
'opinions from a different group which sometimes has not had its opinions counted'


The voice of the youth is a very powerful thing, and I believe that the government and other organisations are taking notice. We are the voice of the next generation and people are very interested to know what we, the future leaders, have to say. Our voice adds a new perspective to environmental issues, as there is an opinion from the people who will experience in the future the results of environmental decisions taken now. It also adds new ideas and opinions from a different group which sometimes has not had its opinions counted in the past. This is one of the reasons why the Council was formed—to communicate young people's environmental voice to the Government.

We have used several methods to achieve this, the most prominent being that the YEC Executive meets with the Ministers after the Council's quarterly meetings to inform them of what we are doing, our opinions, interests and so on. We give the Ministers minutes from meetings, the YEC Newsletter and other information. Another method is that I send the Ministers a letter after each meeting to inform them of our progress. We also send many newsletters out across the state, and soon there will be an interactive web site up and running.

Before the Council existed it was far more difficult to do this as young people would have to write a letter to the government on a personal, singular basis, which was probably not taken much notice of. Since the Council has been formed, it has greatly increased ways to communicate the opinions of large numbers of people—and it encourages the decision makers to take notice.

Over the past year we have achieved a lot—organised a constitution; seated two sets of delegates; proceeded in getting the Council up and running; promoted the Council; met with the Ministers several times and provided them with several written reports; witnessed a range of presentations from other like-minded groups such as Urban Ecology and the local Threatened Species Network—and obtained some great ideas; released the first YEC Newsletter and developed an initial plan for a YEC web site. We have also started collecting information about what projects are going on in schools so that we can support and promote them by developing a database of who is doing what, and we have been developing our opinions on different issues. Now that we are up and running, we will make more and more headway.

We hope to have an influence on projects that are being undertaken by South Australia's young people, and we also hope to have influences on issues that other, older groups and organisations are involved with by promoting them and encouraging young people to get active for the environment. In getting the Council operational it has been clear that everyone, even the students who were very quiet to

start with, has grown up a lot and grown in confidence about putting their point across at Council and back at their school and district. I think the fact that the Council is a group of young people who strive to cooperate as a team to work to improve the environment will make us a group able to discuss important ideas with the decision makers. As a team we are going to discuss ideas at meetings, and work towards the ultimate goal of repairing and protecting the environment. 

As President and Riverland representative of the Youth Environment Council Peter spends much of his time on YEC matters. After Year 12 in 1999, he intends to study Law and Commerce, and to follow this with employment in addressing environmental issues. His interests include spending time in the natural environment, playing football and golf—and working with others towards his ultimate goal of helping to sustain the environment for future generations.

Environmental Adult Education in Canada: Growing Jobs for Living

Darlene Clover

University of Toronto



As in many parts of the world so too in Canada blossoming socio-environmental problems are having adverse effects on many communities. The environmental consequences, for example, of sustained over-fishing of Newfoundland cod, of west coast deforestation by logging of the Great Lakes area and of soil and water contamination caused by industrial activities are now fairly obvious to all. The associated depletion of employment possibilities, folklore and other cultural capital has often been coupled with an increase in violence and feelings of powerlessness and helplessness. But, according to public opinion surveys there is a positive weave to this web of adversity. People's concern for their planet remains high—and their knowledge of the gravity, scope, and root causes of environmental problems and the

relation of these to politics and global economics has greatly expanded. Coupled with this is a realisation that current ways of living on this Earth are unsustainable, and that although governments, scientists and promised technological 'fixes' may be necessary parts of the solutions they are insufficient to the sheer enormity of the task. There is a resulting call to action by many communities.

'to take non-formal environmental education.....into a realm of active, critical and creative engagement'

Often the adults in these communities are frustrated, angry and passionate enough to want to work for change, providing environmental educators with an enormous challenge. It is to take non-formal environmental education beyond the simple notion of 'public awareness'—for people in these communities are certainly aware—into a realm of active, critical and creative engagement and support them in the processes of change.

This account briefly examines one community's move to action in the Quinte bioregion of Eastern Ontario where a number of people are attempting to create a greener, more self-reliant and sustainable community through a project called 'Growing Jobs for Living Through Environmental Adult Education'

The 'Growing Jobs for Living' project

The Quinte region is located on the north shore of Lake Ontario approximately 200 kilometres east of Toronto. The largest urban centre is the town of Belleville which has a population of approximately 38,000. The total population for the Quinte region is approximately 90,000 of which approximately 60% live in urban areas. The Tyandonaga First Nations Reserve is located in the heart of the region.

