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Royal Roads University

## **World Changing Careers: Green Jobs of the Future**

June 17, 2009

Moderated by Ann Dale and Alysia Garmulewicz,

### **Participants**

**Dr. Ann Dale**, Canada Research Chair, Sustainable Community Development, Royal Roads University

**Alysia Garmulewicz**, Director, Changing Climates Educational Society

**Nadine Gudz**, Manager, Sustainable Strategy with InterfaceFLOR

**Rodney McDonald**, Director, Environmental Strategy, The Minto Group

**Dr. Art Hanson**, Former President, International Institute for Sustainable Development

**Dr. Lenore Newman**, Assistant Professor, Royal Roads University

### **Dialogue**

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#### **Ann Dale**

Imagine changing the world and earning a sustainable living at the same time. For the world is indeed changing, the Worldwatch Institute predicts that the pursuit of green jobs-employment that contributes to protecting the environment and reducing humanity's carbon footprint will be a key economic drive of the 21st century. My vision of world changing careers is moving our current extractive economy to a restorative economy to a regenerative economy and it can be done today. Samuel J. Palmisano, President of IBM in his advice to President Obama recommended that rather than stimulating the economy, we should transform, and in three key sectors--smart grids, health-care IT and broadband--could yield almost one million new jobs within one year.

Before we dive into our discussion, could you each introduce yourself, and your interest in this topic, and perhaps my co-moderator, Alysia Garmulewicz, could talk a little about the upcoming conference in this key area.

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#### **Rodney MacDonald**

Hi everyone,

I'm Rodney McDonald. For the past 11 years, I have worked across Canada with public and private sector organizations on issues relating to sustainability, green building, and energy efficiency in policy, programs, and practice. Four weeks ago I moved to Toronto

from Winnipeg to join The Minto Group as Director, Environmental Strategy. Immediately prior to that I was consulting on my own, and have held positions with HOK Canada, the Province of Manitoba and Manitoba Hydro, and have advised senior officials in federal, provincial, and municipal governments, First Nations, corporations. I'm the immediate Past Chair (and Founding Chair) of the Manitoba Chapter of the Canada Green Building Council, have chaired or served as a member of a number of other national, provincial, and municipal committees.

I have made sustainability my profession, thus this topic is of great interest to me.

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### **Ann Dale**

Welcome, Rodney, and thank you for joining us today.

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### **Nadine Gudz**

Hello!

I'm Nadine Gudz, based in Toronto where I work as Manager, Sustainable Strategy with InterfaceFLOR. I joined InterfaceFLOR after 14 years of work/education in ecology, environmental policy and planning, sustainability education and community development. I describe myself as a "generalist"; a collaborator, facilitator, planner, researcher, writer and educator who is passionate about sustainability.

Looking forward to some rich discussion!

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### **Alysia Garmulewicz**

Hello, and thank you for joining this discussion - I look forward to hearing your perspectives on green jobs, and learning from you all.

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### **Ann Dale**

Alysia, can you tell us a little about your upcoming conference?

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## Alysia Garmulewicz

Sure! This e-dialogue is aimed to start the conversation on green jobs in Canada, and enhance the sessions taking place at the World Changing Careers symposium we're organizing July 23rd-27th at the University of British Columbia. The underlying theme of the symposium is exploring cutting edge ideas in all career sectors that can help design a sustainable future. In effect, creating a vision of what a future would look like where all jobs are green jobs, and how youth can - through their career - be part of redesigning our economic and social systems in pursuit of that vision. We will be exploring careers in education, business, economics, policy, agriculture, architecture, communications, and clean technology. Program highlights include Janine Benyus on biomimicry, David Orr on Education for sustainability, George Lakoff on communicating and framing political messages, and a panel of clean tech CEOs. A dialogue on green jobs in Canada will integrate government, NGO, business, and youth perspectives. I'm very interested to hear today's conversation to feed into planning and preparation for World Changing Careers...

For further information, I have uploaded a document to show some of our program highlights for the event.

