



European Robins, Canaries and Environmental Refugees

Radiofrequency/microwave radiation in our environment

By Marg Friesen, M.Sc., director of the Environmental Health Association of Manitoba



PHOTO: TXEMA AGUILAR SANCHEZ/FLICKR

WHY WOULD THE HOUSE OF COMMONS Standing Committee on Health be interested in hearing about European robins? Because a study published in *Nature* last year showed that radiofrequency radiation at every day levels can have biological effects at levels well below current safety standards.

To quote one of the witnesses, Dr. Frank Prato, Imaging Program Leader at the Lawson Health Research Institute in Ontario at recent hearings, "... these are clear non-thermal effects of radiofrequency within the range of Safety Code 6 [Health Canada's guidelines for 'safe' human exposure]." Prato goes on to say that "they were obviously detrimental to the birds in the urban population because [radiofrequency radiation] interfered with their ability to sense the earth's

magnetic field for proper orientation and flying."

The Members of Parliament who served on the committee started getting a grasp of the enormity of the problem after hearing testimony from other witnesses of adverse effects on people at well below safety levels (e.g. from cell towers and WiFi). Dr. Riina Bray, Medical Director of the Environmental Health Clinic, Women's College Hospital in Toronto, gave some sobering testimony of her experiences with people who report being made ill by wireless devices such as their cell phones. Since the time these diagnoses were initially made 10 years ago, the numbers have increased dramatically," Bray said. "Individuals who are sensitive to electromagnetic fields or those with electromagnetic hypersensitivity, are canaries in a coal mine and lucky enough to

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have discovered what it is that is making them feel unwell." Bray described symptoms which include headaches, concentration problems, irritability, heart palpitations and nausea.

After hearing testimony from representatives from Health Canada, the wireless industry and others, the committee reached a consensus on 12 recommendations which were tabled in the House of Commons in June. Recommendations include better data collection, and the development of an awareness program on the safe use of technologies to reduce risks relating to radiofrequency/microwave exposure, particularly for children. One recommendation is that measures taken in countries such as France and Israel be examined for use in Canada. For example, France has legislated no WiFi in daycares for children under three years of age.

Most heartening for members of the Environmental Health Association of Manitoba—whose brief was mentioned several times in the final report—was that four of the recommendations were about electromagnetic sensitivity. Implementation of the recommendations, dependent on the response of Health Canada and the next federal government, cannot come soon enough for those affected. Many in Canada, including some Manitobans, live as environmental refugees because they must continually find safer places to escape radiation from ever proliferating wireless devices.

Is it not time for everyone to pay more attention to European robins and the canaries among us? 🌿



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Executive Director's Message

By Curt Belton

OVER THE PAST FEW MONTHS the Manitoba Eco-Network has continued with its mandate to educate the public on environmental issues and connect people around these issues as well. As member groups will be aware, we were invited to speak to the National Energy Board as part of their outreach program to get feedback on the work they are doing with respect to pipeline safety. In addition to putting out a survey, we collaborated with five member groups to meet with Peter Watson, chair of the NEB, and four of his staff.

A clear message that they heard was that the NEB needs to consider climate change and upstream/downstream effects of current and proposed pipeline projects. I have to applaud the work of some of our member groups in drawing public attention to the proposed Energy East pipeline project and also for the work that they have done to inform our decision makers of the dangers of such projects to the biosphere and the potential peril to our water supplies. This grassroots level work is key in pushing forward environmental sustainability.

The Eco-Network and its programs have continued with public education through the Organic Lawn Care Education Program providing workshops and tabling at events. Our Water Caucus program is working on a rain garden in conjunction with Save Our Seine that will demonstrate how water from a large retail parking lot can be retained and filtered before it rushes into the Seine River. Hopefully this will lead to more progressive stormwater management projects in the future.

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The Climate Change Connection program is working with Manitoba Education to support teachers in climate change curriculum development and providing climate change “Boot Camps” for educators. Our Youth Program will be collaborating with the Green Action Centre in exploring and overcoming the barriers to high school students cycling to school. October is Sustainability Month and the Manitoba Eco-Network is once again the coordinator.

As you receive this issue hopefully activities are in full swing to heighten public awareness on sustainability issues. Check out www.sustainabilitymonth.ca. Although readers of the Eco-Journal are already aware of the issues, it would be fantastic if we all get out and support the activities listed on the Sustainability Month calendar.

