

Open Source Business Resource, July 2009: Collaboration

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Collaborating Across Disciplines, Joseph Wilson

"...it is the interaction between data that causes change. The fundamental mechanism of innovation is the way things come together and connect."

James Burke, The Pinball Effect

Anecdotal evidence suggests that truly innovative ideas and successful adaptation to market conditions comes from collaboration with people across traditionally demarcated fields of study. In science, economics, and business, it is new ideas that are imported from other realms that are most successful in affecting change.

The [Treehouse Group](#) is a Toronto-based collective of thinkers from a wide variety of backgrounds that seek to subvert the traditional notion of what constitutes a conference or a networking opportunity by using a wide variety of brainstorming techniques and cross-disciplinary activities to engage participants.

Ideas at the Intersection

In the early 18th century, a wave of immigrants hit Britain's coast. French Protestants, known as Huguenots, settled in an area just outside the old City of London known as Spitalfields. The market at Spitalfields and the nearby Petticoat Lane initially focused on the Huguenot specialty of weaving, but soon grew into a hub of intellectual exchange of all sorts. One young weaver, inspired by the advances made in Enlightenment science, turned his skill at manufacturing silk towards the fledgling field of lens-making.

John Dollond was inspired by the way the lenses in our eyes focus light with such precision. He combined concave and convex lenses in a way that resulted in near-perfect images, eliminating [chromatic aberration](#). In 1781, this technology, a boon for manufacturers of eyeglasses was in turn scooped up by London astronomer William Herschel, a regular at the market, to create a telescope powerful enough for the discovery of the planet Uranus.

[James Burke](#) has documented such connections between people and ideas for years through books such as *The Pinball Effect*, his BBC television show "Connections" and his column in *Scientific American*. He has recently launched an on-line educational initiative called the [Knowledge Web](#) where students can surf their way through a web of interconnected innovations in science and technology. Burke is a master at uncovering the interconnected web of ideas and technologies that, when allowed to work together and ferment, result in real and lasting change in our world.

Burke is, however, a historian. Tracing the web of social change is easy in hindsight, but near impossible in the present. How do we evaluate the importance of a new technology or a best-selling book? The answer lies not in the intrinsic value of the book's thesis, or how many people buy a widget, but in how it connects to other spheres of influence.

The historical record shows us that truly innovative ideas do not arise in isolation from one another, but at a place like Spitalfields market, a place where one field of study like silk weaving turns into something else, like astronomy. A good idea is not a static, containable thing, but a connector: a burr that latches onto other people and their projects, changing things in the process.

Frans Johansson explores this idea in his book [The Medici Effect: What Elephants and Epidemics Can Teach Us About Innovation](#). He points to the patronage of the influential Medici family in Renaissance Florence as a force for unbridled creativity. The family funded intellectual exploration wherever it led, in a spirit that encouraged the crossing of fields of study. Leonardo DaVinci is often held up as the model of this era, as an accomplished engineer, artist, anatomist and musician, a thinker that worked at "the intersection." The intersection is a place where disciplines meet, where boundaries between fields of study collapse, revealing a new intellectual landscape.

"One thing we know about creativity," says Marc Tucker, Head of the Washington-based [National Center on Education and the Economy](#), "is that it typically occurs when people who have mastered two or more quite different fields use the framework in one to think afresh in the other." Think of the now famous theory that the impact of an asteroid killed off the dinosaurs. It was not proposed by a palaeontologist, but by nuclear physicist Luis Alvarez who had an interest in astronomy.

Charles Darwin, for all his momentous effect on the world of biology, was not a trained biologist. His background in geology allowed him to think deeply about how things change over time. His intellectual curiosity brought him out of his field of study and onto the deck of a ship that travelled the world in search of the new. Upon his return, it was his collaboration with zoologist John Gould that allowed him to propose his revolutionary theory of natural selection.

The Fallacy of Group-Think

We need people outside our fields to collaborate with. Otherwise, companies and social organizations risk falling into the trap of "group-think," where bad ideas are reinforced from within through an iterative process of self-reinforcement. Most famously, NASA found group-think to be one of the factors of the Columbia disaster of 2003. Insulation tiles on the wing were damaged by falling ice during lift-off, yet the Mission Management Team (MMT) discounted reports of critical damage and came to the conclusion that even if there was damage, "nothing could be done."

In his book [The Wisdom of Crowds](#), James Surowiecki details the process by which the Columbia Accident Investigation Board (CAIB) uncovered the MMT's decision-making process. What the group lacked was the "cognitive diversity" to encourage disparate opinions that might have brought the astronauts home safely. The elimination of new perspectives was a result of the group's adherence to the strict hierarchical structure that had become entrenched at NASA.