As a result of plant and factory closures related to the North American Free Trade Agreement—which heavily favours the USA—and other globally related shifts Quinte has seen a dramatic increase in unemployment and 'underemployment' accompanied by a rise in violence and crime. There are also a number of serious environmental problems related to past and continuing industrial and agricultural production. These problems include severe environmental and water quality problems, and rising instances of ill-health in the region which may be linked to these factors. Equally if not more alarming is the homogenisation or 'americanisation' process represented by superstores such as Walmart, Toys R US and fast food outlets such as McDonalds and Kentucky Fried Chicken, a process which erodes culture and collective memory. Without collective memory, people lose the creative and imaginary ability to envision change.

The Quinte region has had its share, however, of the numerous examples across Canada of community economic initiatives emerging from a desire for change (see, for example, Nozick 1992, Roberts & Brandum 1995). However, the vast majority of initiatives in Quinte to develop 'green' jobs have been isolated, ultimately difficult to implement and unsustainable due to lack of broad government and/or community support.

They are like bright squares of new material in an old threadbare quilt. Some of the cloth is different, but the basic weave is still the same.
(Clover, Follen & Hall 1998)

They have often revolved around individual 'ecopreneurs' who created their own solutions with little widespread support. All too often these projects end up being little more than the hobby for a minority and make little contribution to educating the community about sustainable alternatives (Fien 1993).

'tools to help people to create a healthier and more sustainable community'

The primary goal of the 'Growing Jobs for Living' project is to use environmental adult education theory and practice and participatory research as tools to help people to create a healthier and more sustainable community. By engaging in educational and research activities community members will be able to name and better understand the issues and problems in the community, the ways in which these issues and problems are interwoven and how and why they affect particular people in particular places at particular times.

The project's objectives are: to provide an opportunity for people to come together and discuss important issues in their communities; to help them to create alternative and more diversified 'green' livelihoods and localised goods and services and, thereby, to reduce dependency on large businesses and governments; and to repair environmental damage. The project is premised on the idea that environmental adult education and participatory research, linked to struggles to democratise structures and processes, are keys to developing a healthier and more sustainable community. This involves a process of reflection and action which builds knowledge, awareness, cohesiveness, and skills in order to create a stronger foundation for community transformation

Through a variety of teaching and learning methods, the project will first create an inventory of the social and environmental work that needs to be done, the kinds diverse work people would like to engage in the community and the available resources to support this work, and then develop an implementation plan to bring needs, dreams and resources together.

Environmental adult education

Education is how we live our lives and how you live with everything around you. Everything in existence teaches us something about life.....everything around us educates, how we interact with the land, minerals, trees, sky, animals, everything, even our thoughts. Our thoughts too can become a force, for we are in charge of them.

Profeit-LeBlanc (1995)

In 1997, as one possible remedy to socio-environmental problems, the report *Our Common Future* by the World Commission on Environment and Development emphasised formal and non-formal education. Agenda 21, the document emerging from the Rio Conference (UNCED 1992), re-emphasised the importance of education as a critical tool to help people to make changes in their own behaviours and attitudes and address their own needs and concerns, and called for an expansion in environmental education activities and programs. In spite of this stated belief in the importance of education and a proliferation of educational activities, problems resulting from inappropriate human-environment interactions not only persist but grow. I believe that this is because there are a three major problems; two are well known, the other perhaps less so.

'all human-environment problems are political and economic'

First, the focus on 'individual behaviour' change as the goal of education ignores the fact that all human-environment problems are political and economic—and that all mainstream economic systems are maintained through the exploitation of people and the ab/use of natural resources and have the power, money and means to continually manipulate society through the medium of advertising or other forms of propaganda. As Michael Welton (1986) has argued, "the [deepest] educative process at work in the twentieth century has been learning to consume". Second, in order for education to play a 'critical' role and truly 'help' people to challenge existing socio-ecological problems and bring about concrete change, new frameworks will need to be developed since modern education was primarily designed to further the conquest of nature and the industrialisation of the planet—" [it has] tended to produce unbalanced, under-dimensioned people tailored to fit the modern economy" (Orr, quoted in Hicks & Holden 1995). A third problem has been the dismissal of the importance of non-formal or public education and/or its limited framing in terms of 'public awareness'. There is a strong and extremely important focus on environmental education for school children but a marked exclusion of adults. In her ironically titled article 'Approaches to environmental education: towards a transformative perspective' Constance Russell (1997)