You may want to use our new website to check out our 2014/2015 annual report to find out in greater detail just what we have been doing. Now that our AGM is over we will be continuing to work on our strategic plan and as part of that we have been working on long-term financial planning as well. As always, we continue to strive to do the best we can to serve our members and reach out to the general public.



PHOTO: LIANNE BELTON

Farmers' Markets

Just because summer is over doesn't mean the harvest is! Markets continue across Manitoba throughout the year. Check out fmam.ca and foodmattersmanitoba.ca to stay connected to your local producers.

Green Drinks

King's Head Pub, 5pm, first Friday of every month
Working or volunteering in the environmental sector? Join us for an informal monthly get-together of after-work bevies.

Contact info@mbeconetwork.org for info.

OCTOBER

TBA David Suzuki in Winnipeg

No date released yet, but keep watching for details as David Suzuki returns to the Peg for a fundraiser this month.

2-3 Migration Dinner

Oak Hammock Marsh

Enjoy dinner while experiencing the sights and sounds of migration - watch as thousands of ducks and geese return each night. Enjoy an exquisite three-course dinner featuring locally grown and harvested ingredients.

Visit oakhammockmarsh.ca for details.

3 Sustainability Bike Tour

FortWhyte Alive, 1pm

Visit fortwhyte.org/sustainability for more info.

4-31 IWALK (International Walk to School Month)

Thousands of Manitoba students will be joining millions of people around the world in over 40 countries to celebrate active transportation. Celebrate IWALK Week from October 4-10 and IWALK Day on October 7.

Register your school at greenactioncentre.ca

14-17 West Broadway's Tall Grass Prairie Restoration Project

Preparing the Soil - October 14, 6-8pm; Seeding - October 17, 2-4pm

Take part in this great urban initiative; volunteers needed!

Contact gardens@westbroadway.mb.ca for more info.

Niakwa Trail Rain Garden

In partnership with *Save Our Seine* and *HTFC Planning and Design*, the Manitoba Eco-Network is happy to announce the **Niakwa Trail Rain Garden**. On September 16th, volunteers from the community came together to plant over 600 native plants along the Niakwa Trail (corner of Fermor and St Anne's) that will filter pollutants out of rain water runoff before it enters the Seine River.

We gratefully acknowledge the support of *Casera Credit Union*, *Community Incentive Grant Program (City of Winnipeg)*, *Co-op Community Spaces Program*, *EcoAction Community Funding Program*, *Manitoba Conservation and Water Stewardship*, *Nature Manitoba's Bluebird Fund*, *RBC Blue Water Project*, *WWF-Canada*, and *Loblaw Companies Limited (Loblaw Water Fund)*.

October 1-31

Celebrating Sustainability Month

Organizations from across Manitoba will be providing opportunities to learn more about sustainable living during this month-long series of events, including film screenings, workshops, concerts, art exhibits, and more! Have a sustainability event to promote? Contact youth@mbeconetwork.org to get your event listed on the calendar.

Join us on **October 5** at the **Manitoba Museum** for a kick-off evening of cocktails and fast-paced presentations by knowledgeable and entertaining speakers.

Visit sustainabilitymonth.ca for more details and tickets.

17-21 The Wildlife Society's Annual Conference

RBC Convention Centre

One of the largest gatherings of wildlife professionals and supporters in North America, this is a unique and informative event that provides more than 50 networking opportunities through working groups, meetings and receptions as well as more than 400 educational opportunities that encourage discussion and collaboration.

For more information: twconference.org

19-25 Waste Reduction Week

Visit wrwcanada.com to register and learn more.

23 CD/CED Gathering Event

Register for a day of workshops and speakers focused on community development in our province and beyond.

Visit ccednet-rcdec.ca/en/mbgathering for info.

november

5 CCPA Fundraising Brunch

Fort Garry Hotel, 10am-12pm

For more info, please contact blackchair@policyalternatives.ca or 204-927-3200.

7 Bike Winnipeg AGM

West End Cultural Centre, 12:30-3pm

Check out bikewinnipeg.ca for details.

10-17 Lords of the Arctic: The Ecology of Hudson Bay's Polar Bears

Churchill Northern Studies Centre - Churchill, MB

Witness the annual migration of Churchill's polar bears. Contact churchillscience.ca for more info.

