

RESEARCH

THE MAGAZINE OF THE CANADIAN INSTITUTE FOR ADVANCED RESEARCH
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CO₂ and climate
change**

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le Prix Banque
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Chaviva Hošek**



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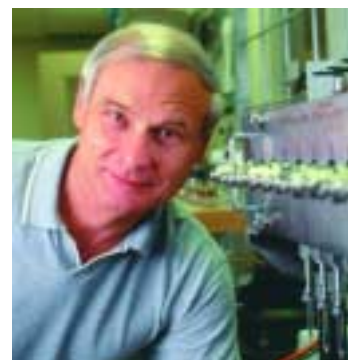
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Reach is a magazine for the researchers, volunteers, friends and supporters of the Canadian Institute for Advanced Research. Published in Spring and Fall annually, *Reach* magazine is designed to celebrate the achievements of CIAR's research programs. The Fall issue of *Reach* magazine will contain the Institute's Annual Report. We invite all comments or inquiries concerning the content of *Reach* and/or the work of CIAR.

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CIAR Proudly Launches *Reach* Magazine

Message from the President, Chaviva Hošek

Welcome to the first issue of *Reach*, the magazine of the Canadian Institute for Advanced Research (CIAR). The ambition of this magazine is to celebrate the achievements of CIAR's researchers, volunteers, partners, benefactors and staff. *Reach* is designed to be accessible to a broad readership, so that we can share the good news about the work of CIAR. In creating this magazine, we hope to build on the success of previous CIAR publications, including *CIAR Connections*, *Catalyst* and the CIAR Annual Report, maintaining their high standards and moving in some new directions.

Reach will be published twice a year: a Spring issue dedicated to research and other Institute news, and a Fall issue incorporating the CIAR Annual Report. The magazine is meant to complement and expand upon other new CIAR communications initiatives, including our recently launched e-Newsletter and our redesigned website (www.ciar.ca). We hope that these efforts will serve to open our doors

to the world, so that our community continues to grow, and an increasingly larger segment of the population takes pride in the fact that Canada is home to one of the world's premier research institutes.

As I embark upon my new role as CIAR President and CEO, I am more impressed each passing day with the quality of the research being produced by the Institute's program members and at the breadth of insight reflected in their work. Over the next few years, there will be many milestones to share in the pages of this magazine. New programs are currently



being investigated as possible future CIAR initiatives. The Institute's 20th anniversary will be celebrated in the year 2002.

The feature stories in this inaugural issue of *Reach* provide a strong indication of the importance of the research facilitated by CIAR. One of these stories examines the work of Jan Veizer, Director of the Institute's Earth System Evolution Program, whose recent article in *Nature* magazine has reexamined the role of CO₂ within the process of global warming. In another feature, Jody Heymann of CIAR's Population Health Program describes her new book, *The Widening Gap*, in which she shares her research findings on the challenges confronting the working family.

I hope that you enjoy these and other stories in this issue of our new magazine. We would very much appreciate any comments you wish to offer. Feedback, including address changes or circulation inquiries, may be forwarded directly to Frank Vetere at (416) 971-4450, or by e-mail at fvetere@ciar.ca

Message de la chef de la direction Chaviva Hošek L'ICRA lance fièrement la revue *Reach*

J'aimerais vous présenter le premier numéro de *Reach*, la revue de l'Institut canadien de recherches avancées (ICRA). Par cette revue, nous voulons célébrer les accomplissements de nos chercheurs, bénévoles, partenaires, bienfaiteurs et membres du personnel. Pour partager les bonnes nouvelles sur les travaux de l'ICRA, nous avons voulu rendre *Reach* accessible à un vaste lectorat. En créant cette revue, nous espérons miser sur la réussite des publications antérieures de l'ICRA, y compris *CIAR Connections*, *Catalyst* et le rapport annuel de l'ICRA et maintenir les mêmes normes élevées tout en adoptant de nouvelles orientations.

Reach sera publiée deux fois l'an : un numéro au printemps consacré à la recherche et à d'autres nouvelles de l'Institut, et un à l'automne qui inclura le rapport annuel de l'ICRA. La revue a pour objectif de compléter et d'élaborer les autres nouvelles initiatives de communication de l'ICRA, y compris

notre bulletin électronique lancé récemment et notre site web reconçu (www.ciar.ca). Nous espérons par ces efforts ouvrir nos portes au monde pour que notre communauté continue à grandir et qu'une portion encore plus grande de la population soit fière du fait qu'au Canada se trouve l'un des meilleurs instituts de recherche au monde.

Alors que j'assume mes nouvelles fonctions de chef de la direction, je suis sans cesse impressionnée par la qualité de la recherche menée par les membres des programmes de l'ICRA et par tout l'éventail de connaissances présentées dans leurs travaux. Au cours des prochaines années, il y aura de nombreux jalons à souligner dans la revue. On étudie actuellement de nouveaux programmes pour voir s'ils pourraient faire partie des initiatives futures de l'ICRA. De plus, on célébrera le vingtième anniver-

saire de l'ICRA en 2002.

Les reportages de ce numéro inaugural de *Reach* font clairement état de l'importance des travaux de recherche facilités par l'ICRA. Dans l'un de ces reportages, on examine les travaux du Dr Jan Veizer, directeur du Programme de l'évolution des systèmes terrestres de l'ICRA dont le dernier article dans la revue *Nature* a réévalué le rôle du CO₂ dans le réchauffement planétaire. Dans un autre reportage, Jody Heymann du Programme de la santé des populations parle de son dernier livre, *The Widening Gap*. Elle y partage ses résultats de recherche concernant les défis auxquels doit faire face la famille au travail.