argued that the reason environmental education focuses on children is because for the most part, adults "are considered beyond repair". At this critical moment in the planet's history this preconception is grievous for it is the adults of this world who are the voters, consumers, workers, employers, parents, media personalities, land and business owners, activists, civil servants, poets, musicians, and educators to name but a few crucial societal roles. It is the adults who "are the force of social and political change, in both the domestic and global arenas" (Lipschutz 1996). As adult educator Michael Welton has argued,

[r]esistance to and transformation of societal structures emerges from the adult population, and is premised upon men and women's ability to learn new ways of seeing the world and acting within it.
(Welton 1987)

Now is an opportune time to reach out to adults playing such critical roles because, in the Western world at least, many more adults in changes probably reflective of contemporary demographics and economics, are engaging in formal and non-formal learning activities than ever before. We can recycle and re-use, use lead free petrol, pay women equally to men, and re-create a few wetlands but what is needed, in essence, are dramatic and fundamental changes—in our relationships with each other and the rest of nature, and in the future ways in which we expect to live. By organising education so that it may be a life-long learning process to which everyone is entitled, whether they return to school or not, we can better help people to explore, design and, in the project under discussion here, to bring into being their desired futures.

'about....living more cooperatively, creatively and lightly on the land'

Environmental adult education is concerned with people, their needs, dreams, hopes, futures and also their environments, built and natural. It involves processes of learning and teaching which begin with the daily lived experiences of women and men living in communities, and is linked to confronting and challenging the root causes of social and environmental injustices and their consequences. It does this primarily by providing opportunities for community members to learn together in community spaces—about personal perspectives and concerns with structural issues, and about identifying and understanding unequal relationships of power and how they affect people's daily lives. It is about providing people with opportunities to create together new knowledge for living more cooperatively, creatively and lightly on the land, and involves a dynamic of helping participants to discover and re-discover what they know about the rest of nature.

Because not all people learn in the same way, environmental adult education uses a diversity of methods

and processes such as storytelling, art, popular theatre, poetry, music, workshops, and study circles to tap into the knowledge and potential of all adults. In particular, nature and community are called upon to play the important roles of teacher and site of learning in the development of concrete action that is personal and, most importantly, collective.

Educational components of the 'Growing Jobs for Living' project

Human learning is central to any process of change—and so it is to the project. The three inter-woven education activities are study circles, a community survey and workshops in participatory research. The common threads are the people who take part in the activities. Study circles provide a structure for critical awareness raising and debate. The primary purpose of a community survey is to get an idea of the kinds of activities which have taken place in the community in the past, to publicise the project and to stimulate discussion about community issues. Participatory research workshops do much the same as study circles, but also provide an opportunity for people to identify creative employment strategies.

Study circles

Extracts from Gibson & Bishop (1998) capture the essence of this approach:

[These] are a map which takes people on a journey. Along the way, it shows them some interesting and challenging places to visit and things to explore. But if the group has been there before, or if they do not find something interesting, they continue on until they find something more appealing...The study circle approach does not aim for experts, but informed decision-makers who are able to take effective and constructive action

Study circles and small group discussions have long been recognised as effective methods of learning and teaching. They are particularly useful for dealing with difficult social and political issues and strengthening the skills necessary for community participation.

They help people, within their own community spaces

to explore important topics, consider a range of viewpoints, challenge commonly held assumptions, and achieve learning that enables people to take constructive action. The essence of the study circle is free discussion and exploration with all views being valid.

A typical Study Circle is a group of 5-15 people who meet three to six times to discuss issues of concern. Each discussion lasts approximately two hours and is facilitated by a group facilitator who is not an expert but who encourages a lively but focussed

discussion. The number of times a group meets and the length of the meeting is flexible and often takes place in people's homes, church basements, community centres or other convenient places. (Gibson & Bishop 1998)

Gibson and Bishop have suggested that there are eight basic principles behind study circles which involve:

- acting in accord with and contributing to wider equality and democracy
- promoting the liberation of individuals and communities from economic and social oppression
- working to enhance cooperation and companionship
- exercising a group's freedom and right to set objectives to suit its needs
- organising for continuity and planning of programs
- facilitation of active participation
- provision of printed study material
- taking action.