19 Manitoba Environmental Industries Association (MEIA) Emerging Issues Conference

Fort Garry Hotel, 8:00 am-6:30 pm

One of MEIA's premier conferences addressing current environmental issues impacting Manitoba industries. Visit meia.mb.ca for more info.

13-14 24 Hours of Reality: The World is Watching

A live online event covering the climate crisis with broadcasts from around the world. This year's focus will be on the upcoming COP21 climate gathering in Paris.

Visit 24hoursofreality.org for more info.



A Bumpy Path for Winnipeg's Pedestrian and Cycling Strategies

By Beth McKechnie, Green Action Centre

WITHOUT A DOUBT, it's been a long and sometimes head-shaking path to reach this point, but Winnipeg's Pedestrian and Cycling Strategies are now officially approved.

There were starts and stops along the way. First, the Public Works Department quietly scuttled the plans in July 2013 until it was noticed by Coun. Jenny Gerbasi (Fort Rouge - East Fort Garry) and the resulting public outcry brought the process back to life. Then the fall 2014 municipal election ground the process to a standstill once again. When Winnipeg's new mayor and council brought the finalized strategies forward for discussion in early May, there were criticisms raised regarding adequate consultation. Given that public engagement on these strategies was more extensive than most major road or bridge projects, this caused some gnashing of teeth. However, to demonstrate due diligence, the mayor and council sent the proposed strategies for scrutiny by the city's new office of public engagement. Not surprisingly, they passed muster.

There were further attempts to delay the process, with some councillors arguing the dollars (though technically imaginary till approved on an annual basis) being spent over the next 20 years are excessive. This in spite of the fact that the amounts involved represent only 6.7 per cent of the total public works expenditures proposed in the city's Transportation Master Plan for the next two decades.

The path certainly has not been boring. There was also some humour and drama, nicely captured in the *Winnipeg Free Press's* musical video titled 'Key of Bart: Bicycle Space'. We will all likely remember the phrase 'democracy denied' for years to come. (Check out the video on YouTube; it's definitely worth two minutes to watch.)

Interestingly, the public debate has revealed supporters from some unexpected corners. *Win-*



PHOTO: COURTESY OF GREEN ACTION CENTRE

“The experience in multiple cities across North America has shown dramatic increases in ridership with the introduction of protected bike lanes along with significant decreases in injuries for all road users.

Winnipeg Sun columnist Tom Brodbeck is supportive of the strategies and in particular is a vocal proponent of protected bike lanes, recently lambasting the city for the lost opportunity to include them in this summer's repairs to two kilometres of Portage Avenue. Brodbeck recognized the important role of protected bike lanes that physically separate people riding on bikes from those in motorized vehicles.

Protected bike lanes not only make cycling much more appealing and comfortable for people, it also makes it safer. The experience in multiple cities across North America has shown dramatic increases in ridership with the introduction of protected bike lanes along with significant decreases in injuries for all road users. People walking also benefit, as protected bike lanes significantly reduce the number of people cycling on the sidewalk. It's also less stressful for those who are driving, as they no longer have to share the lane with a vulnerable person on a bike. And while it's natural for an adjacent business owner to question the potential impact on their sales, multiple studies have concluded

there is little to no impact or, in some cases, an increase in business as a result of being located next to a protected bike lane.

So now it's time to shake the proverbial Red River clay from our boots and move forward. With a new Active Transportation Coordinator coming on board to oversee implementation of the strategies and support expressed by the mayor and a majority of councillors, there is a sense of renewed optimism. (On that note, a collective thank you to Kevin Nixon who tirelessly filled the role of AT Coordinator since the position's inception in 2007 to his retirement in June 2015.)

It's also encouraging that the city's Active Transportation Advisory Committee (ATAC) – which has met only a few times in the past two years compared with monthly meetings in its first five years – is scheduled to meet in September. The initial incarnation of ATAC represented community groups (Green Action Centre, Bike Winnipeg, Winnipeg Trails Association, Manitoba Cycling Association, and the Physical Activity Coalition of Manitoba) and other levels of government (Winnipeg Regional Health Authority and the Province of Manitoba) along with representatives from related city departments (Planning, Property & Development, Public Works and Transit). The more recent, and less active, version of ATAC comprises individuals representing specific areas, such as health, physical activity, youth and active school travel, transportation demand management, and business among others, rather than organizations. It will be revealing to see if or how the committee's structure will change and what its role will be.