J'espère que vous apprécierez les reportages présentés dans le premier numéro de notre nouvelle revue. Nous aimerions beaucoup que vous nous fassiez part de vos commentaires. Si vous voulez nous transmettre vos opinions ou votre changement d'adresse ou si vous avez des questions sur la diffusion de la revue, veuillez contacter directement Frank Vetere au (416) 971-4450, ou par courriel au fvetere@ciar.ca

Group of top individual donors will help CIAR build for the future

Kara Spence, Vice-President,
Advancement and Communications

When CIAR Chairman Thomas E. Kierans sat down with George Fierheller recently to ask for input on the Institute's fundraising initiatives, he could not have anticipated the solid base of support that would grow from the meeting.

Mr. Fierheller is among Canada's top philanthropists and volunteers. A founder and former President of Cantel, he has chaired numerous successful fundraising initiatives, including the United Way of Greater Toronto and the Trinity College Campaign. Currently, he is chairing the Sunnybrook Women's College Hospital Campaign. He was also recently named "Volunteer of the Year" by the Association of Fundraising Professionals.

Although he had never before been approached to discuss the work of the Institute, Mr. Fierheller possessed a strong understanding of CIAR's past contributions to Canadian research and the importance of fundamental research to the country's future



intellectual leadership. He also understands that, in addition to the outstanding support CIAR receives from corporations and foundations, the Institute requires a greater base of support from major individual donors in order to respond to future research challenges. That is why he suggested that CIAR create an elite group of at least 30 donors, each of whom would commit \$50,000 per year in support of the Institute. When he received an enthusiastic response to his suggestion, Mr. Fierheller did not hesitate to provide the inaugural \$50,000 contribution, thus becoming the first member

of the group.

"My work in the communications industry taught me that the most important discoveries happen when our top minds are given the opportunity to imagine new ideas and possibilities," Mr. Fierheller said. "I believe that CIAR's role in giving researchers this opportunity is an extremely important function, and I cannot think of another institution that exists to enable this vital work. I'm pleased to be part of the initiative to get individuals involved in the Group of 30."

The idea of the Group of 30 has been enthusiastically embraced by CIAR's leading donors. Our ambition is to add at least 10 new members each year for the next three years. Group members will be invited to participate in special sessions with CIAR's top researchers, where they will have the opportunity to interact and gain unique insights into new initiatives.

Anyone wishing to participate in the CIAR's new Group of 30 donors at the \$50,000 level, or to support the Institute at another level, is invited to contact me directly at 416-971-4439.

Kara Spence, vice-présidente, avancement et communications Un groupe de donateurs d'envergure va aider l'ICRA à bâtir pour l'avenir

Quand le président du conseil d'administration de l'ICRA, Thomas E. Kierans a demandé des conseils à George Fierheller sur les initiatives de levée de fond de l'Institut, il ne pouvait pas prévoir tout le soutien qui découlerait de cette réunion.

M. Fierheller fait partie des plus grands philanthropes et bénévoles du Canada. Fondateur et ancien président de Cantel, il a présidé nombre d'initiatives de levée de fonds couronnées de succès, notamment la campagne de Centraide pour la région du Grand Toronto et celle de Trinity College. À l'heure actuelle, il préside la campagne de l'hôpital Sunnybrook Women's College. De plus, il a récemment été nommé «Bénévole de l'année» par la «Association of Fundraising Professionals.»

Bien qu'on ne l'ait jamais approché pour parler des travaux menés par l'Institut, M. Fierheller comprenait bien les contributions passées de l'ICRA à la recherche canadienne et l'importance de la recherche fondamentale pour permettre au Canada de maintenir sa position de chef de file en matière de capital intellectuel à l'avenir. Il comprend aussi qu'en plus du soutien exceptionnel qu'offrent les sociétés et les fondations, l'Institut a besoin d'un plus grand appui de la part de grands donateurs individuels pour faire face aux défis futurs que présentera la recherche. Voilà pourquoi il a suggéré la création d'un groupe élite composé d'au moins 30 donateurs qui s'engageraient à faire un don de 50 000 \$ par année pour soutenir l'Institut. Lorsque M. Fierheller a vu l'enthousiasme suscité par sa suggestion, il n'a pas hésité à fournir la première contribution de 50 000 \$, devenant par le fait le premier membre du groupe élite.

«Par mon travail dans l'industrie des communications, j'ai appris que les découvertes les plus importantes surviennent quand on permet aux

plus grands cerveaux d'imaginer de nouvelles idées et possibilités», a dit M. Fierheller. «Je crois que le rôle de l'ICRA d'offrir cette possibilité aux chercheurs est de la plus grande importance. Et je ne connais aucun autre établissement qui puisse faciliter ces travaux essentiels. Je suis heureux de participer à cette initiative visant l'identification de personnes qui feront partie du groupe des 30.»

Les plus grands donateurs de l'ICRA ont adopté avec enthousiasme l'idée du Groupe des 30. Notre objectif est d'y ajouter au moins 10 nouveaux membres par année pour les trois prochaines années. On invitera les membres du groupe à participer à des séances spéciales avec les plus grands chercheurs de l'ICRA où ils auront la possibilité d'échanger et d'en apprendre davantage sur de nouvelles initiatives.

