an Exploratory Workshops program was established to lead into the Major Thematic Grant. The Exploratory Workshops provide funding for top UBC researchers to come together with outstanding experts from around the world to explore the possibilities of developing a research agenda in a new field. This allows the UBC participants to draw upon, and perhaps draw in, the most outstanding researchers in the world on the thematic topic.

This past year, two new thematic programs were added. The Catalytic Visitor program has similar objectives to the Exploratory Workshops, bringing UBC and international experts together, but it has a somewhat different form. Exploratory Workshops generally involve a group of 5-10 international experts being brought in for a workshop of several days’ duration whereas the Catalytic Visitor program focuses on bringing in one visitor for one or two academic terms. The underlying rationale is that in some cases the research endeavour is better served by having a single person brought in to provide leadership over an extended period.

The Theme Development Workshops, also initiated this year, are the fourth thematic program. These sessions
involves making our new facilities available on an informal basis to groups of UBC faculty who want a focal point for attracting colleagues to work with them in the initial stages of probing a thematic topic. It should be noted that all of these thematic programs are of a “bottom up” form, in that UBC faculty are encouraged to propose the thematic topic that they want to work on—the themes are not created as fundable topics by the Institute itself.

The scope of the programs differs as shown in the following table. The programs that were introduced for the first time this year are bolded.

<table>
<thead>
<tr>
<th>DURATION</th>
<th>THEMATIC PROGRAMS</th>
<th>RESIDENTIAL PROGRAMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years</td>
<td>Major Thematic Grant</td>
<td>Distinguished Professors</td>
</tr>
<tr>
<td>Months</td>
<td>Catalytic Visitors</td>
<td>Scholars in Residence</td>
</tr>
<tr>
<td>Days</td>
<td>Exploratory Workshops</td>
<td>Visiting Junior Scholars</td>
</tr>
<tr>
<td>Hours</td>
<td>Theme Development Workshops</td>
<td>Associates Gatherings; Weekly Colloquia</td>
</tr>
</tbody>
</table>

**Major Thematic Grants**

The Major Thematic Grant provides funding of up to $500,000 over a three-year period to an interdisciplinary team of UBC and external scholars undertaking a large-scale collaborative project in a new area. This research must be basic, and have the potential to provide significant contributions to theory. Applications are accepted from UBC faculty in the spring and fall of each year, and are appraised by an internal Adjudication Committee drawn from top researchers in every Faculty of the University. Proposals making the short list are sent for external review by international experts. In order to demonstrate the requisite commitment, starting in Fall 1998 we required that Major Thematic Grant applicants first apply for and receive an Exploratory Workshop or Catalytic Visitor grant, or the equivalent. Two major thematic grants were awarded prior to this year. No awards were made in 1998-99.

The first Major Thematic Grant was awarded to the project “Crisis Points and Models of Decision” led by Dr. Priscilla Greenwood (Mathematics, UBC). The grant was
awarded in April 1996, with active research beginning in summer 1997.

The organizing theme of the project is the family of phenomena that exhibit “critical” or “crisis” points at which the character of the process changes abruptly from one form to another, as some influence changes gradually. Past a critical point, a crisis is experienced. The Crisis Points Group comprises researchers from Mathematics, Earth & Ocean Sciences, Geography, Psychology, Physics, Zoology, Atmospheric Sciences and Health Care & Epidemiology. Together they bring their individual disciplinary experiences of non-linear dynamics to a collaborative study that seeks to better understand, explain, and model crisis point phenomena.

Critical points appear in epidemiology (birth rates and death rates), climatology, geology (earthquakes and avalanches), in cosmology and in the social sciences (changes in individual and group behaviour). Crisis points may also be associated with social order, new technology, patterns of commerce, the formation of an embryo, flock or school, and also the formation of the Universe.

This was the second year of the Crisis Points project. In November 1998 and again in June 1999, Doug Nychka of the National Center for Atmospheric Research in Boulder met with the Crisis Points Group and the UBC Dept. of Statistics. He gave Complexity Seminar talks on “Spatial Statistics, Hierarchical Models and Large Datasets” and “Smoothing Applications”. Anders Martin-Lof of the Mathematics Dept., University of Stockholm spent two weeks in November–December 1998 visiting with the Crisis Points Group. Dr. Martin-Lof’s epidemic models were the primary topic of discussion and he gave two Complexity Seminars; “Approximation for a nearly critical epidemic” and “A diffusion approximation to a nearly critical epidemic process”. A highlight of the year’s activities was the presentation of seven papers by Crisis Points Group members at the 25th Meeting on Stochastic Processes and Applications in Corvallis, Oregon, July 5-10.
The members of the Crisis Points team are Cindy Greenwood, Mathematics, Principal Investigator; Phil Austin, Geography/Earth & Ocean Sciences; Roger Beckie, Earth & Ocean Sciences; Birger Bergersen, Physics; Leah Keshet, Mathematics; Steve Marion, Health Care & Epidemiology; Dave McClung, Geography and Civil Engineering; Carl Walters, Zoology; and Lawrence Ward, Psychology. A list of the Complexity Group weekly Seminars for 1998-99 can be found in Appendix A.

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The second Major Thematic Grant award was made in September 1997 for the project “Understanding Electron Motion In Matter: Orbital Imaging of Biomolecules, Transition Metal Complexes, Chemically Reactive Species and Condensed Matter”. The research team is led by Dr. Chris Brion (Chemistry, UBC).

This project seeks to develop new and detailed information on the fundamental relation between electron motion and the chemical, biochemical, and physical properties of matter.

The interdisciplinary team is conducting a series of momentum-space experiments to determine the momentum distributions of valence and core electrons (orbital imaging) for a range of systems. These measurements are made using both a multichannel electron momentum spectrometer and a state-of-the-art UHV chamber and EELS/EMS spectrometer. This advanced technique has the ability to image the electron density in the individual atomic and molecular orbitals in molecules or bands in solids.