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**File attachment** [World Changing Careers invite.pdf](#) (1.37 MB)

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**File attachment** [World Changing Careers invite.pdf](#) (1.37 MB)

## Ann Dale

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Thanks, Alysia, while we are waiting for our other colleagues, let's move to our first question. Let's assume the world embraces a more sustainable future, what are your predictions for how the economy will change and which sectors will emerge?

Rodney McDonald

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Recent and ongoing developments in the auto sector are providing us with a glimpse of how the economy will change. In the area of transportation, I think we will see significant demand shift towards personal transportation as a service - more zipcars and auto-share services - and a continual decline in the demand for purchased vehicles, as communities become more walkable and the cost of real estate makes owning a car difficult or nonsensical for many. I think we will see a shift away from air transportation, as companies seek ways to reduce ghg emissions by making use of increasingly

higher quality video and web conferencing technologies, and the availability and price of transport fuels, along with a price on carbon, make air travel expensive.

Generally speaking, I predict we will see significant growth in sectors such as clean energy and clean tech, and growth in services to support the green economy, with a focus on high quality professional services such as strategic sustainability planning, the design of renewable energy facilities, building commissioning, auditing and verification services (e.g., energy, ghg, and environmental).

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### **Nadine Gudz**

For me, this raises the question about what a sustainable economy would look like...It would likely mean transforming our existing economic system through inspired leadership on a number of scales towards just communities, systems thinking, life cycle impacts of products and services (requiring a whole other level of "corporate transparency") relative to the biophysical limits of Earth

Transformation to me involves rethinking design on a variety of scales and in a variety of contexts; essentially rethinking what we make in the world.

Sectors such as building and construction will focus on brown-field development and land regeneration and the creation of accessible, affordable, high density, energy efficient dwellings to accommodate population increases in urban communities.

How we value products and services will also change based on the need for new measures/models aligned with more holistic notions of "quality of life" (eg. beyond GDP...) and the limits of the biosphere.

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### **Ann Dale**

I think another sector that will be interesting is the whole redesign and regeneration, for example, I am thinking of one of my graduate students who works with a company called Lidar (and this is not a plug), light detection and ranging to map micro-drainage patterns on impervious surfaces to locate the best locations for storm-water mitigation through Low Impact Development Technology (such as green roofing, bio-retention, and pervious pavement systems. Go to the website [www.guiaguide.org](http://www.guiaguide.org) and look at the video, it shows the power of meaningful small steps leading to major change. Let me be a little provocative now, I don't believe people change readily and especially large bureaucracies in both the private and public sectors. So, let's imagine our Federal Government showed real leadership and simply implemented legislation tomorrow that mandated a policy of no waste for all Canadian companies and public institutions? Waste recovery would become a major sector, rather than right now, recycling.

## **Nadine Gudz**

This is how Interface's sustainability journey started - eliminating the concept of waste across the business. Founder, Ray Anderson, asked employees to consider a very broad definition of waste to include things like use of non-renewable energy and off quality manufacturing. [plug also not intended]

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## **Ann Dale**

Plug more than warranted, we miss the simple things that can make the biggest changes, eliminate virtually all waste by 2012, how that would spur innovation and reduce input costs. Any other wisdom from Interface's leadership?

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## **Nadine Gudz**

I would start by saying Interface still has a long way to go, and fortunately, internal drive and passion keeps growing! This is key - having an inspired team driven by a meaningful vision so core to the day to day business. Though Interface has made a lot of progress relative to its 7 principles/fronts of "mount sustainability" and mission zero targets, the business does not exist in a vacuum and operates within a much larger, unsustainable economic system. Working towards the company's vision requires collaborating with suppliers, customers, communities, governments, etc. One of the things I found particularly inspiring about Interface's sustainability model is that one of the principles includes "redesign commerce." This gets at the idea of leveraging the company's leadership in order to redesign the economy. InterfaceRAISE is a new business which began in order to help other organizations on their respective sustainability journeys. Working towards new levels of corporate transparency and resetting standards for "green purchasing," we also just launched the industry's first Environmental Product Declaration in North America (equivalent to an ingredients list and nutrition facts label but for a product's environmental impacts and materials and energy throughputs).