Hopefully, after all the bumps and delays experienced the last three years, we will regain momentum to make walking and cycling in Winnipeg more convenient, comfortable and appealing for people of all ages and abilities. 🌱

Not-So-Good Nature of Compact Fluorescent Light Bulbs in Manitoba

By Robert V. Parsons, PhD, MBA

COMPACT FLUORESCENT LIGHT (CFL) BULBS have literally become the epitome of energy efficiency. Such notables as Al Gore, the former U.S. vice-president and now environmental activist, strongly support them. But an important question arises, whether their use in Manitoba is actually beneficial to our environment? The surprising answer appears to be “No!”

Over this past summer I instructed a new course as part of the Asper MBA program at the University of Manitoba, dealing specifically with sustainability economics. As part of one assignment, I asked class members to estimate the appropriate value for a levy to be charged per CFL bulb in order to address environmental problems caused by CFLs within Manitoba. The suggested value for the levy ranged between \$1.00 and \$1.50 per CFL bulb. Given a current retail price of \$3.00 to \$5.00 per CFL bulb, this is significant.

About two-thirds of the levy amount, upwards of \$1.00 per CFL bulb, was due to their content of mercury, a toxic substance. Each standard CFL bulb contains upwards of four milligrams. The levy value was based on the comparable cost to recover mercury from the flue gas of coal power plants, its most common emission source today. In jurisdictions where electricity is dominated by coal, the CFL certainly provides a benefit by reducing electricity needed for lighting and thus mercury emissions. In Manitoba, however, the mercury in each CFL bulb represents an incremental new release, not a reduction. All would be okay if CFL bulbs were duly returned to recycling programs, as strongly recommended by Manitoba Hydro. However, as noted in a 2014 study by Statistics Canada, entitled, “Uptake and Disposal of Compact Fluorescent Lights by Canadian Households,” it is clear that Canadians in general and Manitobans in particular are not very good at this. The majority of CFL bulbs end up in the garbage.

The remaining one-third of the calculated levy was to address increased greenhouse gas (GHG) emissions, with the amount based on the approximate current market purchase price

for GHG credits. This adverse effect sounds quite odd, but is indeed true. CFLs are significantly more efficient than conventional incandescent light bulbs, except that during colder weather, the latter clean source of waste heat is useful to help keep our houses a bit warmer. Without waste heat from incandescent bulbs, we have to replace it with something else, which in most cases means more natural gas. Thus, increased GHG emissions result. The reverse situation in the summer has no appreciable impact. There certainly is a slight increase in electricity used for air-conditioning because of incandescent bulbs, but given our already clean grid-mix, it has little effect on net GHG emissions.


The aggregate impact of CFL bulbs on GHG emissions is significant. In a 2010 study entitled, “Impact of Conversion to Compact Fluorescent Lighting, and other Energy Efficient Devices, on Greenhouse Gas Emissions,” it was estimated that within Manitoba, GHG emissions from residential sources are increased by approximately seven per cent overall by the use of CFL bulbs. Manitobans have taken pride in the clean nature of our electricity, including overall reductions that have occurred due to Manitoba exports. However, based on the methodology applied to Canada’s ongoing National Inventory Report for GHG emissions, we do not receive any recognition for reduced GHG emissions elsewhere from our exports.

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Solar Steam Engine

Alternative Transport and Energy

By Kevan Bowkett

A NEW CONCEPT IS EMERGING among explorers of alternative energy and transportation: solar-powered steam engines. Solar steam engines can be either locomotives, for use in trains, boats, or even cars, or stationary engines, used to power buildings and factories.

To be clear, we're talking about passive solar, which turns sunlight directly into heat to do mechanical work, rather than photovoltaic systems, which turn sunlight into electricity for various applications. All the ideas and all the pieces exist, and some workers have started to put them together.

Pioneering work was done on passive solar engines in the nineteenth century in France, by Augustin Mouchot. But with the development of coal-powered steam, and then with the coming of electric trains and then fossil-fuel transport, his inventions were abandoned. A lot of work was done in the second half of the twentieth century on improving steam locomotives for greater efficiency, especially by the Argentinean engineer Livio Dante Porta.

Highly efficient steam turbines are commonly used in electricity generation. Even nuclear power is used to run steam turbines to generate electricity. This makes modern steam locomotives much more efficient than they were at the end of the old Steam Age.