Si vous désirez participer au nouveau Groupe des 30 donateurs de l'ICRA en faisant un don de 50 000 \$ ou si vous désirez soutenir l'Institut d'une autre façon, veuillez me contacter au 416-971-4439.

Tell me where it hurts:

CIAR researchers study healthy childhoods, healthy lives

Kathryn Hough, Vice-President,
Program Development

Among the most vital questions being investigated by members of CIAR's Population Health and Human Development Programs is: Why are some people healthier than others? Our Population Health Program created a framework for understanding the determinants of health, which now plays a central role in scientific, clinical and policy discussions of health throughout the Western world.

The program recognized the importance of the "socioeconomic gradient in health status," where one can see a stepwise increase in health status among successively higher socioeconomic groups in all the developed countries of the world. The fact that this



gradient affects most disease processes, despite their differing pathologies, led members of the group to recognize that general biological pathways to resilience and vulnerability may be important.

This perception then led to the prospect that early human development was a significant life-long determinant of health. This in turn led CIAR to create its Human Development Program. So far, the focus of this program has been on the role of early life course development. In 1999, program members published a book entitled, *Developmental Health and the Wealth of Nations*, which examined how the milestones of child development interact with the environment in which children grow up, live, and learn, to produce differences in competence and coping skills.

Out of this work another theme has emerged, which, to date, remains largely unex-

plored. How do the different environments in which people grow up create differences in human biology, and how to these biological differences affect the entire life course? In other words, do these different environments "embed" themselves into our biological make-up, altering our biological responses, and thus affecting us at every subsequent stage of our development?

On the biological side, the primate and other mammalian studies provide course models for the interplay between inherited biological traits, differences in environments, and subsequent life course trajectories. The question of how biological factors affect human development will need different approaches to gathering evidence and it will be a crucial research area over the next few years.

Members from the Population Health and Human Development Programs have held three interdisciplinary workshops so far on this question of biological embedding.

For more information, please visit our website at www.ciar.ca.

Dites-moi où ça fait mal : les chercheurs de l'ICRA étudient les liens entre enfance saines et vies saines

Kathryn Hough, vice-présidente,
élaboration de programmes

Voici l'une des questions essentielles à l'étude par des membres des Programmes de la santé des populations et du développement humain de l'ICRA : pourquoi est-ce que certaines personnes sont plus en santé que d'autres? Dans notre Programme sur la santé des populations nous avons créé un cadre pour mieux comprendre les déterminants de la santé qui se situent maintenant au cœur de discussions scientifiques, cliniques et politiques portant sur la santé dans tout l'Occident.

Le programme a reconnu l'importance du «niveau socio-économique dans l'état de santé», car on peut observer une augmentation progressive de l'état de santé en montant l'échelle des groupes socio-économiques dans tous les pays industrialisés du monde. Comme ce niveau socio-économique

touche la plupart des processus morbides, en dépit de pathologies différentes, des membres du groupe ont reconnu l'importance éventuelle des voies biologiques générales menant à la résilience et à la vulnérabilité.

Cette perception a mené à la possibilité que le développement de l'enfant soit un déterminant de la santé tout au long de la vie. Ceci a entraîné en retour la création du Programme de développement humain de l'ICRA. Jusqu'à présent, le programme a mis l'accent sur le rôle du développement dans la petite enfance. En 1999, les membres du programme ont publié un livre intitulé *Developmental Health and the Wealth of Nations*, qui examine les liens entre les jalons du développement de l'enfant et l'environnement où l'enfant grandit, vit et apprend pour créer des différences au niveau des compétences et des facultés d'adaptation.

Un autre thème largement inexploré jusqu'à ce jour découle de ces travaux : comment est-ce que les environnements différents dans lesquels les gens évoluent créent des différences au niveau de la

biologie humaine et comment est-ce que ces différences biologiques touchent le déroulement de la vie? En d'autres mots, est-ce que ces différents environnements s'intègrent dans notre patrimoine biologique pour modifier nos réponses biologiques et conséquemment avoir un effet sur toutes les étapes subséquentes de notre développement?

Dans le domaine de la biologie, les études sur les primates et autres mammifères fournissent des modèles de déroulement pour l'interaction entre les traits biologiques transmis, les différences environnementales et les trajectoires de vie subséquentes. Différentes méthodes de rassemblement des preuves seront nécessaires pour déterminer si les facteurs biologiques ont un effet sur le développement humain; il s'agira d'un domaine de recherche essentiel au cours des prochaines années.

Jusqu'à présent, les membres des Programmes de la santé des populations et du développement humain ont tenu trois ateliers pluridisciplinaires sur l'intégration biologique.

Pour de plus amples renseignements, veuillez visiter notre site web au www.ciar.ca.



HOT AIR

A CIAR researcher learns a lesson about media relations

By Harold Heft

When CIAR's Earth System Evolution Program Director and Noranda Fellow Jan Veizer published a recent scientific article in *Nature* magazine, he could not have anticipated the media reactions his work would receive.

Dr. Veizer's article, which appeared in the December 7, 2000 edition of *Nature*, was titled "Evidence for decoupling of atmospheric CO₂ and global climate during the Phanerozoic eon" and described the development of new databases for understanding the temperature of seawater and climate change over the last 550 million years. Based upon these new databases, Dr. Veizer was able to postulate in his article that CO₂ was not the main driver of climate cycles on geological time scales.