Gas-phase model systems selected for study include small and intermediate size biomolecules, transition metal complexes, free radicals, metastable species, and ions. The condensed matter targets include crystalline solids, ultrasmooth surfaces, nanostructures, and absorbed molecules. Additional information on surfaces and absorbed molecules will be obtained using Scanning Tunneling Microscopy (STM) and other surface science techniques such as LEED crystallography.
The Electron Motion in Matter team includes researchers from Chemistry, Biochemistry, Surface Physics and Atomic Physics, Electrical & Computer Engineering, and Materials Sciences. The fundamental results of this project may find application in such diverse areas as medicine, plasmas, molecular modeling, pharmaceutical sciences, theories of chemical reactivity, new materials design, and atmospheric and space sciences.

The members of the Electron Motion in Matter team are Chris Brion, Principal Investigator, Chemistry; Delano Chong, Chemistry; Glyn Cooper, Chemistry; Don Douglas, Chemistry; Keith Mitchell, Chemistry; Tom Tiedje, Physics and Electrical & Computing Engineering; Bruce Todd, Physics and Chemistry; Steve Withers, Biochemistry and Chemistry; and Yenyou Zheng, Chemistry.

The first Electron Motion in Matter Symposium was held October 2, 1998. The program consisted of presentations of the individual and collaborative work of the research team members (see Appendix B: Electron Motion in Matter Symposium October 2, 1998 for a list of presentations).

The following research reports were published this year by the Electron Motion project group:

#3 August 1998 – ‘Absolute photoabsorption oscillator strengths by electron energy loss methods: The valence shell and the $S 2p$ and $2s$ inner shells of sulphur dioxide in the discrete and continuum regions (3.5 – 260eV)’.

#4 November 1998 – ‘Orbital imaging and assessment orbital models for the valence shell of methanol: Comparison of EMS measurements with the near Hartree-Fock limit, MRSD-CI, localized valence bond and density functional theory’.

#5 November 1998 – ‘Measurements of the valence shell binding energy spectrum and momentum profiles of the frontier orbitals of propane by binary (e, 2e) spectroscopy’.
Thematic Grants/Exploratory Workshops

#6 January 1999 – ‘Absolute oscillator strengths for hydrogen sulphide: 1. photoabsorption in the valence shell and the S 2p and 2s inner shell regions (4-260 eV)’.

#7 April 1999 – ‘Absolute oscillator strengths for hydrogen sulphide: 2. ionic photo-fragmentation and photoionization in the valence shell continuum regions (10-60 eV)’.

#8 June 1999 – ‘Orbital momentum profiles and binding energy spectra for the complete valence shell of propane’.

March 1999 Major Thematic Grant Competition
Three applications for Major Thematic Grants were received by the March 1 deadline. The Adjudication Committee carefully assessed all three and decided that, after slight revisions, all three should be advanced to the next stage and sent out for external review. Approximately eight external reviews for each proposal have been solicited from international experts; half the reviewers were suggested by the applicants while the other half were generated by the Institute. The reviews are expected to be received in early July and the Committee will meet later in July to make the final decisions. The results will be described in the next Annual Report.

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Exploratory Workshops
Exploratory Workshops provide funding to bring together researchers from different disciplines at UBC with distinguished external experts, to work jointly on assessing research possibilities in a new area, and to develop a research agenda. The core team of applicants should be willing to collaborate over an extended period. Typically workshops have a mix of open and closed sessions. Interested members of the UBC community may attend the open sessions. Workshop funding varies from $15,000 to $25,000 and applications are accepted in the spring and fall of each year. Since moving into our own facilities in March 1999, workshops are now held at the PWIAS conference rooms in the University Centre at UBC.

To date, PWIAS has received more than 20 research proposals for these workshops. Since the spring of 1997 PWIAS has funded 10 Exploratory Workshops. Following is a brief description of the workshops held this year.

Bringing together researchers and experts from Anthropology & Sociology; Classics, Near Eastern & Religious Studies; English; Fine Arts; and Geography, this workshop focused on cities real and unreal (imagined, projected, virtual) in their historical and actual interrelations.

The program was organized around five themes:

1. “Glorious Things of Thee are Spoken”/Jerusalem Old and New
2. What Has Rome (or York) to Do With Jerusalem?/Late Antiquity and the Middle Ages
3. Cities Renascent and Reformed/Early Modern Eutopics
4. The Modern(ist) City/Excavations and Projections
5. Coming Home/The Canadian City in the Twentieth Century.

The results of the workshop confirmed the richness and potential productivity of the theme of Unreal Cities; stimulated new impetus for intra- and inter-departmental research and teaching; contrasted and challenged approaches to interdisciplinarity between ‘humanities’ and ‘social sciences’; and nuanced the distinction between policy oriented research and basic research as it pertains to interpretability and applicability of research and teaching in the humanities.

Potential future products of the workshop include a proposed conference on ‘unreal cities’ in the ancient world, the possibility of producing an “annotated” edition of Augustine’s *City of God*, new interdisciplinary graduate seminars/courses, and potential links with the current Metropolis Project by drawing attention to ways that different imagined cities can overlay and underlie our ‘real’ experience of urban/civic dwelling.

Principal external participants in the Unreal Cities Workshop included Robert Baldwin (Connecticut College), Sarah Beckwith (Duke U.), James Brigham (U. College of the Okanagan), Peter Burnell (U. of Saskatchewan), Lisa Coulthard (U. of Toronto), Shawn Mallory (U. of Toronto), Michele Salzman (UC Riverside), Harold Troper (U. of Toronto), and Samuel Wong (U. of Victoria).

While public perception clearly equates visual degradation of landscapes with unsustainable practices, experts seem to be divided between those who see a strong association between ecological health and visual quality, and those who see sustainability as a complex issue to be assessed through a visual analysis approach. Without a clear resolution of these dilemmas, public perception constraints and other difficulties may hamper the development of sustainable forestry.

This workshop brought together ecologists, forest resource scientists, landscape architects, perceptual psychologists and sociologists to debate and explore relationships between ecology and aesthetics, and to develop research plans to help resolve the theoretical and practical questions involved. A second aspect of the workshop was the exploration of links between forest resource modeling techniques and state-of-the-art virtual reality displays.