What the team needed was a reminder that solutions to tough problems don't often occur within the confines of fields of study, but at the margins. The easiest way to access these margins is to open up the process to collaboration and discussion with as wide a range of people as possible. In other words, open up your decision making to the wisdom of the crowds. Collectively, the vast and varied experiences of a large group can provide much-needed advice on how to proceed in sticky situations, much more than the experience of any one individual.

In our current economic quagmire, it has become a truism to appeal to innovation and "outside-the-box" thinking to allow companies to survive. But organizations that are not practised at this will struggle. They will hire the same consultants and read the same industry analyses and demographic studies without ever bumping up against the sides of their boxes, let alone break through.

The failure of General Motors is a classic example of a company that got too big and became too entrenched in their own way of thinking to contemplate change. Instead of struggling to save their company through growth and power over government agencies with their hands on bail-out funding, CEOs might have benefited from a 180 degree turn. Leafing through the ancient Taoist text, the Tao Te Ching, we find stanzas 182 and 183:

Grass and trees are pliant and fragile when living,

But dried and shrivelled when dead.

Thus the hard and the strong are the comrades of death;

The supple and the weak are the comrades of life

...

The strong and big takes the lower position,

The supple and weak takes the higher position.

The Taoist philosophy of flexibility in the face of adversity is the same idea many economists are now espousing to survive the recession: split your company up into smaller chunks so they can adapt more readily to market forces.

It's a safe bet that many CEOs took a comparative religion course as part of their humanities undergraduate degree. But books not directly related to the handling of multi-national companies were seen as a waste of time, a frivolous diversion.

In university, intellectual playfulness is more accepted. Pursuing esoteric lines of thought is expected and embraced, especially in the humanities. "Knowledge for knowledge's sake" is a common mantra for defending the public good of universities. After graduation, it sometimes feels like we've entered a period of intellectual stagnation, surrounded by people with the same skill sets and experiences.

The collaboration between Darwin, Gould and many other scientists and philosophers during the 19th century was called "philosophical laughing," by Charles Darwin's grandfather, Erasmus Darwin, himself a fan of intellectual banter. Darwin and his colleagues were able to pursue knowledge just for the fun of it, smiling at each other's preposterous ideas along the way.

Science shows us that the human brain is evolved to be remarkably adaptable to new ideas and conditions, but only if we embrace new experiences. In *The Brain That Changes Itself*, [Norman Doidge](#) surveys the burgeoning field of "neuroplasticity," a field devoted to studying how the brain is able to rewire itself in new situations.

When children are born, they enter the world with an "undifferentiated" brain, a seething mass of firing neurons that eventually get pruned and trimmed into a map that corresponds to the world in which they live. This period of time is crucial for brain development. Children who miss out on key periods of social, linguistic or emotional development retain cognitive behaviours that become locked in as they grow into adulthood. Children are also creative, as their brains work overtime, experimenting with new connections and neural networks.

"All people start out with plastic potential," says Doidge. "Some of us develop into increasingly flexible children and stay that way throughout our adult lives. For others of us, the spontaneity, creativity, and unpredictability of childhood gives way to a routinized existence that repeats the same behaviour and turns us into rigid caricatures of ourselves."

Recent studies show that we can regain this plasticity of our youth. As our brains get used to firing the same neuronal connections day after day, they become more resistant to change. Yet brain scans of adults who make an effort to engage in new experiences show evidence of massively reworked brain maps. Adults who learn a new language, take a drawing course, or otherwise challenge themselves intellectually can more easily adapt to the rapidly changing world around them, and even have lower risks of dementia and other health problems. Plasticity begets plasticity. When we have a new experience, or learn something new, the human mind shuffles the data around and works it into previously learned experience. New knowledge doesn't grow dust and remain static, but gets parcelled up and redistributed, used as the building blocks of new ideas. If we close ourselves off from the new, we risk stagnation in our jobs and lives.

In his book *Proust Was a Neuroscientist*, [Jonah Lehrer](#) recounts stories from the 19th century of artists uncovering truths years before scientists. Working in the same cities and mixing with the same people allowed artists and scientists to uncover parallel truths. Unfortunately, many scientists in the 19th century, enamoured with the power of positivism, scoffed at the subjective experiences of the arts.

[Auguste Escoffier](#) was a famous Parisian saucier who invented veal stock at the turn of the 19th century. Escoffier emphasized the importance of stock for revealing tastes within meals at the same time as a Japanese biochemist isolated the amino acids that made meat taste so good: he named this taste umami, the Japanese word for delicious. Scientists in Europe were more sceptical. They refused to believe in Escoffier's new mode of cooking, because they were convinced people could only perceive four tastes: sweet, salty, sour and bitter.