On December 7, 2000, the front-page headline of the *Toronto Star* announced: "Climate change theory stuns scientists." The next day, a *Calgary Herald* headline further sensationalized Dr. Veizer's research by stating: "Scientist deflates greenhouse theory." Rather than celebrating his

research achievement, Dr. Veizer found himself struggling to explain the true meaning behind his years of research. What he ultimately found is that front-page headlines do not always capture the full scope of scientific findings.

"What most people don't understand," says Dr. Veizer, "is that there is a natural greenhouse effect of 33°C, without which the Earth would be a frozen wasteland. About two-thirds or more of this temperature enhancement is due to water vapour, not CO₂. And how much of the superimposed 0.6°C temperature rise over the last century can be attributed solely to the 70 ppm (or 30 %) CO₂ rise believed to be of anthropogenic origin is an open question. The situation is very complex. We are not saying that CO₂ is not a greenhouse gas. It is. But so is water vapour. How much each contributes to the greenhouse, let alone to climate change is something that we have yet to figure out."

"One of the media's misconceptions was in thinking that a climate driver and a greenhouse gas are the same thing, which they are not," contin-

ues Dr. Veizer, "nor are the climate agenda and the environmental agenda the same thing. The climate system is an extremely complex system in which water vapour and carbon dioxide act as temperature amplifiers, without necessarily driving it."

Ironically, says Dr. Veizer, among the people who have had the strongest reaction to his study are those with an environmental agenda, which he strongly supports. "The environmental agenda, in the sense of pollution abatement, has great merits on its own regardless of whether or not CO₂ is a climate driver," he argues. "Even if CO₂ has a minimal effect on climate, the fact remains that emission of collateral phases (sulfur, particulates) still results in pollution, much of it due to our wasteful treatment of energy."

The problem, according to Dr. Veizer, is that the political agenda of climate change is predicated on the assumption that "CO₂ equals warming equals climate change equals disaster." He does not dispute that the first step in this equation is warming, but he feels that there is a need to understand the relative role of greenhouse gases, particularly water vapour, in the process of global warming. "The deafening silence about the role of water in the climate debate is regrettable," Dr. Veizer suggests. "If both water vapour and CO₂ are an internal part of the system, and only the anthropogenic part of CO₂ is considered external, the impact of the latter will be modified by water vapour. There is merit to the precautionary action of keeping the emissions as low as possible."

Dr. Veizer is also careful to note that theories of climate change, separate from temperature change, are questionable. He points out that a direct causal relationship from CO₂ to climate change is not supported in his study on the million-years time scale, nor on the millennial-year time scale, as reflected in the work of French scholars on ice cores. And he also points out that the notion of climate change on century or decadal time scales has not yet been properly studied.

Finally, Dr. Veizer suggests that, until more data is collected, it is irresponsible to speculate that we are headed for a disaster. "In the end," he says, "this approach may be counterproductive. It is like the boy that cried wolf. If it happens too many times without proof, people will stop listening. I would rather have all the facts before rushing to any conclusions."

A friend indeed: Dr. Gerald Hatch celebrates Jan Veizer's research

IN 1992, Dr. Gerald Hatch was invited to participate in a governmental committee examining sustainable development for the energy and metals industries. As an engineer who had spent much of his career developing processes for cleaning up the environment, Dr. Hatch was disappointed by the lack of understanding of basic chemistry expressed by other participants on the committee.

It was around the same time that Dr. Hatch was introduced to Jan Veizer by CIAR Founding-President Fraser Mustard. Dr. Veizer, who already had an international reputation for his work in studying the geochemical aspects of Earth, had been named as Director of a new CIAR program in Earth System Evolution. When Dr. Hatch began attending Earth System Evolution Program meetings, which involved members from such disciplines as geochemistry, geophysics, mathematics and biology in carrying out research on the interrelationships between the geosphere, hydrosphere and atmosphere, he "saw how complex the Earth is, and how the forces of nature are truly profound." While attending the meetings, he realized that the group represented "an excellent example of the catalytic nature of CIAR programs."

Since his involvement began in 1992, Dr. Hatch has emerged as one of CIAR's premier volunteers and supporters. That is why, when Jan Veizer recently published his seminal article on "Evidence for decoupling of atmospheric CO₂ and global climate during the Phanerozoic era" in *Nature* magazine, Dr. Hatch was one of the first people to voice his support for the research findings expressed in the paper.

"There are people who are trying to build mathematical models to blame the increase in temperature solely on fossil fuels, but Jan Veizer's work shows us that the forces of nature are more complicated than that," says Dr. Hatch. "For example, both CO₂ and water are needed for plant life, since, in the process of photosynthesis, it takes almost one-thousand units of moisture to fix one



unit of CO₂. It is therefore more likely that it is the moisture that drives the reaction, not CO₂. We also know that moisture is mostly responsible for the natural global warming of 33°C, otherwise this planet would be an iceball at -16°C. So obviously this has to be taken into consideration in the mathematical models dealing with the human impact. What this tells us is that more research is needed to generate better data for the models."

"What we need is a broader exchange on what is known about global warming and what isn't," Dr. Hatch continues. "Only five percent of the CO₂ that is emitted annually into the atmosphere, and again reabsorbed by plant photosynthesis, is from fossil fuels. We have to examine variations in moisture and in sunlight to get a better picture of why temperatures are changing."