Workshop discussions centered on five themes: sustainable forests; aesthetics; relationships between sustainability and aesthetics; visualization as a research tool; and certification of forest management. The final session dealt with setting a research agenda. The following areas were identified as deserving examination:

- Application of principal component analysis or other statistical tools to identify appropriate criteria and indicators of ecological change.
- Development of a means of assessing the validity and effectiveness of emerging visualization techniques.
- Development of research strategies to determine the cultural versus biological basis for aesthetic preferences for forested landscapes.
- An examination of techniques that could be most effectively employed to inform the public and other disciplines outside forestry about sustainable
forest dynamics and shape, and thus influence aesthetic preferences towards more sustainable resource management practices while enlightening scientists and forest managers about social preferences.

Principal external participants in the Sustainability and Aesthetics Workshop included Daniel Botkin (George Mason U.), Simon Bell (Forestry Commission of Great Britain), David Brand (Research & Development, State Forests of New South Wales), Jeff Burley (Oxford Forestry Institute, UK), Terry Daniel (U. of Arizona), Joe McBride (UC Berkeley), Chadwick Oliver (U. of Washington), Brian Orland (U. of Illinois, Urbana), and JoAnna Ruth Wherrett (Macaulay Land Use Research Institute, Aberdeen, UK).


Antibiotics, once hailed as a miracle of modern science, are rapidly losing their ability to combat infection. The emergence of bacterial superbugs, against which antibiotics are proving powerless, forewarns of a coming era in which infectious disease will once again pose a major threat to human life. Many factors drive the development of resistant bacteria, notably the overuse of antibiotics in both developed and developing countries.

Despite dire predictions and a proliferation of academic publications and warnings in the popular media, no coherent course of action has evolved. This workshop sought to approach the problem of antibiotic resistance not through isolated discipline-specific research but with a collective vision drawn from the expertise of many professional fields.

The workshop comprised two sections: (1) a one-day symposium of presentations by leading researchers in microbiology, law, animal science, medicine, public health, sociology and psychology. The symposium was attended by approximately 300 members of the UBC academic community, staff from major area hospitals, invited participants in the workshop, graduate students, government and media representatives. (2) a two-day workshop of 50 UBC and
international multi-disciplinary experts. The goal of this part of the workshop was to identify and prioritize the problems and prospects in current antibiotic resistance research.

The areas identified as holding the greatest potential for future research were:

- A risk-benefit analysis of strategies to manage or control antimicrobial resistance and the cost of inaction, examined as a philosophical and political as well as a practical/scientific issue.
- Consideration of the inter-connected systems influencing and influenced by antimicrobial resistance, including bacteriological, human, animal and social systems.
- Examination of a potential global strategy based on dominant assumptions about antimicrobial resistance to determine if success in managing resistance is in fact achievable or if failure is inevitable.

Principal external participants in the Outsmarting Superbugs Workshop included Ron Dagan (Ben Gurion U., Israel), David Fidler (Indiana U.), Donald Iverson (U. of Colorado), Karl Kristinsson (National University Hospital, Iceland), Abigail Sayers (U. of Illinois, Urbana), Benjamin Schwartz (CDC, Atlanta), Stephen Teret (Johns Hopkins U.), Lawrence Wallack (Portland State U.), Frances Westley (McGill U.), and Wolfgang Witte (Robert Koch Institute).

**Innovations in Molecular Biophysics.** Principal Investigators Dr. Grant Mauk (Biochemistry and Molecular Biology, UBC), Dr. Michael Blades (Chemistry, UBC). May 5 – 6, 1999.

The term molecular biophysics is used to refer to the use of knowledge and methods derived from physics, chemistry and engineering to characterize functional and structural properties of large molecules (macromolecules) of biological origin. Molecules of this type include DNA, proteins, and biological membranes. Of the technologies used in such work magnetic resonance and lasers are among the more widely recognized. One of the challenges in the development of this field has been the segregation, by traditional departmental structures, of investigators knowledgeable about physical methods from those who have developed biological materials that are suitable for investigation.
This one-day workshop, open to the UBC community, brought seven internationally-renowned experts in the fields of molecular biophysics, theoretical and inorganic chemistry, cell biology and chemical engineering, face to face with UBC researchers to discuss current approaches in the use of physical methods to study biological macromolecules. In addition to bringing researchers together to share current work in molecular biophysics, the participants were asked to discuss the potential for establishing a Molecular Biophysics Laboratory at UBC.

Principal external participants in the workshop included Robert Birge (Syracuse U.), Carlos Bustamente (UC Berkeley), Brian Chait (Rockefeller U.), Harry Gray (CalTech), Jacob Isrealachvili (UC Santa Barbara), Gerhard Wagner (Harvard U.), and Peter Wolynes (U. of Illinois).

Cross-Cultural Perspectives on Women, Food and Identity. Principal Investigators Dr. Sneja Gunew (English and Centre for Research in Women’s Studies & Gender Relations, UBC), Dr. Shirley Neuman (Faculty of Arts, UBC). May 13 – 15, 1999.

While there appears to be a great deal of work which looks at women’s relationship to food within the analytical frames of pathology there is also a great deal of cultural representation which celebrates the ways in which women’s food practices cement family and community relations.

A multidisciplinary team of 30 participants including five international participants, UBC researchers and graduate students met for this workshop to bring together the productive subjects of women, narratives of identity (including fiction and film), multiculturalism and food. The workshop focused on both popular and ‘high’ culture theoretical and historical explanations of women’s self-representations of their relation to food. The discussion topics were clustered within the headings of Hunger, Identity, and the Gastro-Politics of Food, Women, Nation. To facilitate discussion, pre-workshop meetings were held to generate questions that were forwarded to the participants before the workshop.

Contributors to the workshop included researchers from English, Family & Nutritional Sciences, Asian Studies, Anthropology, and Women’s Studies. The workshop served
to initiate new inter- and intra-university contacts to work toward the preparation of an application to the Major Collaborative Research Initiatives Program of SSHRC. It helped establish team-taught course materials for a senior interdisciplinary course on the topic “Cross-Cultural Perspectives on Women, Identity and Food”.

The principal external participants in this workshop included Maud Ellmann (King’s College, Cambridge U.), Penny Van Esterik (York U.), Melanie Katzman (U. of London), Shirley Goek-lin Lim (UC Santa Barbara), and Sidonie Smith (U. of Michigan).