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## **Lenore Newman**

Hi all,  
Sorry I'm late, there were some technical issues keeping me out. I'm Lenore Newman and I'm the Graduate Program Chair in the School of Environment and Sustainability at Royal Roads. I'm amazed at the exciting opportunities our learners are finding in the job market in the field of sustainable development.

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## **Rodney Mcdonald**

Yes, and at a broader scale I think what we would see emerge across the board in a move toward a restorative economy is a focus on solutions at the beginning of the pipe, rather than the end, such as designing a system or a process from the outset to eliminate waste at the end.

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## **Alysia Garmulewicz**

In the area of predicting what shifts will take place the sectors that will emerge, I feel there needs to be more attention to the sectors that should emerge - like your comment Ann on government policy mandating zero waste. In effect, we can guide future innovations through the application of core principals (like closed-loop design) which is not prescriptive or restrictive but allows a level of foresight to enter political and economic decision making.

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## **Ann Dale**

Nadine raises two key points an economy oriented to the limits of the biosphere and design and redesign of the built environment and governance. It is clear that governments need to establish a firm framework for greening all aspects of the economy. Sustainable transportation, renewable energy sector, biofuels, waste recovery, the deeper aspects of sustainable community development. We have the technology now for carbon neutral buildings and for carbon positive buildings. There is a global disconnect, however, as currently global unemployment stands at roughly 6 percent, affecting some 190 million people (Worldwatch report 177). The same report states that the Canadian government estimates that implementing a retrofitting program on a national scale would result in 5,600-7,840 person-years of employment. That represents 20 jobs for every \$1 million invested, or 1 job for every \$50,000, so what is going on? What thinks you?

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## **Lenore Newman**

My thought is there is a real danger at this stage for government and industry to focus too intently on single solutions, such as the focus on ethanol in the US or the focus on Carbon Capture in Alberta. What sustainable innovation needs is the sort of incubation that occurred in Silicon Valley in the late 1990's. Many of the businesses that developed failed, but a wealth of innovative technologies emerged. We need a similar boom in sustainable development application. Sadly I do not see that happening in Canada.

**Ann Dale**

Why?

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**Lenore Newman**

Ann I fear that our government is making the wrong moves at the wrong time. We are seeing unprecedented shrinkage in funding for pure research at a time when the US is greatly expanding funding. Our best young minds will have no choice to go where the jobs and the research dollars are. I feel that one of our most urgent priorities is to restore and expand research funding that is open-ended. To quote a very old argument for pure research, one of the fathers of theoretical physics, when asked what use his research was, replied "what use is a newborn baby?"

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**Alysia Garmulewicz**

Like the Silicon valley example - Perhaps we can get farther in changing political and economic institutions by changing their structure - their ways of operating - to be more conducive the thinking needed for decisions such as mandating no waste from economic activity. If institutions operated more holistically, integrating various silos of operation, we could provide the structure out of which green economic decisions would naturally emerge.

**Ann Dale**

Rodney, give me your thoughts on the building sector, what will the green jobs be?

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**Rodney Mcdonald**

In the green building sector, the green jobs will be: integrated design process facilitator, energy modeling, building commissioner, sustainable design engineer, green building assessor and rater, life cycle assessor, in addition to the greening of the traditional professionals in the building design industry.

## **Arthur J Hanson**

Dear Participants. Sorry to be late. I had put this e-dialogue in my book as starting at 4 on PDT, instead of eastern daylight time. So, my apologies.

I did want to make some contribution of a general nature first.

I do see employment growth centred around the SD innovation agenda, especially around energy and environment, but more pervasively around the transformative environment and development approach that we see occurring within Industry, Cities, and Governments.

The big question for me is whether Canada will match the speed of change I see in other parts of the world, especially countries like China, the USA and parts of Europe. Countries like Sweden, Germany, Netherlands and England are examples in Europe.

The stimulus packages generally are not doing enough to press green growth, but they will help us move towards what is a strong undercurrent of green growth here and elsewhere in the world.