Dr. Hatch was not surprised by the strong media reaction to Jan Veizer's article, but he was encouraged to see that, once the dust settled, the *Globe and Mail* published a more level headed editorial on the value of informed climate research. "I believe that Jan Veizer has done a great job in getting the debate started," argues Dr. Hatch, "because he has generated the first experimental databases, taken from all over the world, that help us to understand the operation of the climate system on longer time scales. He is a driver for truth."

CHAUD, CHAUD :

Un chercheur de l'ICRA apprend une leçon sur les relations avec les médias

Lorsque Jan Veizer, directeur du Programme de l'évolution des systèmes terrestres de l'ICRA et boursier Noranda a publié un article dans la revue *Nature*, il n'imaginait pas que son travail allait susciter de telles réactions dans les médias.

L'article du Dr Veizer, paru dans le numéro du 7 décembre 2000 de *Nature* intitulé «Evidence for Decoupling of Atmospheric CO₂ and Global Climate during the Phanerozoic Eon», décrivait l'élaboration de nouvelles bases de données qui permettent de comprendre les changements de la température de l'eau de mer et du climat au cours des dernières 550 millions d'années. À l'aide de ces nouvelles bases de données, le Dr Veizer a pu postuler dans son article que le CO₂ n'était pas le principal agent causal des cycles climatiques sur les échelles de temps géologiques.

Le 7 décembre 2000, le *Toronto Star* titrait à la une que les scientifiques étaient stupéfaits par une théorie sur les changements climatiques. Le lendemain, le *Calgary Herald* dramatisait davantage la recherche du Dr Veizer en disant qu'un scientifique avait dégonflé la théorie de l'effet de serre. Plutôt que de célébrer la réussite de sa recherche, le Dr Veizer s'est vu obligé d'essayer d'expliquer la véritable signification de toutes ses années de travail. Il a fini par comprendre que les manchettes des journaux ne rendent pas toujours fidèlement les résultats scientifiques.

«Ce que la plupart des gens ne comprennent pas,» explique le Dr Veizer, «c'est qu'il y a un effet de serre naturel de 33°C, sans lequel la Terre serait sous la glace et inutilisable. La vapeur d'eau et non le CO₂ est responsable d'environ les deux tiers ou plus de cette hausse de température. Et nous ne savons pas quel pourcentage de la hausse de température superposée de 0,6°C survenue au cours des cent dernières années découle uniquement de la hausse de 70 ppm (ou 30 %) de CO₂ que l'on croit être d'origine humaine. La situation est très complexe. Nous n'affirmons pas que le

CO₂ n'est pas un gaz à effet de serre. C'en est un. Mais la vapeur d'eau en est aussi. Ce que nous ignorons, c'est l'importance de la contribution de chacun à l'effet de serre, sans mentionner celle sur les changements climatiques.»

«Les médias croient à tort qu'un agent climatique et qu'un gaz à effet de serre sont la même chose, ce qui est faux», poursuit le Dr Veizer, «tout comme un programme climatique et un programme environnemental ne sont pas équivalents. Le système climatique est un système très complexe dans lequel la vapeur d'eau et le gaz carbonique amplifient la température, sans nécessairement être des facteurs déclenchants.»

Le Dr Veizer constate avec ironie que cer-

Ce que la plupart des gens ne comprennent pas, explique le Dr Veizer, c'est qu'il y a un effet de serre naturel de 33°C, sans lequel la Terre serait sous la glace et inutilisable.

taines des personnes qui ont réagi le plus fortement à son étude soutiennent un programme environnemental dont il est lui-même un chaud partisan. «Le programme environnemental qui vise la réduction de la pollution a beaucoup de mérite en soi, que le CO₂ soit un facteur climatique ou non», affirme-t-il. «Même si le CO₂ a un effet minime sur le climat, il n'en demeure pas moins que l'émission de phases collatérales (soufre, particules) entraîne quand même de la

pollution, causée en grande partie par notre utilisation inefficace de l'énergie.»

Le problème, selon le Dr Veizer, est que le programme politique relatif aux changements climatiques est fondé sur l'équation «CO₂ égale réchauffement planétaire égale changement climatique égale catastrophe». Il ne conteste pas que le réchauffement constitue la première étape de cette équation, mais il estime qu'il faut comprendre le rôle relatif des gaz à effet de serre, surtout de la vapeur d'eau, dans le processus de réchauffement planétaire. «Le silence assourdissant au sujet du rôle de l'eau dans le débat sur le climat est regrettable», avance le Dr Veizer. «Si la vapeur d'eau et le CO₂ constituent des éléments internes du système, et que seule la portion anthropogène du CO₂ est considérée comme externe, l'effet de ce dernier sera modifié par la vapeur d'eau. La mesure préventive de réduction maximale des émissions a beaucoup de mérite.»

Le Dr Veizer prend bien soin de noter que les théories sur le changement climatique, indépendamment du changement de température, sont douteuses. Il souligne que son étude ne soutient pas une relation de cause à effet directe entre le CO₂ et le changement climatique sur une échelle d'un million d'années, ni sur une échelle de mille ans, comme le reflètent les travaux de chercheurs français sur les noyaux de glace. Et il précise que la notion de changement climatique sur une décennie ou un siècle n'a pas encore fait l'objet d'études adéquates.