**Ecosystem Base Management of the Coastal Zone.** Principal Investigators Dr. Michael Healey (Institute for Resources & the Environment and Earth & Ocean Sciences, UBC), Dr. Les Lavkulich (Institute for Resources & the Environment, UBC), and Dr. Patricia Marchak (Anthropology & Sociology, UBC). May 29 - 30, 1999.

The coastal zone, loosely defined as the land within about 50 km of coastal marine waters and the adjacent ocean seaward to an equal distance, is the most rapidly developing region on earth. Approximately 70% of the world’s population lives within 50 km of the coast and most of the world’s developing megacities are within the zone. Population growth in the coastal zone greatly exceeds global population growth because of emigration to the coast.

The majority of the world’s fish production and, in some parts of the world, the majority of agricultural production comes from the coastal zone. The coastal zone is critically important for national and international transportation and for recreation and tourism. The coastal zone represents the most intense clash of ecological, economic and social factors in the world today. Yet few countries, including Canada, have taken organized steps to address the conflicts over land, water and resource use in the coastal zone. Those that have are still struggling to come to grips with an expanding list of problems.

This workshop brought experts in coastal zone science and management together with experts in ecosystem based approaches to develop a research agenda and communication strategy that can be pursued in various locations in North

**Without facts we have no science. Facts are to the scientist what words are to the poet. The scientist has a love of facts, even isolated facts, similar to a poet’s love of words. But a collection of facts is not a science any more than a dictionary is poetry. Around his facts the scientist weaves a logical pattern or theory which gives the facts meaning, order and significance.**

Isidor Isaac Rabi
and South America, South Asia and Europe. Specifically, workshop participants addressed three questions:

1. What are the critical biophysical issues for which limited scientific information is impeding progress toward ecosystem based management in the coastal zone?
2. What constitutes meaningful biophysical units for management under ecosystem based coastal zone management and what research is needed to delineate these?
3. What tools (communication, institutional, procedural) are available to integrate the results of ecosystem research into institutional and governance designs for ecosystem based management and what are the implications of these tools for the research agenda?

Principal external participants in the Coastal Zone Management Workshop included Donald Boesch (U. of Maryland), Lauro Caliari and Milton Asmus (U. of Rio Grande, Brazil), Tim Hennessee (U. of Rhode Island), Kungwan Juntarashote (Kisetsart U., Bangkok), Wim Kimmerer (San Francisco State U.), Alejandro Robles (Conservation International Mexico), Charles Simenstad (U. of Washington), and Phutchapol Suvanachai (Federal Dept. of Fisheries, Bangkok).

**Tracing the Changing Interactions of Socioeconomic Status and Life Stages as Determinants of Health.** Principal Investigators Dr. Lawrence R. Green (Institute of Health Promotion Research, UBC), Dr. D. Ralph Matthews (Anthropology & Sociology, UBC) and Dr. Clyde Hertzman (Health Care & Epidemiology, UBC) June 11 – 13, 1999.

The study of social stratification, considered by many to be the crucial determinant of health, has until recently consisted largely of a structural analysis of class, status and power. The measurement of socioeconomic status has usually been a simple classification of earners’ occupations into classes or prestige scores. Increasingly social stratification is understood as a more dynamic interplay over the life course of myriad components including social standing, marital status, income, education, occupation, region, quality of housing, race or ethnicity, gender and some conceptualization of class.

The goals of this workshop were to bring together social scientists from a wide variety of disciplines to exchange

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**Programs**

*Now, my suspicion is that the universe is not only queerer than we suppose, but queerer than we can suppose... I suspect there are more things in heaven and earth than are dreamed of, in any philosophy.*

**JBS Haldane**
information, points of view and approaches, and to begin to formulate a research agenda for studying the changing nature of socioeconomic status and its relationship to health in greater depth and breadth. The workshop focused on two issues: the re-conceptualization of Socioeconomic Status (SES); and the changing relationship between SES (in the context of changing gender roles and other social changes) and health.

The research agenda arising from the workshop centred on three interrelated themes:

- Causal mechanisms involving SES, gender and life stages as determinants of health;
- The effects of postmodernization and globalization as influences on class and status;
- Measurement and analysis of SES and gender.

These represent the principle outcomes of the workshop, which encompassed a multidisciplinary group of individuals from social psychology, nursing, sociology, education, health promotion, medicine, epidemiology, economics, occupational health, biology, medical genetics, geography and statistics.

Principal external participants in the workshop included Martin Bobak (University College, London), Penny Hawe (U. of Sydney, Australia), Neil Holtzman and Barbara Starfield (Johns Hopkins U.), Susan Roxburgh (Kent State U.), Alvin Tarlov (Harvard U.), and Richard Wilkinson (U. of Sussex, UK).

_Toward a New Understanding of Space, Time and Matter._

Principal Investigators Dr. William Unruh (Physics, UBC), Dr. Steven Savitt (Philosophy, UBC), Dr. Steven Weinstein (post-doctoral fellow, Philosophy, UBC). June 16 – 20, 1999.

For some time now the foundations of physics have been haunted by the twin problems of understanding quantum theory and reconciling quantum theory with general relativity, Einstein’s curved spacetime theory of gravitation. Resolution of these problems is crucial to gaining an understanding of the origins and fate of the universe and understanding the fundamental nature of space, time and matter.

This workshop brought together outstanding mathematicians, physicists and philosophers from UBC and around the world for discussions of the following conceptual issues: quantum theory of closed systems; what is quantum
theory; fundamental vs. effective theories; what is the relevance of the Planck theories; the role of time; and Gödel’s Theorem. The workshop also dealt with the following questions of methodology: is the interpretation of quantum theory a problem for physics, philosophy or both; is quantum gravity physics; and what is the role of philosophy?

The workshop included four public talks centering on the issues mentioned above but sketched for a broad audience the deep puzzles at the root of contemporary physical theory.

Principal external participants in the Space, Time and Matter Workshop included John Baez (UC Riverside), Steven Carlip (UC Davis), Alan Connes (IHES, Bures, France), John Earman (U. of Pittsburgh), Chris Isham (Imperial College of Science, Technology & Medicine, UK), Simon Saunders (Oxford U.), Lawrence Sklar (U. of Michigan), and Lee Smolin (Pennsylvania State U.).