Parabolic mirrors could be used to focus sunlight onto the heating elements in a passive solar engine. These are widely used in producing energy today, for instance in large-scale photovoltaic arrays. Focusing lenses between the sun and the heating element can magnify the strength of the sunbeams. Heating elements, like coils in some kettles except hollow, and black on the inside to increase heat absorption, would receive the focused beams of sunlight on their insides. They could stick into the boiler, and so would heat the water into steam from the inside. Or, the focused sunlight could fall directly onto water (or even heat-bearing metal) in a transparent/glass container.

All of these pieces could be combined in a locomotive or steamboat. In this concept, the vehicle would carry its own boiler and be able to create its own steam. But a more promising alternative seems to be fireless locomotives. These are locomotives that do not generate their own steam, but "fill up" with steam from fixed stations every so often. They used to be more common, but they are in use today, for example by the

Swiss company DLM for shunting trains in rail yards. (By the way, DLM is doing a great deal of work developing and deploying modern, efficient steam engines, in trains as well as boats.) Fireless engines are safer than regular steam locomotives because they don't carry a boiler. One writer has called them "a thermos on wheels." The author of the great Architrains blog post "Simplicity in Steam" suggests a whole network of these "fireless" locomotives in cities, where they could easily be topped up with new hot steam regularly.

One great advantage of using fireless locomotives or boats is that they are independent of sunlight: they don't have to have the sun shining on them in order to run. The fixed solar-steam stations generate the steam when it is sunny, and store it so it can be used whenever it is needed. A good deal of research and development is being done today on storing steam. Such devices could be used in a modern "fireless" steam transport network.

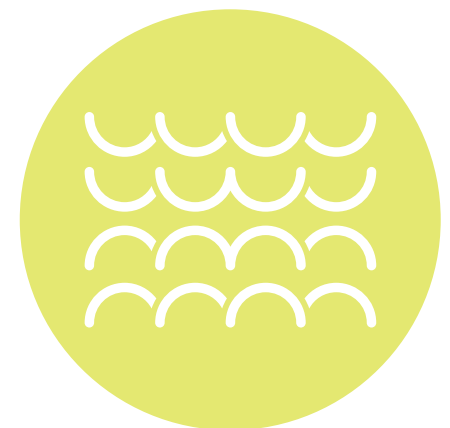
Why are passive solar steam engines a good idea? First, they are a relatively green alternative to carbon fuels and their toxic replacement technologies like nuclear. Second, they are an alternative to electric systems. Electric systems should be pursued of course, and probably should become our default form of energy and transport. But electric systems are vulnerable to power outages, human attack (especially centralized systems), and natural disturbances like solar or magnetic storm. It's only prudent to have a system that backs up the electric network—at least for emergency power and transport.

In California, some of these pieces have been coming together. People in Sacramento have suggested fireless solar steam trains as part of the city's transport network for tourists. This project has promise, although it seems to have paused since it was discussed online in 2005-08.

What might we in Manitoba do to help the development of this potential technology? The most important thing is to set up a trial line of a fireless locomotive and see how it works, similar to what was proposed for Sacramento. Could the Prairie Dog Central have a fireless solar locomotive? Or a tramline in the city? Another area might be in promoting tech from which solar steam engines can be built—for instance, CN could use fireless engines in the yards (perhaps bought initially from DLM, but subsequently built by a Winnipeg spinoff firm). Also, enthusiasts are required to build miniature models of such a system and try them out. Perhaps

this could be done on the rail-line maintained in Winnipeg by the Manitoba Live Steamers Association. Fireless steamboats on the rivers or around Hecla Island/Gimli are also possibilities.

All of these approaches would help to build the solutions economy on which our province's future has to be based. It will not be quick or easy; new work has to be built gradually on existing and often humble work. Whether or not a passive solar steam train would actually be efficient enough to be practical is less important than that we are using part of our minds to think outside the carbon-fuel and electric-power boxes. 🌱



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The Soil of Friendship

Excerpt from *Samaritans and Scapegoats*

By Marcus Rempel

ON A HOT DAY IN MAY, a truck full of men pulls up at the farm at 10:00 AM. Out pile five men ready for work. "I've got rubber boots, Marcus, rubber boots," one intones. He is blinking and rocking, vigorously rubbing thick fingers together, ready to bust. "I'm a farmer, Marcus."

We sort out boots for the guys that didn't bring their own and amble over to the cow pen, where pitchforks and a winter's worth of bedding and crap await. I say a few words about how this stuff makes the garden grow big and green, and we dig in.