Finalement, le Dr Veizer suggère qu'avant d'avoir recueilli davantage de données, il est irresponsable de spéculer que nous courons à la catastrophe. «Au bout du compte, cette approche pourrait être improductive», dit-il. «C'est un peu comme le garçon qui criait au loup. Si ça se produit trop souvent sans preuves, les gens n'écouteront plus. Je préférerais connaître tous les faits au lieu de tirer des conclusions trop rapidement.»

CIAR receives 2000 Royal Bank Award for Canadian Achievement

ON December 14, 2000, CIAR was presented with the 2000 Royal Bank Award for Canadian Achievement in a special ceremony held at the Royal York Hotel in downtown Toronto.

In presenting the award, Royal Bank Chairman and CEO John Cleghorn stated that CIAR was receiving this distinction "in recognition of the Institute's outstanding contribution to Canadian science and research." Royal Bank has contributed over \$2.5 million in support of CIAR over the past 13 years, and Mr. Cleghorn



announced at the award ceremony an additional pledge of \$750,000 in support of the Institute over the next three years.

In its first 33 years, the Royal Bank Award honoured the achievements of individuals, including CIAR Founding-President Fraser Mustard, who won the award in 1993. To mark

the new millennium, Royal Bank re-launched the award and the kind of achievement it recognizes. Beginning in 2000, the Royal Bank Award will honour innovative organizations and forward-thinking projects that are responding to important issues facing Canadian society.

The award was accepted by CIAR Chairman Thomas E. Kierans and President Chaviva Hošek. Mr. Kierans recognized the Royal Bank for being "at the forefront of the Institute's group of distinguished partners," providing seed funding for the Institute as well as support for the work of such eminent scholars as Dr. Paul Romer and Dr. Dan Keating. Dr. Hošek added that the Institute's "past successes and our future aspirations have been affirmed in Royal Bank of Canada's decision to give its highest honour, the Royal Bank Award, to CIAR."

The event was chaired by CIAR Board member and former Royal Bank Chairman Allan Taylor, who expressed the hope that more Canadians learn about the Institute's research contributions to Canada. These sentiments were echoed when the event was covered on December 15, 2000, in the *Globe and Mail*.

L'ICRA reçoit le Prix Banque Royale 2000 pour son succès exceptionnel au Canada

LE 14 décembre dernier, l'ICRA a reçu le Prix Banque Royale 2000 qui souligne un succès exceptionnel au Canada, lors d'une cérémonie spéciale au Royal York Hotel au centre-ville de Toronto.

John Cleghorn, président du conseil et chef de la direction de la Banque Royale a déclaré qu'il présentait ce prix à l'ICRA «en reconnaissance de sa contribution exceptionnelle à la science et à la recherche au Canada». Au cours des 13 dernières années, la Banque Royale a fait don de plus de 2,5 millions de dollars à l'Institut, et M. Cleghorn a déclaré que la Banque Royale maintiendrait son soutien et qu'elle s'engageait à lui remettre 750 000 \$ au cours des trois prochaines années.

Pendant les 33 premières années où il a été décerné, le Prix Banque Royale consacrait les réali-

sations individuelles; le président-fondateur de l'ICRA, Fraser Mustard, en a d'ailleurs été le récipiendaire en 1993. Pour marquer le nouveau millénaire, la Banque Royale a relancé le prix et le genre de réalisations auquel il rend hommage. Depuis l'an 2000, le Prix Banque Royale honore les organismes innovateurs et les projets d'avenir qui répondent aux importants enjeux de la société canadienne.

Le prix a été accepté par le président du Conseil d'administration de l'ICRA, Thomas E. Kierans et par Chaviva Hošek, chef de la direction de l'Institut. M. Kierans a rendu hommage à la Banque Royale pour «son rôle de premier plan au sein des partenaires distingués de l'Institut», car l'institution bancaire a fourni des fonds de lancement à l'Institut et appuie le travail de chercheurs éminents comme



les Drs Paul Romer et Dan Keating. La Dre Hošek a ajouté que les «succès passés et les projets d'avenir de l'ICRA ont été reconnus par la décision de la Banque Royale du Canada de lui décerner son plus prestigieux prix, le Prix Banque Royale».

L'événement a été présidé par Allan Taylor, membre du conseil de l'ICRA et ancien président de la Banque Royale. M. Taylor souhaite que plus de Canadiens soient au courant des contributions de l'Institut à la recherche canadienne. Le *Globe and Mail* a fait l'écho de ces sentiments dans un article sur l'événement publié le 15 décembre dernier.

Nanoelectronics Program member receives international prize

Sajeev John, a member of the CIAR Nanoelectronics Program, has been awarded the 2001 King Faisal Prize for Science. As an award recipient, Professor John will receive US \$200,000 and a 200-gram, 22-carat gold medallion.

The award recognizes Professor John's pioneering work in the processing and transmission of information by optical means, which could ultimately revolutionize the information technology industry. A member of the Department of Physics at the University of Toronto, Professor John has worked closely with other members of the CIAR Nanoelectronics Program, including Professor Geoffrey Ozin, in modeling the world's first three-dimensional photonic crystal fashioned from silicon.

King Faisal International Prizes are awarded annually in the categories of Service to Islam, Islamic Studies, Arabic Literature, Medicine, and Science. Prizes are awarded to "scientists and

scholars who make significant advances in areas that benefit humanity." The King Faisal Prize is among the richest and most prestigious international awards for scholarship.