March 1999 Exploratory Workshop Competition
At the March 1 deadline, seven new Exploratory Workshop applications were received. The Adjudication Committee decided to fund three of them: (1) “Mediating Cultures: The Foundational Role of the Ramayana in South and Southeast Asian Societies”, Mandakranta Bose, PI (Asian Studies); (2) “Institutional Readings: Early Modern Europe and the Modern University”, Nancy Frelick, PI (French, Hispanic & Italian Studies and Comparative Literature) and Paul Yachnin, PI (English); and (3) “Acoustic Ecology: Listeners and Their Relationship to Sound Environments”, M. Kathleen Pichora-Fuller, PI (IHEAR and School of Audiology & Speech Sciences). These Workshops will be described in more detail after they have taken place.

The man who cannot occasionally imagine events and conditions of existence that are contrary to the causal principle as he knows it will never enrich his science by the addition of a new idea.

Max Planck
Catalytic Visitors

In response to requests from the UBC community for a program that would bring outstanding international experts to the UBC campus, the Catalytic Visitor competition was created. This program brings to UBC a distinguished external scholar who serves as a focal point for gathering a team of UBC faculty and other external scholars to investigate a new research agenda. This program runs for one or two academic terms. The core applicants must commit to working together during the visit and to carry the research forward. The amount of this award is $50,000 to $75,000. There are two deadlines annually (Feb. 1 and Oct. 1). The first Catalytic Visitor application was received in the March 1999 competition. However, after making a careful assessment, the Adjudication Committee decided that this did not adequately meet the expectations for the program and thus declined to fund it.

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Theme Development Workshops

PWIAS began to offer Theme Development Workshops in anticipation of the new facilities in the University Centre. These informal meetings allow researchers to meet with colleagues from a variety of disciplines to share initial ideas on researching particular themes. PWIAS provides the meeting venue and a light lunch. Applications can be made at any time. Recent workshops include:

**Facing Life: The Body in Dis/Ease** was coordinated by Valerie Raoul (French Dept. and Centre for Research in Women’s Studies & Gender Relations) on February 5-6, 1999, and took place at St John’s College, UBC.

**Creativity and Design** was coordinated by Rhodri Windsor-Liscombe (Fine Arts Dept.) on March 25, 1999, and held at the University Centre, UBC.

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*It would be possible to describe everything scientifically, but it would make no sense; it would be without meaning, as if you described a Beethoven symphony as a variation of wave pressure.*

*Albert Einstein*
Weekly Colloquia
These talks are usually held during the lunch hour in the PWIAS conference area at the University Centre. The Institute provides accommodation for a visiting speaker in the PWIAS residential annex, and also a luncheon for up to 12 guests. Applications by departments, Faculties and other academic units may be made any time during the year. To date PWIAS has sponsored:

Susan Haack, Dept of Philosophy, University of Miami, lecturing on *Misinterpretation and the ‘Rhetoric of Science’: Or, What was the Colour of the Horse?* on March 15, 1999. This was combined with the UBC President’s Lecture, and jointly sponsored by the UBC Dept of Philosophy.

Hidecki Koizumi, Dept of Basic Science, University of Tokyo, gave a lecture on *Dynamic Optical Topography* on March 25, 1999.

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Peter Wall Distinguished Professors
We are very pleased to have two Peter Wall Distinguished Professors of the Institute: Dr Michael Smith and Dr Raphael Amit. Both were appointed in 1997.

**Dr Michael Smith, Nobel Laureate**
**Faculties of Medicine and Science**
Dr Smith has an extensive research career in the field of medical genetics. Dr Smith is a Director of the Canada Foundation for Innovation, and a member of the Advisory Council on Science and Technology to the Federal Cabinet. He also participates in various UBC activities as requested by the President’s Office, advises the Director of the Biotechnology Lab, presents lectures to campus groups and to off-campus professionals. His role as Director of the Genome Sequence Centre is to establish the Centre as Canada’s first and world-
class genome sequencing facility, which is a joint enterprise of the UBC Biotechnology Lab and the BC Cancer Research Centre. As a Peter Wall Distinguished Professor, he is able to contribute to the advancement of biotechnology at UBC.

Michael Smith is a Member of the Order of Canada, Fellow of the Royal Society of Canada, and Fellow of the Royal Society of London. He was awarded the Nobel prize in Chemistry in 1993.

**Dr Raphael Amit**

Dr Amit is Professor, Commerce & Business Administration and Director of the UBC Entrepreneurship & Venture Capital Research Centre. Dr Amit is the Principal Investigator of the Entrepreneurship Research Alliance (ERA) Project, a five-year SSHRC Major Collaborative Research Initiative with co-funding from UBC and industry. This collaborative research program focuses on the creation and dissemination of knowledge about the formation of new enterprises. The ERA Project has yielded a substantial number of refereed publications, working papers and book chapters. The objective of this Project is to understand why some firms grow while others stagnate or go out of business.

This year, Dr Amit was an invited speaker at a number of scholarly, professional and government forums in Canada, the US, Europe, Australia and Singapore. He also developed and coordinated the MBA specialization in Entrepreneurship within the Faculty of Commerce & Business Administration at UBC. During the year he has published a book, three journal articles and completed 10 working papers.
Peter Wall Distinguished Scholars in Residence

In mid-1998 in anticipation of having our new facilities, the Peter Wall Distinguished Scholar in Residence program was announced. Each year up to four UBC faculty members will be appointed as Distinguished Scholars in Residence for the following calendar year. Applicants must be tenure-track faculty members at any level with demonstrated and recognized research excellence. Recipients of this award are provided with an office at the PWIAS in the University Centre, to be used as the Scholar’s main research office for the year. An infrastructure budget of $10,000 is provided to each Scholar and may be used for research-related expenses. During the year each Scholar will give a lecture, open to the University community. The four Scholars in Residence for 1999 are:

Michael Chandler (Psychology) – Dr Chandler has been at the forefront of developmental theory, promoting the ideas of Piaget to North American psychology in the early 1970s and continuing to use this framework to understand cognitive development in children. Currently he is researching adolescent suicide cases on Vancouver Island, focusing on social-cognition development; affective development; developmental psychopathology and life-span development.