Basically, we will hardly recognize today's industries and ways of doing things two to three decades from now. The result is new economic opportunity and employment.

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## **Ann Dale**

Welcome, Dr. Hanson, can you elaborate about green jobs in the transformative environment?

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## **Arthur J Hanson**

To look at some of the best transformative efforts, we can turn to the USA and also to China. It means jobs that were never there, or were of minor significance in the past but now occupy an important place. In other words, change has been more than incremental.

Some of my favorite examples certainly are those surrounding IT. How important use of GPS has become, and the jobs related to putting that into all our devices, then hooking those devices through networked activities, often with a heavy use of remote sensing information. We deal with all manner of problems differently now compared to 5 or ten years ago as a result of this. Many new software and service jobs created.

Another one is the rapidly growing industrial base surrounding wind power. There have

been several good write-ups, including the latest issue of Canadian Geographic magazine. This is one that is very important for people in countries like Canada, China and the USA. And it involves much more than actual production and installation of windmills.

The transportation sector is in the midst of a transformation that will spawn many new opportunities related not only to personal transportation, but also the revision of how goods move, the fuels used, and the very nature of transportation networks and their management. It is a good time to be entering some field related to transportation!

I like the Chinese concept of Circular Economy, which is a broader concept than recycling. It incorporates thinking about sustainable consumption and lends itself to a global vision.

I will stop with these examples, there are, of course, many more.

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## **Ann Dale**

What about the science sector--atmospheric and space scientists, air analysts, environmental meteorologists and climatologists, how will these sectors change, dare I argue for more and more interdisciplinary experts, people who integrate and synthesize? Let's move to our next question, which we already have, what will be the world changing careers of the future?

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## **Arthur J Hanson**

Certainly the people who can translate a systems approach into action are extremely valuable. These include engineers who can tackle the biotechnology world through green chemistry will have good opportunities, for example working on bio-refineries. The people in business who can see their way through complex supply chain issues involving minerals, sustainable agricultural production, new forest products, the issues surrounding the complementary technologies surrounding renewable energy use (e.g., batteries or other means of energy storage for wind power, smart power grids, etc.) And the social scientists and community-oriented people who will be needed to address both challenges and opportunities of climate adaptation are examples.

## **Rodney McDonald**

Perhaps until that happens, as Art alluded to, those who can work collaboratively in the spaces between disciplines, professions and organizations will be highly valued - that has been my personal experience.

Twenty years ago we saw the emergence of environmental managers. Now we see sustainability moving higher up in organizations and the emergence today of positions such as VP of Sustainability and Chief Sustainability Officer - bringing sustainability to the discussions at the executive team...

And I think we could do a quick web search and come up with a laundry list of potential new careers. In addition, my personal experience is that there is also a need to green up or integrate sustainability into a host of existing professions, which in the end may be more sustainable means of realizing sustainability across the board. For example, building code officials that are trained to understand green building, rather than adding the one green building person to the building code department.

Governments and others have been making some of the wrong moves, primarily I think because of the lack of integrated decision-making. So perhaps the question is: how do we produce a generation of systems thinking integrated decision makers?

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## **Ann Dale**

Integrated decision-making where what is good for the economy is also good for the environment, I think I would argue for a clear legislative framework designed to make Canada a leader in sustainable technologies, regenerative ecosystem restoration, integrated interdisciplinary science specialists, waste recovery, bio-mimicry, renewable energy, micro-generation systems, the list is endless. Is it doable, yes, is it necessary, yes, and I would like to quote from a speech given Paul Hawken, The Unforgettable Commencement Address to the Class of 2009, University of Portland.

"Inspiration is not garnered from the litanies of what may befall us: it resides in humanity's willingness to restore, redress, reform, rebuild, recover, re-imagine, and reconsider."