In his acceptance speech, Professor John described his vision of the future of communications technology: "The time will come when communications even within a single computer chip may take place with tiny beams of laser light rather than electricity and optical computers will become a reality. Such computers may be faster and more capable than the ones we have today."

Professor John recently commented on the role of CIAR in helping him advance his research. "Advances in the field of Photonic Band Gap materials require bringing together the distinctive skills of an interdisciplinary and international group of scientists," he

said. "CIAR encourages this type of networking and it could play a vital role in keeping Canada at the forefront of this field which is so central to our information technology sector."

CIAR congratulates Professor John on his tremendous success. More information on the award and its recipients may be found at <http://www.kingfaisal.com/frameprize.htm>.

(LEFT TO RIGHT) SAJEEV JOHN RECEIVES PRIZE FROM CROWN PRINCE ABDULLAH BIN ABDUL AZIZ, PRINCE KHALID BIN FAISAL AND PRINCE CHARLES



Max Bell Foundation provides key funding to support CIAR research in Early Childhood Development

The CIAR program members involved in Early Childhood Development research have received a tremendous commitment in support of their work, courtesy of the Max Bell Foundation. The Calgary-based foundation, dedicated to supporting endeavours, "which encourage the development of human potential in pursuit of social, academic and economic goals," has pledged \$500,000 over the next five years toward initiatives in CIAR's Population Health and Human Development Programs. This commitment marks the Max Bell Foundation's second consecutive five-year, \$500,000 pledge in support of CIAR.

One of the researchers who will benefit from the Max Bell Foundation's donation is Dr.



Ronald Barr of the Human Development Program, who is embarking on a research program to look at "hidden regulators" in Maternal-Infant Caregiving. In addition, Dr. Clyde Hertzman of the Population Health Program will look at the effects of environment upon the development of children. "Our researchers' contributions to the subject of Early Childhood Development are among the Institute's most significant intellectual accomplishments to date," says CIAR President Chaviva Hošek. "Developmental Health and the Wealth of Nations, which was edited by Dan Keating and Clyde Hertzman, as well as the

Early Years Study that was co-chaired by Margaret Norrie McCain and Fraser Mustard, demonstrate the importance and scope of this

research achievement. We are extremely grateful to the Max Bell Foundation for providing the resources that will enable this work to be taken to the next level."

The Max Bell Foundation was founded in 1972 by the late George Maxwell Bell, an entrepreneur who created successful newspaper, oil and natural gas businesses. The foundation named in his honour is committed to following his spirit of innovation in its granting practices.

According to Dr. David Elton, President of the Max Bell Foundation, "Children – future citizens – are without doubt Canada's most pressing concern. The CIAR research into Early Childhood Development is critical to our ability to assess and improve on the ways we nurture our children. It is work that is critical not only to our country's future, but to the well-being of human kind."

CIAR thanks the Max Bell Foundation for its outstanding commitment.

TURNING THE PAGE

Chaviva Hošek
ushers in new
era at CIAR

IN

January 2001, Dr. Chaviva Hošek left her position as Senior Policy Advisor to Prime Minister Jean Chrétien to join CIAR as its new President and Chief Executive Officer. As a former Professor of English at the University of Toronto, President of the National

Action Committee on the Status of Women, and Minister of Housing for the Province of Ontario, Dr. Hošek brought an impressive and varied background to her new challenge. The arrival of Dr. Hošek in her new position was celebrated by CIAR's leadership, including Thomas E. Kierans, Chairman of the Board of Directors, who said that "the selection of Chaviva Hošek was unanimous and enthusiastically embraced by the entire search committee. In the tradition of former Presidents Fraser Mustard and Stefan Dupré, Dr. Hošek brings with her the vision to recognize vital intellectual currents and the initiative to drive CIAR's programs to the vanguard of the world's research community."



This is a unique institution, and one that has enabled our country to build a knowledge base well beyond what we could expect from our size and wealth. The history of CIAR is remarkable, and I am very excited about where the Institute can go from here

REACH: After ten successful years working in the Prime Minister's Office, why did you feel that it was time to move on?

Chaviva Hošek: My ten years working with Mr. Chrétien, first when he was Leader of the Opposition and then after he was elected Prime Minister, were among the most rewarding years of my life. But after ten years, I did feel that it was time for something new. I consider myself very lucky to have reached that point in my career at the moment when CIAR was looking for a new President, and I am pleased to have been chosen for the job.

REACH: Why were you drawn to CIAR?

Chaviva Hošek: Throughout my years in provincial and federal politics, I was always impressed by the research being facilitated by CIAR. In particular, I reacted positively to the concept of CIAR – the way in which it consistently succeeded in building a sense of community among all of the finest researchers in extremely important areas of inquiry, regardless of where they were physically located across Canada or around the world. This is a unique institution, and one that has enabled our country to build a knowledge base well beyond what we could expect from our size and wealth. The history of CIAR is remarkable, and I am very excited about where the Institute can go from here.

REACH: Such as?