Sarah Otto (Zoology) – Dr Otto’s research focuses on the evolution of an organism, including its life cycle, mating system, and genomic organization. Most recently she has been exploring factors that influence whether or not a new mutation can become established within a population. She is exploring the limits that these factors place on evolution by natural selection, using mathematical models. Her work in recombination seeks to explore and explain the range of parameters governing gene creation and destruction. Her recent journal publications include *The evolution of recombination in changing environments*, TREE 13: 145-151; and *The probability of fixation in populations of changing size*, Genetics 146: 723-733.
Alan Richardson (Philosophy) – Dr Richardson’s main research interests are in the relations between the history of science and the history of philosophy in the 20th century. His published research has been on the rise of philosophy of science as a discipline in philosophy. Currently he is researching how scientific philosophy has fundamentally changed philosophy’s relation to other disciplines in the humanities and in science. He is editor of “Logical Empiricism in North America”, a volume in the series of Minnesota Studies I Philosophy of Science (Minneapolis: University of Minnesota Press, in press). He is also editing “The Cambridge Companion to Logical Empiricism” (Cambridge: University of Cambridge Press, in press) and “Scientific Ethos: Authority, Authorship and Trust in the Sciences” (under consideration by Cambridge University Press).

Dolph Schluter (Zoology) – Dr Schluter’s research on adaptive radiation has revealed the environmental conditions promoting both the origin of new species and their ecological divergence. His work has determined factors governing the assembly and evolution of phylogenetically diverse faunas. Much of his experimental work is carried out in a series of ponds on the UBC campus. Studying a mini-explosion of new species of threespine stickelbacks in coastal BC lakes, he has found that these are among the youngest species on earth, less than 13,000 years old. He has developed and applied novel analytical and experimental methods that are now finding widespread application, and is considered one of the outstanding evolutionary biologists of his generation. Dolph was made a Fellow of the Royal Society of London during his tenure as a PWIAS Distinguished Scholar in Residence. His recent books include: “The Ecology of Adaptive Radiation” (Oxford: Oxford University Press, in press); and “Species Diversity in Ecological Communities: Historical and Geographical Perspectives” (Chicago: University of Chicago Press, 1993). During his year in residence, Dr. Schluter, in addition to his book, has published articles in Nature, American Naturalist, Science and Evolution.
Visiting Junior Scholars

With the opening of the Institute’s conference and residence facilities, the opportunities to expand our residential programs have been greatly enhanced. Beginning in the summer of 1999, the Visiting Junior Scholars program will bring to UBC for one month up to 10 outstanding international scholars at the early stages of their careers. The scholars will be nominated by a sponsoring UBC department, and the final selection by the Institute will be based on the candidates’ research excellence and their fit with the Institute’s mandate to support fundamental, interdisciplinary research.

The goals of this program will be to provide UBC departments the opportunity to develop contacts with exceptional new scholars, to allow the participants to interact with peers in diverse disciplines, and to introduce these new PhDs to UBC. Each participant will be provided with an expense allowance, a room in the PWIAS residence annex and scheduled meals. While the program will include daily talks, lectures and meetings, time will be provided for the participants to continue with their own research work.

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Associates Events

After moving to permanent space in the University Centre, PWIAS began to arrange events for faculty members associated with the Institute. Institute associates are those who serve on PWIAS committees, or who are involved with research projects sponsored by PWIAS. On two Wednesdays each month, the Institute offers alternating lunch and dinner lectures. All associates are invited to attend, and a fee is charged to partially cover meal costs. This program provides a forum for UBC faculty to exchange theories and knowledge across different departments and Faculties. The first speaker for 1999 was the Principal Investigator on our first Major Thematic Grant, while the next four were PIs who gave previews of upcoming Exploratory Workshops.
April 7  Dinner: Cindy Greenwood, Mathematics – “Crisis Points”
April 21 Lunch: Grant Mauk, Biochemistry – “Preview of Research in Molecular Biophysics”
May 5  Lunch: Sneja Gunew, English – “Cross-Cultural Perspectives on Women, Identity and Food”
May 19 Dinner: Lawrence Green, Health Care & Epidemiology – “Socioeconomic Status, Gender and Life Stages as Determinants of Health”
June 2  Dinner: Steven Weinstein, Philosophy – “New Concepts of Space, Time and Matter”
PWIAS Facilities

Administration
For the year prior to March 1999, the Wall Institute was located in St. John’s College. Our permanent offices are now in the east wing on the third floor of the University Centre. In addition to the staff offices, the facilities provide four research offices for the four Peter Wall Distinguished Scholars in Residence, and an office for Peter Wall Distinguished Professor Michael Smith. The administration area also has a boardroom and a lounge.

Conferences
The Institute has two conference rooms in the west wing of the University Centre’s third floor. The large and small meeting rooms, approximately 900 and 600 square feet respectively, can be used separately or combined. Both rooms open onto a large terrace with a wonderful view of the sea and mountains. When not in use by the Institute for program events, the conference rooms are available to other groups. Booking preference is given to research related activities open to the University community.

Residences
Located at the northeast end of the University Centre is the Institute’s guest residence of twelve rooms. These superior rooms are well-furnished and all offer a view to the ocean. Each room, whether the standard hotel style or the kitchette style, includes a full private bathroom, queen bed, Internet-linked PC, cable TV and voice mail. The rooms can be configured individually or as two-room suites. Rental rates give preference to Wall Institute program guests. When not in use by the Institute, the rooms are available for visitors to the University.
Website

The Institute’s website, www.pwias.ubc.ca, has been continuously online since its first version in December 1996. It provides comprehensive information about the Institute’s mandate, facilities, programs, deadlines, award recipients, events, staff and faculty associates, booking for its conference and residential space, and more. All information and links to related websites are frequently updated. The PWIAS website pages are accessed by people from over 50 countries worldwide.
The Peter Wall Institute for Advanced Studies is funded through the income from two endowments. The Peter Wall Endowment comprises Peter Wall’s 1991 gift of 6.5 million Wall Financial Corporation shares. The income from this endowment supports the Professorships, the Residential Programs, facilities-related activities and a portion of the Institute administration. The Hampton Endowment, a $10 million fund, was created for the Institute by The University of British Columbia in 1994. It supports the Thematic Programs.