And yes, Lenore, research funding is so linked to innovation and future competitiveness, but we need to speed the exploitation of knowledge and diffuse it much more widely and deeply in Canadian communities, so what thinks you about IBM's statement about the smart grids, could we use wireless sensors to feed back information to people about their energy consumption, their building use? What about electronic health records, so

that we would have a true health care system, which their President claims a \$10 billion stimulus investment could generate more than 200,000 direct and indirect jobs and contribute to streamlining health-care costs, never mind other benefits?

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### **Nadine Gudz**

Another field which I feel will be seeing more and more needed attention is green chemistry - design at the micro and milli scales.

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### **Ann Dale**

Nanotechnology and dematerialization?

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### **Nadine Gudz**

One application might be in the reuse of existing materials - how do we divert stuff from landfill by reusing, recycling used products using zero/low impact technologies, finding ways to keep goods in biological and technical cycles. The context remains: applying these fields necessarily within a restorative and regenerative framework/vision informed by concepts like bio-mimicry, acknowledging that there are living systems and material components invisible to the human eye, rethinking design at a whole other level.

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### **Arthur J Hanson**

We will see tremendous growth and cross-fertilization among the newer technologies such as biotech and nanotech, often combined with IT. But we also need to be mindful of what can still be done to enhance water, land and energy uses based on improved management, integrated application of policy instruments, etc. In other words, innovation beyond technology shifts is an essential part of developing new employment and SD strategies.

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### **Alysia Garmulewicz**

As Rodney McDonald mentioned, I think this is the prime challenge - a generation of systems thinkers and integrated decision makers. Our education system is key to this (currently set up to teach in separate boxes), and Liza Ireland will be discussing the

'future of school' at the World Changing Careers symposium to look at how we redesign the educational system to foster this new paradigm.

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## **Ann Dale**

Here is a note from one of my colleagues, Caterina Geuer, who worked as the volunteer coordinator at the David Suzuki Foundation for six years?

". . .I met literally hundreds of bright young people who seemed biologically impelled to work at projects planned to make a positive difference. The market place had no room for them--it always takes a long time for the ponderous ship of the economy to turn, it seems, and so one of my main goals there was to find or create projects that these energetic young people could get their teeth into. I created teams, including a sprinkling of older mentoring types, and set them off to work their magic. . .The main point I would make is not to get trapped in dependence upon government money or programs. If the project is worth doing, it will get done--groups of families and those sharing common values and interests for example, could support a project using the power of Facebook, YouTube, etc.

The whole world of non-profits, civil society, schools, social entrepreneurship and non-governmental organizations?"

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## **Rodney Mcdonald**

This is a great example of a concerted effort to create the opportunities in the work force that young people want. We need more of this and fast, and collectively there is a need to work on both the supply and demand side of world changing careers. Sometimes I see young people come out of school ready to change the world, entering a firm run by well meaning folks with a mindset 30 years out of date. As our societies and economies go through transition how will we manage the mismatch that may occur until we can align things at the new level? Although, perhaps demographics is in our favour.

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## **Ann Dale**

Totally concur about the mismatch, makes me think that young people have to have incredible leadership and persistence skills to break down these walls?

Alysia Garmulewicz

I think one of the challenges is to reframe youth action as not just project-based - something youth can do on the side if they have extra time and motivation. The prime entry point for systems change for young people is their career path, for we are engaging every day in perpetuating outdated models. Investment in new ideas from the beginning of young people's careers is key, in order to reorient the direction of sectors they are working in. There has to be a new way of engagement that is not just protesting the establishment because we don't feel empowered to change it.

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**Ann Dale**

Before we close, our last question and we have been touching on it, is what are the critical skill sets for the regenerative economy?

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**Lenore Newman**

Ann I would argue that critical skill sets are the ability to innovate and cross boundaries, and the ability to be flexible. Our societies and our challenges are now so complex we really can't train people into narrow slots and expect to succeed. People are going to have to reinvent their careers on an ongoing basis, which requires, among other things, the classic skills of critical thinking, communication, and problem solving.

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**Rodney McDonald**

SYSTEMS THINKING, INTEGRATED DECISION-MAKING, COLLABORATION, DIALOGUE.