Chaviva Hošek: There are many exciting opportunities on the horizon at CIAR. Right now, there are task forces investigating some new program ideas that could potentially enable the Institute to build on many of its previous accomplishments and move into some exciting new directions. One of these programs would look at the question of whether it is possible to identify those elements of social organization that could lead to societies of improved health, more favorable economic growth and a greater sense of well-being. This program would have the opportunity to build on some of the remarkable work that has been done by members of our Population Health

and Human Development Programs. Another new program idea that is being investigated, Quantum Information Processing, could explore how our knowledge of the fundamental laws of physics can be used to enhance the ways in which information is gathered, processed and transmitted.

REACH: In what other ways could CIAR build on its past accomplishments in the coming years?

Chaviva Hošek: When CIAR was the recipient of the Royal Bank Award in December 2000, the newspaper headline the next day read "Little known think tank gets award." It's a pity that the Institute isn't better known, because I think that the more Canadians know about CIAR, the more they will feel pride in the fact that their country is home to such an exceptional, leading edge research institution. We need to spread the word about the Institute.

REACH: How do you think CIAR can raise its profile?

Chaviva Hošek: CIAR is one of Canada's great stories. The Institute is helping to maintain Canada's place at the forefront of the international research community while adding value to our intellectual capital. People are becoming more and more interested in research – particularly scientific research – and they are taking notice of CIAR's role in pushing ideas forward. And, there is an enormous appetite for knowledge in this country. The Institute itself has recently been featured in *Canadian Business*, *National Post*, *Report-on-Business TV*, *Nature* magazine, *The Canadian Jewish News*. This growing level of engagement makes me very optimistic.

In 2002, we will be celebrating our 20th anniversary, which will give us the opportunity to celebrate with the rest of Canada the Institute's past accomplishments, and demonstrate the work of our country's most promising young minds. This country has an outstanding intellectual future. Everyone should have the opportunity to be part of it. That is why it is important for us to tell our story to as many people as possible.

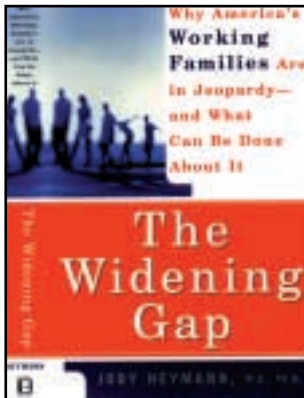
Family Ties: CIAR researcher's book studies the effect of the working family on child care and quality of life

Jody Heymann, a member of CIAR's Population Health Program, knows that while statistics and data may provide clues, it is personal, one-on-one contact that provides answers. That is why when Dr. Heymann and her colleagues at the Harvard University School of Public Health were conducting research for her recent book, *The Widening Gap: Why America's Working Families are in Jeopardy and What Can Be Done About It*, they understood the importance of complementing their statistical findings with personal narratives.

The Widening Gap begins with an understanding that the majority of children in the United States today are being raised by two working parents, and that these parents are often responsible for the care and well-being of elderly or sick family members as well. Dr. Heymann's goal in the book is to study the effect that these responsibilities have on both the quality of care that these parents are able to give as well as on their working conditions. To accomplish this, Dr. Heymann studied a sampling of 8,000 families, surveying 1,000 people over the course of eight straight days about work disruptions, and conducting in-depth interviews with families.

"While the national data gave us a good overview of the issues," says Heymann, "it was the in-depth interviews that provided us with insights and understanding that the data could not provide.

"The stories are very compelling," Dr. Heymann continues. "We spoke with one woman who was absent from her job for four weeks over the course of a year and was fired as a result. She had no choice but to miss that time to look after sick children despite the fact that she had no paid leave. Another woman we interviewed couldn't afford to lose her job, so she sent her child to daycare although she was worried her asthma was beginning to act up.



When the child's respiratory distress increased, the daycare provider did not realize what was happening. As soon as the mother picked her child up, she had to go straight to the emergency room. Without the early intervention she needed, the child ended up in the hospital for a week."

She found that the stress faced by working families is markedly affecting both men and women, people from 25-75 years old, as well as people with and without children. The pressure associated with the working family has taken a toll on businesses that

must deal with absentee employees.

In attempting to understand the problems of the working family, Dr. Heymann has found that her involvement in the CIAR Population Health Program has given her a great deal of perspective. "The US has much to learn from Canada and Europe, both of which are well ahead in terms of paid parental leave and child care," she argues. "This has a tremendous impact on how children fare, as well as on how men and women in the workplace fare.

"The problems confronting the working family are global," Dr. Heymann continues, "and therefore the solutions are going to be global as well. CIAR has had an important impact on my work because it brings people together internationally and gives us the opportunity to understand problems from an international perspective. CIAR's multi-disciplinary approach has also provided us with the opportunity to look at health outcomes, educational outcomes and policy outcomes together as related issues."

In *The Widening Gap*, Dr. Heymann argues that problems confronting the working family are going to become increasingly relevant as corporations become more international and have to examine the issue of employee benefits from a cross-border perspective. In order to continue studying the international implications of her findings, Dr. Heymann intends to expand the focus of her work, applying her findings to other countries, including Mexico, Botswana and Vietnam. Her hope is to broaden her understanding of the working family in order to see how the model applies in different contexts, including situations like the crises that follow natural disasters, disease epidemics, and rapidly changing economies.

Throughout the next phase of her research, Dr. Heymann's work will continue to benefit from her CIAR interactions. "There are few other places in the world where international comparisons are so well intellectually supported," says Heymann, "CIAR has an invaluable impact on the quality of research we conduct."

JODY HEYMANN





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