In 1998-99, the principal program expenditures have been $420,000 in support of our two Major Thematic projects Crisis Points and Electron Motion in Matter. Also in the thematic programs area, eight Exploratory Workshops have been funded this year for a total of $158,000. From the programs funded by the Peter Wall Endowment, the principal expenditures have been $65,000 for the UBC Distinguished Scholars in Residence and $400,000 for the Distinguished Professorships.

The renovation and furnishing of the Institute’s new offices, conference and residential space at the University Centre represent a one-time expenditure of approximately $560,000 allocated from the Peter Wall Endowment. The Peter Wall Institute has entered into an agreement with The University of British Columbia to lease the University Centre facilities for a five-year term, with an initial annual charge of $210,000.

The move to these new facilities provides the Institute with the opportunity to generate additional income from the rental of conference space and residential rooms. This income will be used to offset a portion of the Institute’s facilities costs including the lease.
PWIAS Staff

Kenneth R. MacCrimmon was appointed in 1996 as the first Director of the Peter Wall Institute for Advanced Studies. He also holds the endowed chair as E.D. MacPhee Professor of Management at UBC. His PhD is from UCLA in interdisciplinary studies. Early in his career he was on the faculty at Carnegie Mellon University as well as holding an extended appointment at the Rand thinktank. Later he was J.L. Kellogg Distinguished Professor of Strategy and Decision at Northwestern University. He is co-author of the book Taking Risks, and his current research focuses on descriptive and normative aspects of decision theory and creativity.

Christopher McGill is Assistant to the Director. Chris was appointed in May, 1999. He obtained his BA (Hons.) from Trent University. Chris is responsible for the day-to-day operations of the facilities and program administration.

Marlean Martin is the Institute Secretary. She was hired to this position in 1996 and has a diverse background in communications and office support.

Dale MacCrostie is the Systems Coordinator at PWIAS. She manages all information systems hardware and software including the Scholars in Residence, the administrative offices, the residential annex and the website.
**Governance**

**Board of Trustees**
There are five trustees on the PWIAS board. They are:
Akbar Lalani, Royal Columbian Hospital
Robert H. Lee, Prospero International Realty Inc.
Les Peterson, Boughton Peterson Yang Anderson
Martha Piper (Chair), President, UBC
Bruno Wall, Wall Financial Corporation

**Management Committee**
Four members oversee the financial operations of the PWIAS. They are:
Frieda Granot, Graduate Studies, UBC
Ken MacCrimmon, Director - PWIAS, UBC
Terry Sumner, VP Finance and Administration, UBC
Bruno Wall, Wall Financial Corporation

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**Faculty Associates**

Professors from a variety of disciplines are invited to join the PWIAS as Associates. Associates are researchers involved with PWIAS research grants and workshops as Principal Investigators, Scholars in Residence or PWASIS committee members. As of June 30, 1999 they include:

**Agricultural Science**
Moura Quayle, Landscape Architecture
James Thompson, Agricultural Science

**Applied Science**
Shel Cherry, Civil Engineering
John Grace, Chemical Engineering
Martha Salcudean, Mechanical Engineering

**Arts**
Mandakranta Bose, Asian Studies
Alan Cairns, Political Science
Michael Chandler, Psychology
Faculty Associates

Jane Coop, Music
Richard Ericson, Principal – Green College
Nancy Frelick, French, Hispanic & Italian Studies and Comparative Literature
Marketa Goetz-Stankiewicz, Germanic Studies
Derek Gregory, Geography
Sneja Gunew, English
Eva-Marie Kroller, English
Patricia Marchak, Anthropology & Sociology
Ralph Matthews, Anthropology & Sociology
Shirley Neuman, English
Anthony Phillips, Psychology
Ruth Phillips, Museum of Anthropology
Catharine Rankin, Psychology
Alan Richardson, Philosophy
Steve Savitt, Philosophy
Olav Slaymaker, Geography
Mark Vessey, English
Rhodri Windsor-Liscombe, Fine Arts
Paul Yachnin, English

Commerce
  Raphael Amit, Strategy & Business Economics
  Alan Kraus, Finance
  Maurice Levi, Finance

Dentistry
  Don Brunette, Oral Biology

Education
  Linda Siegel, Education & Counselling Psychology & Special Education
  Patricia Vertinsky, Educational Studies

Forestry
  Jack Saddler, Wood Science

Graduate Studies
  Lawrence Green, Institute of Health Promotion Research
  Tony Pitcher, Fisheries Centre
Law
Christine Boyle
Wes Pue
Joseph Smith

Medicine
Patricia Baird, Medical Genetics
William Bowie, Infectious Diseases
Don Brooks, Pathology
Judith Hall, Pediatrics
Michael Hayden, Medical Genetics
Clyde Hertzman, Health Care & Epidemiology
James Hogg, Respiratory & Pulmonary Lab
Dagmar Kalousek, Pathology
Peter Reiner, Psychiatry
Ann Rose, Medical Genetics
David Speert, Pediatrics

Pharmaceutical Sciences
Gail Bellward

Science
Ian Affleck, Physics
Michael Blades, Chemistry
Chris Brion, Chemistry
Priscilla Greenwood, Mathematics
Michael Healey, Earth & Ocean Sciences
Peter Hochachka, Zoology
Brian James, Chemistry
David Kirkpatrick, Computer Science
Charles Krebs, Zoology
Grant Mauk, Biochemistry
Andrew Ng, Physics
Sarah Otto, Zoology
Dolph Schluter, Zoology
Anthony Sinclair, Zoology
Michael Smith, Biochemistry
Terrance Snutch, Biotechnology
Curtis Suttle, Earth & Ocean Sciences
William Unruh, Physics & Astronomy
James Zidek, Statistics
Committees

Adjudication Committee
This committee meets in the fall and in the spring to review PWIAS thematic program applications. Representing a broad base of academic expertise, this committee makes recommendations and choices on research grants to UBC interdisciplinary teams.