These guys are here because a year before a woman named Laurie McLean had a vision. Newly hired Day Program Coordinator at a local centre for adults with cognitive disabilities and a permaculturist with a passion for the synergy of all things living, Laurie started her work the way she started the back-to-the-land homestead that brought her out to this neighbourhood: by building soil.

The centre was scrambling for meaningful work opportunities in the day program after the local municipality cut off their contract to sort the region's recyclables, "saving taxpayer dollars" by contracting out to a private, more competitive bidder. Municipal recycling options lost, Laurie found a less fussy customer to take and recycle the shredded paper still accumulating at the centre – worms.

To prepare, she attended a vermicomposting workshop hosted by the local chapter of the transition movement, an international grassroots effort to build local resilience to the shocks of peak oil and climate change. Scanning through the minutes of the transition meetings, she saw a note about Ploughshares Community Farm, where I live, and the possibility of our renting out some unused acres to neighbours looking for a place to grow more of their own food.

When we got together to talk, we found synergies too good to pass up. We also concluded that a separate plot managed by the centre would mean a daunting learning curve, more risk than necessary for all involved. We would garden together instead, expanding the Ploughshares garden and trading the extra labour from the centre's participants for extra vegetables from Ploughshares.

I had another agenda besides getting some extra hands into our low-tech, high-labour mar-



Hauling hay.

PHOTO: LAURIE MACLEAN

ket garden. I was hoping that I could do here at Ploughshares what I never managed to do as an occupational therapist. One of the things that attracted me to a career in occupational therapy was its fundamentally different understanding of health from the medical model. Rather than seeing human beings as machines that break down and need their parts replaced, their fluids changed or their wiring chemically altered, occupational therapy historically ties human health closely to meaning and relationship. Humans are creatures that need to be meaningfully occupied and relationally connected. This, as much or more than optimally aligned body parts and brain function, is foundational to real health.

Back in the cow pen, the manure seems to make relationships grow, as it does everything else. The jokes and teasing are almost instantaneous, the smell and the sweat conducive to a distinctly macho camaraderie. Were I with these guys in a professional therapeutic capacity, I might feel pressure to "redirect." Instead, I get to just roll with it. And so, by the grace of grunt work, crap and sunshine, we have become just six guys shooting the shit and shovelling it, too, happy to be out of doors and out away from the arts and crafts domesticity and the clean-scrubbed supervisory care inside the day program centre. There is a lot of tough talk about who can take who, who is too old and too weak

for the work, who is going to be in trouble if he doesn't watch it. We have shit on our shoes, sweat on our brows, and an animal pen full of rough and happy talk where we know we are friends and we know we are men.

It looks to me as though we are finding here at our feet what the Christian philosopher Ivan Illich called "the soil of friendship." Illich called his generation back to an understanding of virtue grounded in the soil of place: "We note that such virtue is traditionally found in labor, craft, dwelling and suffering supported, not by an abstract earth, environment or energy system, but by the particular soil these very actions have enriched with their traces."

Enriched with their traces indeed. I don't know how to "save the planet," the earth as an abstraction. But I am learning to be a friend and to be a farmer, with these people in this place. Every day that we are here the soil picks up another trace of our actions, holding and changing each one, churning into liveliness each trace of crap and each trace of love, a cycle of decay and delight in perpetual return. 🌱

*This essay is an abridged chapter from Marcus Rempel's forthcoming book, *Samaritans and Scapegoats: Scandal and Good News in a Cross Culture Country*, a collection of field notes on a "religionless Christianity," particularly as taught by the philosophers Ivan Illich and Rene Girard.*

Biofuels: “The New Green Bio-Economy”

... Absolutely YES!!!

By Brad Crass

WHY DOES AN ARTICLE ON BIOFUELS feature a photo from the Apollo 8 manned mission to the moon?

The photo was taken through one of three small triangular windows on the spacecraft which were all forward facing. It was by pure luck, in an unscripted moment within the Apollo 8 mission that NASA astronaut William Anders was able to snap this shot of planet Earth. When NASA released this image, it became responsible for the realization that the small blue orb that hovered in the absolute blackness of space is a home shared by all of humanity.

This single photo kickstarted the environmental movement of the 1960s. As well as touching the hearts and minds of many people, one amongst them being a student hard at work on his PhD studies in microbiology. His name was David Suzuki.