I think that interdisciplinary professional collaboration is key to sustainability success in many sectors. Yes, carbon neutral buildings are possible, but they require a degree of collaboration and integration between the design disciplines that many established design professionals are not accustomed to. I have personally seen opportunities fall off the table because teams struggle to integrate and collaborate, lacking a building forever into higher energy use, energy costs, and emissions.

## **Nadine Gudz**

I find it difficult to talk about specific skills. I start thinking about things like ecological literacy, reflexivity and critical thinking to ask the "right" questions; and, of course, then we need activators - community mobilisers and courageous leaders in a variety of forms. skills in the arts of good governance. it seems the profound change that's required also involves some level of spiritual renewal, not reflected in any type of skill but more about wisdom, love, compassion, forgiveness. i would encourage young people to think about aligning their passions and values when considering a career path. this reminds me of David Orr's writings about careers vs. callings...how do educational institutions support students in [re]discovering their callings?

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## **Alysia Garmulewicz**

I don't think we should NOT shy away from how hard it will be for young people to make systemic shifts, and instead find inspiration and empowerment in the scale of the challenge, and therefore the scale of the response needed. What is worse is showing how momentous the challenge is, and then saying 'but we can solve it by turning off the light' etc. That is disempowering I think. Another key is connectivity to new ideas, and leaders in the field, to show that new ways are possible, and partnerships can reveal leverage points for change we never knew were there.

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## **Arthur J Hanson**

I would add to this the capacity to be a risk-taker. New opportunities also pose challenges.

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## **Ann Dale**

A question from one of our listeners, "I would be interested in elaboration of some examples of how you have been valued", addressed to Rodney?

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## **Rodney Mcdonald**

Thank you for the question.

1) In terms of demand, when I entered this profession 12 years ago I struggled to find a job. When I was laid off from my job in the fall of 2008 due to the change in the

economy, I had 6 job offers - a sign I think of the value the market is starting to place on this type of work.

2) In terms of financial value, in the past five years I have seen my annual salary triple - partly due to a change in my level of education, but again I think due to the value the market is placing on this type of work. I finally feel not disadvantaged financially for choosing a sustainability careers, compared to my contemporaries who chose more conventional career paths.

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### **Ann Dale**

Thanks on behalf of Alysia and I, dear colleagues, for a most lively conversation, any last words? I would again like to quote from Hawken's speech, incidentally, I understand that Ray Anderson from Interface was moved to change by Paul's book, *The Ecology of Commerce*, written in 1992?

"Nature beckons you to be on her side. You couldn't ask for a better boss. The most unrealistic person in the world is the cynic, not the dreamer. Hopefulness only makes sense when it doesn't make sense to be hopeful. This is your century. Take it and run as if your life depends on it." As Nadine wrote, let's all [re]discover our callings? I so appreciate your time, any last thoughts?

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### **Nadine Gudz**

Yes! Paul Hawken and "*The Ecology of Commerce*" were and continue to be significant sources of inspiration.

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### **Arthur J Hanson**

My favorite closing quote is the one from Gandhi: "Be the change you seek." That should guide one's career choices!

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### **Rodney Mcdonald**

As always, thank you for the opportunity to participate. And thank you to all of you for the great dialogue!

Best regards.

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**Alysia Garmulewicz**

Thank you to all for your fantastic points of discussion. Most enjoyable, and very helpful for launching World Changing Careers on this theme. I hope you all can follow the event online at least!

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**Alysia Garmulewicz**

... talent for speaking differently, rather than for arguing well, is the chief instrument of cultural change.

Richard Rorty, philosopher

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**Rodney McDonald**

I love that one. Another that helped me when I was a young man fresh out of my undergrad and wondering how to be the change and pay the rent was the title of a book: "Do what you love, and the money will follow."

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**Post-script from Rodney McDonald**

Since graduating from Royal Roads University in 2005, I have held four progressively senior positions in four different organizations. In all four cases, the position was newly created by the organization and I was the first person to hold the position. I think this is a clear indication that (a) organizations are increasingly understanding the importance of sustainability, and (b) there are growing opportunities for world changing careers.