'people with.....different sectoral and group perspectives.....discuss community issues'

Although study circle methods are numerous a common strategy is the one used in the Quinte region—a thematic approach which revolves around a single topic of concern within the community. Since the inception of the 'Growing Jobs for Living' project in May 1997 approximately 10–15 people from community sectors such as education, health, small business and farming, and from community groups such as women's anti-poverty organisations have been meeting in study circles to discuss community problems and to share stories from their work. The study circle strategy allows people with often very different sectoral and group perspectives to learn more about and to discuss community issues, and the ways in which they affect other people. Without these discussions most information about community issues, if not learnt first hand, is provided by the media—local newspapers and television. The media, however, does not focus on process but rather sound bites, snippets of information that often distort or confuse. And when knowledge is wrong, Rowe (1990) writes, "wrong ideas and misdirected activities can flow from it".

Each week, a different person acts as a facilitator of the study circle while someone else keeps a record of the discussions. This helps people to develop skills in facilitation, and in recording and presentation. There have been a number of topics discussed to date. They have ranged from philosophical discussion around the meaning of 'democracy', the lives of people on welfare and involved now in Workfare—working in menial jobs for welfare benefits—and the role of the Food Bank, to information sharing about the work of the Women's Learning Centre, Consumer Unions, the Remedial Action Plan—which

lobbies for the Great Lakes clean up—and Green Check, a green business. To augment their learning experiences people bring books, videos and other kinds of materials. A key area of focus for study circles which will begin again in the autumn of 1998 will be around the issue of health and the environment, with a particular focus on breast cancer.

Community survey

'to identify environmental and job-creation initiatives'

The first objective of the community survey was to identify environmental and job-creation initiatives that had taken place in the community over the past 10 years. It asked:

- If the initiatives were still active, what had been their successes and what assistance would they need to make their success more visible to the wider community?
- If the initiatives had not succeeded, what were the primary reasons for this?

A second objective was to identify what community members felt were the most important environmental, social and economic issues—and to use the wide-range of responses as a basis for discussion in future study circles. The identification of key environmental, social and business groups in the region, and the soliciting of support for and/or participation in study circles, interviews, workshops, the steering committee and so on constituted the third objective of the survey. The survey, as was previously mentioned, was also used to tell people about the workshops and study circles. The survey discovered that almost all the environmental programs started in the Quinte area had been cancelled primarily due to Government cutbacks or lack of community support. It also showed that there were very few initiatives taking place in the community to create alternative employment. In fact, none of the people interviewed could identify any organisation engaged in this kind of activity. Although unemployment continued to rise, there was no space or opportunity for people to collectively engage in developing alternatives. Finding work in a ever more 'workless' environment must presently take place in isolation. A final important piece of information garnered from the survey was that all the members of the organisations or groups interviewed felt that there was a need for an umbrella group to act as a coordinating body, playing a networking role for the many small but active community groups who often work in a similar isolation.

Participatory research workshops

Every individual carries out some research in their everyday life and yet research is often considered to be something that is only done by experts, usually within in universities or perhaps by governments. Research, or the

production of useful knowledge as it is conceived in the participatory model, can be best understood in the sense of 'learning by searching for'. The path from knowledge generation to knowledge utilisation is very direct in participatory research because the same people are involved in both activities. The result of this kind of activity is the creation of living knowledge which gets translated directly into action, because it is created with this concrete application in mind (Park et al 1993).

Participatory research was developed as a systematic process of research which involves ordinary people in analysis of their own situations. It is a method of conducting a research project that "helps ordinary people understand the connections between their individual experiences and broader social, economic, and political struggles" (Maguire 1987). People themselves become the researchers and the researched, their needs and experiences the content or data of the study. One goal of participatory research is community revitalisation and social transformation. It is often a three-part integrated process "that combines social investigation, educational work, and action" (Hall 1981), and it puts emphasis on "participation, critical analysis, and personal and collective knowledge" (Harris 1992). When applied to community based problems it takes the form of:

- the collective production, analysis and dissemination of useful, valid, pertinent, popular knowledge and information, through the participatory and democratic implementation of basic social research methods and practices
- the provision of opportunities for critical, trans-formational education at the grassroots in an effort to empower individuals and build effective popular democratic organisations and movements
- a challenge to present distributions of power at many levels and the creation of progressive structural changes based on the needs of the most oppressed classes in the global economic system.