The purpose of this paper is to provide a counterpoint to a previous article on biofuels [“Biofuels: ‘The New Green Bio-Economy’ from *Manitoba Eco-Journal*, Summer 2015] to specifically address three arguments put forth by the article’s author.

The first area of concern is that of land-use policy and the utilization a limited quantity of productive cropland to produce feedstocks for fuel instead of food. How we treat our planet and the thin veneer of the nutrient rich soil that covers this small portion of the land mass should be a concern to all of us. On this issue, the author fully agrees that it is an inane practice whose enormous economic benefits are for those companies who own the patents on the GMO seeds which are being planted (canola, soybean and corn predominantly).

The second area of concern was that the establishment of a system of carbon tax credits (or carbon offsets) does nothing to solve the intrinsic problem of pollution sources. This statement is both true and false. Back in the early 1990s, an organization called Tree Plan Canada was founded and its first executive director was an individual from Winnipeg named Chuck Geale. One of the first projects he initiated was to study how much CO₂ a tree and a forest could absorb through normal aspiration during a tree’s life-

cycle. This study was done over 25 years ago, before anyone else started to get interested in this topic. As the saying goes: Tree Plan Canada “had no dog in this fight,” it was just an intellectual inquiry as to whether planting different tree species could have a mitigating effect upon CO₂ levels. Well, trees do. They are called “sinks” in the whole CO₂ balance equation and are used to absorb the products of CO₂ “sources.” To calculate your carbon footprint use the Tree Canada Carbon Calculator and then go out and plant as many sinks – er ... trees as you can.

Carbon tax credits were never meant to eliminate pollution. Their use is to economically penalize polluters and at the same time provide positive compensation to those entities that do not generate vast amounts of GHGs. This monetary exchange occurs in a futures exchange much like the structure of the Winnipeg Commodities Exchange. Chuck Geale had gone to the heads of many large Canadian corporations and to a man each of those corporate presidents expressed positive interest in this process as it represented an accurate, quantifiable way in which emissions can be objectively measured. The original development



of this concept in Canada was done by Tree Plan Canada and Natural Resources Canada and you can still request a copy of that original science-based study at their website www.treecanada.ca

The last area of concern is that biofuels cannot be sustainable. This statement is patently false. It may have had a degree of truth during the last century, but in 2015 it is simply not true. There are many plant-based feedstocks that can be used to create biodiesel as well as a replacement for fossil-based gasoline called bio butanol. There is no need for ethanol to be produced from cropland. Unfortunately, motor vehicles and the internal combustion engine will be with us for many decades into the future as no viable high density battery-like storage device has been developed to compete with the energy stored in a gallon of gasoline. Until that day arrives would it not be better for the planet to be burning a bio-fuel rather than a fossil fuel? 🌱

Brad Crass is Executive Director of the Galileo Project, world, Inc. a non-profit organization whose mandate is to provide leadership in energy sovereignty and food security for remote, rural and urban communities.

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CFL Bulbs...

At the same time, we are obliged to count increased GHG emissions here within Manitoba. Hence, there is a net cost.

The movement away from conventional incandescent light bulbs to CFL bulbs has been continental in nature, and thus not necessarily easy for Manitoba to resist on its own. After looking more closely, it is clear that CFL bulbs have detrimental effects on our environment within Manitoba, both in terms of increased mercury releases and increased GHG emissions. As such, in both cases CFL bulbs have imposed noticeable costs on our society. This situation emphasizes the importance of evaluating impacts specifically within Manitoba in order to ensure that policies and actions result in net benefits. 🌱

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Editor’s Note : The market is very quickly transitioning to LED technology. A trip to the hardware store will show how evident this is by the shelf space assigned to LED vs CFL. According to Manitoba Hydro’s Power Smart Lighting Tips, LED’s are the most efficient form of lighting and additionally Hydro encourages responsible disposal of CFL bulbs.

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Why is Al Gore Optimistic?

By Curt Hull, Project Manager, Climate Change Connection

I HAVE NOT SEEN AL GORE as optimistic as he appeared to be this summer.

When his film *An Inconvenient Truth* came out in 2006, a lot of people were freaked out, myself included. It's why I got involved in climate change full time in 2007. The film ends with the devastation of Hurricane Katrina and predictions of future flooding, drought, and wildfires. The solutions (such as they were) appeared as fleeting bits of text during the closing credits.