Ian Affleck, Physics
Gail Bellward, Pharmacology & Toxicology
William Bowie, Infectious Diseases
Christine Boyle, Law
Don Brooks, Pathology
Donald Brunette, Oral Biology
John Grace, Chemical Engineering
Derek Gregory, Geography
Judith Hall, Pediatrics, Medical Genetics
Brian James, Chemistry
Alan Kraus, Commerce & Business Administration
Eva-Marie Kroller, English
Ken MacCrimmon, Commerce & Business Administration and PWIAS (Chair)
Ruth Phillips, Anthropology & Sociology and Art History
Wes Pue, Law
Catharine Rankin, Psychology
Jack Saddler, Wood Science
Linda Siegel, Education & Counselling Psychology & Special Education
Terrance Snutch, Zoology
Curtis Suttle, Earth & Ocean Sciences
James Thompson, Animal Science

Advisory Committee
This committee meets as required to discuss directions for PWIAS and recommend program changes.

Raphael Amit, Commerce & Business Administration
Patricia Baird, Medical Genetics
Jane Coop, Music
Richard Ericson, Law and Anthropology & Sociology
People

Peter Hochachka, Zoology
David Kirkpatrick, Computer Science
Anthony Phillips, Psychology
Martha Salcudean, Mechanical Engineering
Michael Smith, Biochemistry (Chair)
William Unruh, Physics & Astronomy
Patricia Vertinsky, Educational Studies
Seminars given at the Complexity Group 1998–99 weekly meetings included:

1998


“Dynamical Modelling of Biological Development: Examples, Determinism, Robustness, and Error Suppression”, Lionel Harrison, UBC Chemistry Dept. September 15.


“Competition and Coexistence in Fluctuating Environments”, Beatrix Beisner, UBC Zoology Dept. October 20.

“Magnetic Resonance Spectroscopy — How to obtain chemical information from the brain without getting your hands dirty”, Elana Brief, UNC Physics & Astronomy Dept. October 28.


“Predictions of Geochemistry of Water Seeping from Waste-rock Dumps at Mine Sites”, Roger Beckie, UBC Earth & Ocean Sciences Dept. November 17.

“Molecular Architecture and Skin Barrier”, Jennifer Thewalt, Simon Fraser University Dept. of Physics, and Institute of Molecular Biology & Biochemistry. November 24.


1999


APPENDIX A

“Interest Rates: Can the World Endure the Ones Presently Prevailing?” Jose Luis Lopez-Leautard, Architecture, Universidad Nacional Autonoma de Mexico. April 6
“Roughening of Fluid Interfaces in Random Media”, Martin Dube, Helsinki Institute of Physics. April 9
“Intermittency Bursting & Stability Criteria Part 1”, Vlad E Shapiro, TRIUMF – UBC. May 11
“Intermittency Bursting & Stability Criteria Part 2”, Vlad E Shapiro, TRIUMF – UBC. May 18
Peter Wall Institute for Advanced Studies

Understanding Electron Motion in Matter: Orbital Imaging of Biomolecules, Transition Metal Complexes, Chemically Reactive Species and Condensed Matter

First Annual Workshop and Symposium, October 2, 1998, St. Johns College, UBC.

Program

**Session 1**

9.00-9.10am     Chair: Prof. Chris E. Brion (Chemistry, UBC).
9.10-10.10am    Prof. Ken MacCrimmon (PWIAS): Introduction and Welcome.
10.10-10.40am   Prof. Saul Wolfe (SFU): "Lone Pairs in Chemistry".
10.40-11.00am   Coffee / Soft Drinks.
11.00-12.00am   Prof. Delano P. Chong (UBC): "Density Functional Theory (DFT) and EMS".
12.00-1.30pm    Prof. George Sawatzky (Groningen, Netherlands): "Effects in electron energy loss spectroscopy of solids including surface wave guide effects: Relevance to e,2e experiments".
Lunch

**Session 2**

1.30-1.45pm     Chair: Prof. Tom Tiedje (Physics, UBC).
1.45-2.25pm     Prof. Tom Tiedje (UBC): "Introduction and Relevance of EMS to Surfaces and Materials Science".
2.25-2.55pm     Dr. Sebastian Tixier (UBC): "Recent Progress on the Surface-Reflection EELS / EMS Instrument. for the Study of Electron Motion in Condensed Matter".
2.55-3.15pm     Dr. Igor Litvinyuk (UBC): "EMS and Theoretical Studies of Amantadene and Adamantane".
3.15-3.30pm     Drs. Yenyou Zheng and Glyn Cooper (UBC): "Progress in the 2π Gas Phase EMS Spectrometer for Orbital Imaging".
Coffee / Soft Drinks.

**Session 3**

3.30-3.50pm     Chair: Dr. Yenyou Zheng (Chemistry, UBC)
3.50-4.10pm     Dr. Terry N. Olney (UBC): "Development of ICP Ion Sources for EMS & EELS".
4.10-4.30pm     Dr. Renfei Feng (UBC): "EMS and EELS Studies of SO2 and H2S".
4.30-5.15pm     Dr. Glyn Cooper (UBC): "EMS Studies of Transition Metal Complexes".
Prof. Chris E. Brion (UBC): "Investigation of Different Orbital Models (LMOs, CMOs and KSOs) by EMS: Implications for Computer Aided Molecular Design, Molecular Modeling and the Teaching of Chemistry".

**Session 4**

Chair: Prof. Chris E. Brion (Chemistry, UBC).
5.15-5.45pm     Open Discussion.
5.45-5.50pm     Prof. Chris E. Brion (UBC): Concluding remarks.
The Peter Wall Institute for Advanced Studies is located at the University Centre in the cultural heart of the University of British Columbia. The University Campus occupies a beautiful wooded site at the western tip of Vancouver on cliffs overlooking the Pacific Ocean. The Institute facilities include two well-appointed conference rooms opening to a broad terrace with spectacular water and mountain views. The residential annex, adjacent to the University Rose Garden, has twelve fully-equipped rooms.

The Peter Wall Institute for Advanced Studies has a variety of programs directed at supporting outstanding research. Several programs are thematic in nature designed to fund the collaborative research of interdisciplinary teams. These activities range from single meetings for developing themes, to multi-year major thematic grants. Other Institute programs focus on bringing together distinguished researchers, from both UBC and around the world, to spend time in residence at the Institute. These residencies, ranging in term from one month to one year, encourage the interaction of scholars from a variety of disciplines in exploring new research directions.