'the approach attempts to alter.....the inherent power imbalances in the quantitative model of science'

It is not that participatory research necessarily changes the basic process of scientific research; rather what the approach attempts to alter are the inherent power imbalances in the quantitative model of science. The goal of the project is to organise a series of workshops in which women and men can use their imaginations, creativity and problem-solving skills. The workshops are more structured than study circles and use skilled adult education facilitators both from within and outside the community. A variety of workshops are planned to take place over the next two years. One kind, and probably the most numerous,

will focus on: developing ideas for a variety of sustainable or 'green' jobs needed in communities; the resources available to support these green jobs and eventually; and an implementation plan. Participants will come from environmental groups, social justice organisations, Native people's groups, local businesses, the unemployed and underemployed and so on. Special attention will be paid to addressing and working creatively, but critically, with the imbalance of power that occurs when different groups of people are brought together. Alongside the workshops, participatory researchers conduct individual interviews with women and men in the community who are unwilling or unable to participate in the workshops or study circles processes in order to obtain their input. The first of these workshops took place in 1998.

Another kind of workshop will provide interested community members with educational skills and methods to enable them to work in the community. Other workshops will focus on examining connections between socio-political and economic forces and the environment, and/or use storytelling and nature as a teacher and site of learning to help people connect with their ecological self. The first workshop of this kind took place in October 1997 and was a combination of all of these. The purposes were to:

- introduce the 'Growing Jobs for Living' project
- identify some key principles of a sustainable community
- provide participants with facilitation skills
- strengthen partnerships and share resources
- contribute to people's energy and motivation, and discuss ways to motivate others
- identify socio-environmental problems and break them down into smaller bites so that realistic and concrete solutions could be devised and initiated
- and, importantly, to have fun.

For two and a half days the facilitators introduced participants to a variety of educational methods such as poetry and music creation, popular theatre, small group discussion and mural creation to explore, debate, laugh about and work through complex community problems.

Major challenges

Where does one begin! There are so many challenges that is probably best to focus on three of the most pressing and common. The first, one which all community educators and activists face, is time. People, particularly women, have little time for activities such as study circles and workshops. Often they are busy just trying to survive. Ensuring that the times and locations of these learning activities are suitable to women's schedules takes an ongoing commitment. The study circle approach is effective because one does not always have to be there and they have a natural beginning and a natural ending. Also,

workshops can be held over a shorter period of time, such as a three-hour evening workshop, and/or the design can be made more flexible and overlapping in order to allow people to come and go as necessary.

'this.....education is viewed as 'subversive' '

A second challenge is to obtain recognition and support for this kind of educational work. The government of Ontario does not recognise education, and particularly community education, as a relevant activity worthy of an appropriate level of expenditure. Moreover, this kind of education is viewed as 'subversive' because it is about challenging and changing, rather than conforming and supporting. So, funding is seldom forthcoming! One of the coordinators of this project who has had many years of experience with this lack of funding has somehow managed to find a free computer, meeting space and furniture. Her attitude is basically, "if a miracle should happen, and they always do, we will find the funds". Her attitude is a life line in this kind of work.

For this particular project, because of funding constraints, a further challenge has been to find a full-time coordinator, a role which really needs fulfilling right from the beginning to get the word out. Also, as always, those who volunteer are those who always volunteer! They are the community members who always pitch in—but who soon become overworked, burnt out and frustrated.

A final challenge is the initial making contact with the community, finding pockets of interested people. Because most people are interested, they need the opportunities this project is attempting to create. Personal networking is often the best method of locating these people—friends who have friends, who know someone, who knows someone!

Conclusion

With the knowledge that socio-environmental problems are growing, that neither scientists nor technology can repair these problems, that cultural identity is being eroded, that crime and violence are escalating, and that both the federal and provincial governments have abdicated much of their social responsibility, a number of people in Quinte have engaged in a journey. This process, in which they will need to learn to think, act and work creatively and collectively together if they are to have a healthier and more sustainable place in which to live and work, will be a long-term one. As Kaptchuk (1983) wrote "a journey is not a round tour; it does not return home, and it does not even necessarily end". There will be number of successes, but there are also a number of challenges. The major one is to get local politicians and the business sector to invest more in this project.