This July, I attended a Climate Reality Project conference in Toronto. During the conference, Gore trained about 650 people, mostly Canadians, on how to give his presentation. I took the training myself in 2010. At that time, we spent considerably more time on solutions than in the film. Mostly, I sensed his frustration with the deniers in the US legislature. I became a mentor for new Climate Reality trainees in 2012. In all, I've been to four training sessions with Gore. In 2011, I met him at a breakfast at the Hotel Fort Garry when he came to address WeDay. Each time I've seen him, his outlook gets a little more hopeful.

But this summer, he was the most upbeat yet. What's different today? The fact that he has been vegan for two years may have something to do with his healthy vigour. But mostly, it is because of the progress he has seen lately and the prospects for more in the future. Momentum is building—sometimes from unexpected places. Lately, even Pope Francis is speaking forcefully about the urgency of climate change and our need to dramatically cut fossil fuel usage.

Renewable energy is taking off. During the conference, he showed us the numbers. Renewables are still a small percentage of the overall global energy supply, but they are coming on strongly. Solar photovoltaic (PV) and wind turbine costs are falling. Every quarter, renewables are reaching cost equivalence with traditional electrical sources in more and more jurisdictions. Installations are growing exponentially. In 2010, global investments in renewables exceeded those in fossil energy for the first time.

Battery storage is poised to become affordable and eliminate the intermittency from renewable power. The cost of consumer batteries has dropped 90 per cent in the past 20 years. As of May, Elon Musk (the Tesla electric car guy) has invested over a billion dollars to build a battery “gigafactory” in Nevada. Within a year, Powerwall will start shipping affordable electrical storage systems for homes and businesses.

Business is seeing the need for change. In spite of Naomi Klein's compelling case that climate action and capitalism are incompatible, more and more entrepreneurs are seeing the opportunities. The Canadian Council of Chief Executives and the Canadian Association of Petroleum Producers have suggested putting a price on carbon



Al Gore at the Climate Reality Conference, Toronto, ON, July 2015.

(although without any specific suggestions as to how or when). In June, CEOs from six global oil and gas companies also called for carbon pricing. Businesses are forming organizations like Business for Innovative Climate & Energy Policy (BICEP). Preston Manning and Canada's Eco-fiscal Commission are calling for action on climate. Many mutual fund managers and academic institutions are divesting their fossil fuel holdings.

All this is building up to COP21. In the first two weeks of December, world leaders and delegates will meet in Paris for the 21st Conference of the Parties (COP21). The objective of COP21 is to negotiate a greenhouse gas (GHG) reduction plan to replace the Kyoto Protocol.

Why might COP21 be successful in 2015 when Copenhagen (COP15) failed so badly in 2009? There are three key reasons: the economy, preparation, and expectation:

- **Economy** - In 2009, the global economy was in a major recession. No one wanted to commit to anything that might cost money. The economy is still not out of the woods but it's pretty much back to where it was before the bubble burst in 2008.
- **Preparation** - Before COP15, preparatory work was inadequate. This time, all countries are supposed to submit their Intended Nationally Determined Contributions (INDC). To date, 24 submissions have been received, including Canada's. Although they are mostly lacklustre, (Canada's have been judged “inadequate”) at least the negotiations will start with solid numbers.
- **Expectation** - Sure, there was huge expectation for COP15 too. But this time, there is a sense of “now or never.” Since 2009, people have been waking up. The world has had six more years of increasingly severe weather events, droughts, floods, heatwaves, and wildfires. After the failure of 2009, there is something to prove.

As part of that preparation, the US is starting to take action. In 2009, Obama was a new president. He had an embattled congress and was focused on healthcare reform. Now he's in the final year of his second term and he seems ready to make climate change action part of his legacy. He has negotiated an agreement for action from China with China agreeing to cap its GHG emissions by 2030 or earlier. For its part, the US has pledged to cut its emissions to 26 or 28 per cent below 2005 levels by 2025. This is significant because the US and China together account for about 40 per cent of all global GHG emissions.

In an effort for the US to meet its commitment, Obama recently announced the Clean Power Plan. This will reduce the US emissions from electrical power generation by 32 per cent by 2030. Currently, electrical generation accounts for about 1/3 of all US GHG emissions.

So, are we at a turning point? Is Al Gore's optimism justified? It's all a matter of time and timing. Gore has said, “We will win but we need to win faster.” He's right. Human GHG emissions will come down to a sustainable level. The question is, will we do it before the worst predictions of his movie come to pass?



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