Through study circles, workshops, surveys and interviews the project will combine locally generated environmental

research findings with job needs through a process of community revitalisation. Building public awareness and support by including people from all sectors of society into the educational process is essential before any significant change is possible. In sharing information regarding 'Growing Jobs for Living' beyond the community not only has the potential and validity of the project been confirmed but there has been considerable interest in future outcomes. The Study Circles have proven to be a productive structure within which to network and to exchange information and ideas. The community survey has provided useful information about the variety of initiatives that have and continue to take place, and which provides people with hope and energy. Participatory research workshops have provided a training opportunity and stimulated a variety of progressive ideas and suggestions for green jobs and potential resources. The workshops are themselves invigorating and empowering, for the main reason that education and participatory research are critical tools for change is because at the heart of life is every person's longing for connection, meaning, mystery, knowledge, and delight. ☺

References

- Clover, D., Follen, S. & Hall, B. 1998, *Learning our Way Out: Environmental Adult and Popular Education*, (forthcoming).
- Fien, J. (ed) 1993, *Environmental Education: A Pathway to Sustainability*, Deakin University Press, Geelong, Victoria.
- Gibson, G. & Bishop, M. 1998, 'Ecologically focussed study circles' in Clover, D., Hall, B. & Follen, S., *The Nature of Transformation: Environmental Adult and Popular Education*, Transformative Learning Centre/Ontario Institute for Studies in Education, Toronto.
- Hall, B. 1981, 'Participatory research, popular knowledge and power: a personal reflection', *Convergence*, vol. 14, no. 3, pp. 6–17.
- Harris, E. 1992, 'Dreaming reality: small media in community development as critical educational practice', Doctoral thesis, University of Toronto, Toronto.
- Hicks, D. & Holden, C. 1995, 'Exploring the future: a missing dimension in environmental education', *Environmental Education Research*, vol. 1, no. 2, pp. 185–193.
- Lipschutz, R. D. 1996, *Global Civil Society and Global Environmental Governance*, State University of New York Press, Albany, NY.
- Maguire, P. 1987, *Doing Participatory Research: A Feminist Approach*, The Centre for International Education/University of Massachusetts, Amherst, Massachusetts.
- Nozick, M. 1992, *No Place Like Home: Building Sustainable Communities*, Canadian Council on Social Development, Ottawa.
- Park, P., Brydon-Miller, M., Hall, B. & Jackson E. (eds) 1993, *Voices of Change: Participatory Research in the United States and Canada*, Ontario Institute for Studies in Education Press, Toronto.
- Profeit-LeBlanc, L. 1995, 'Transferring wisdom through storytelling' in Jickling, R. (ed), *A Colloquium on Environment, Ethics and Education*, Whitehorse, Yukon.
- Roberts, W. & Brandum, S. 1995, *Get a Life!, Get a Life* Publishing House, Toronto.
- Rowe, S. 1990, *Home Place*, New West Publishers, Edmonton.
- Russell, C. L. 1997, 'Approaches to environmental education: towards a transformative perspective', *Holistic Education Review*, vol. 10, no. 1, pp. 34–38.
- UNCED 1992, *Agenda 21*, UNESCO, Paris.
- Welton, M. (1986), *Vivisecting the Nightingale: Reflections on Adult Education as an Object of Study*, Ontario Institute for Studies in Education Press, Toronto.
- Welton, M. (1987), *Knowledge for the People*, Ontario Institute for Studies in Education Press, Toronto.

During the 1992 United Nations Conference on Environment and Development in Rio de Janeiro, Darlene Clover co-organised the four day International Journey for Environmental Education. Darlene has taught and facilitated workshops in environmental adult education around the world. She is the current international coordinator of the Learning for Environmental Action Program and Canadian coordinator of a Popular and Environmental Adult Education Program. As a senior academic researcher at the Ontario Institute for Studies in Education Darlene has researched and published in the areas of feminist environmental action and education, social movement learning, non-formal learning in the labour movement, and environmental adult education. She will complete a Doctor of Philosophy at the University of Toronto in May 1999.