The power of group-think was as strong in 19th century biochemistry as it was in 20th century NASA or 21st century General Motors. Imagine how things might have changed if the biochemists had invited a cook to their conference instead of another scientist.

Enter the Treehouse

Founded in 2006, the [Treehouse Group](#) is a collective of Torontonians devoted to embracing this idea of cross-disciplinary collaboration. Inspired by the prospects of living in a diverse and dynamic city, the Treehouse Group organizes conferences, monthly brunches, science-fairs, and educational sessions dedicated to exploring that fuzzy and exciting region where fields of study overlap. This is where truly creative ideas foment.

Our flagship series, the Toronto ideaXchange, has brought together hundreds of people from different fields of study to grapple with social problems and play with ideas. We've witnessed conversations between lawyers and musicians, home contractors and information technology professionals, entomologists and high-school students.

We see narrowing of perspective in our jobs every day. In my experience, sitting in a lecture hall at a conference full of people that share your specialty results in one of three outcomes: i) boredom; ii) a feeling of defensiveness if you disagree with the presenter; and, iii) if you're lucky, a notebook full of good ideas you'll never open again.

Millions of dollars are spent every year to provide employees with opportunities for professional development. How can we tweak the structure to infuse events with the creativity and ingenuity we need to solve our current problems? How does the Treehouse Group respond?

1. Against boredom: at almost every talk I've been to, a speaker is announced, the PowerPoint is fired up and the speaker is quickly talking to the eyelids of the audience. At many Treehouse events, PowerPoint is all but banned. If people are presented with something they aren't expecting, their attention is immediately captured.

Or if PowerPoint does sneak its way in, it's in the form of "PowerPoint karaoke", where small groups are given the same set of graphs, slides and photographs, and have 20 minutes to rearrange them into a presentation for the rest of the participants. People are never bored during this activity.

Imagine you settle into a lecture hall and are presented with a graffiti artist creating a large mural before your eyes, or a musician demonstrating an organ that works not through bellows and tubes, but through flowing columns of water. At our first event in 2007, I witnessed John Evans, Chair of the [Canada Foundation for Innovation](#), concentrate on performing a drum-roll, a skill he was exposed to only a few minutes earlier at the [MaRS Discovery District](#). At an event this January, Deb Matthews, Provincial Minister of Children and Youth Services, was taught how to scratch a record by a professional disk jockey.

We call these activities brain cleansers. They are a way to grab the audience's attention and clear their mind much like water cleanses the palette of a sommelier. After these activities, collaboration has renewed vigour and ideas flow more freely.

Another way of subverting people's expectations is with location. Try having your board meeting at a park, or an elementary school, or a fire station. Last June, the Treehouse Group had a meeting in the middle of Bloor Street during a [street festival](#) that closed the street down. We invited members to bring food for a giant potluck dinner where we mashed up some ideas on a white board.

Earlier in the spring, we hosted our annual Grown-Up Science Fair, where participants made flubber, played periodic table twister, played with science overheads from the 1960s and debated the merits of the new video game Spore. No notes were taken, but there was more intellectual energy in that room than at the last 10 conferences I've attended.

2. Against defensiveness: it is easy to tell people to "have an open mind" and "think outside the box," but people need prompts. When we hear people talk about subjects we have been studying, a common response is to mentally joust with the speaker and reject and argue away the points they are making. This is a natural way for people to protect their reputations and their egos. The trick is to present people with something they don't have a well-entrenched opinion about.

At a recent event, the Treehouse Group was given the task of providing an evening of orientation for 30 energetic teenagers in Toronto. The students, here from all over the world, were set to embark on a two week tour of the Arctic through an organization called [Cape Farewell](#), to explore issues of climate change through science and the arts. The students were ambassadors of environmentally responsible living and exuded confidence and knowledge.

To turn the tables, we asked them to role-play as one of a number of professionals such as an oil executive, a politician from China, or a First Nations activist. We gave them 60 minutes to come up with a climate change treaty that they could all sign in good conscience. The activity was not easy. There were people yelling and getting frustrated, there were groups who refused to sign. There was even one corn farmer who got his "union" to "strike" until the government refused to do any more business with China.

But there were also some genuinely creative solutions. One group focused on getting their message out through the media, while another decided to hold a referendum so the citizens of their countries could rank the priorities of dealing with climate change. When the students were asked to role-play, their empathy shot up and their defensiveness shot down, crucial for consensus-based problem solving.

3. Against taking notes: studies in education show that around 20% of the population are auditory learners. That means that most of us need to get up and interact with a subject in order to understand it. Taking notes at a conference helps retention but is a poor way to internalize new concepts. Activity and engagement are what stick.

At our monthly brunch meetings, one of our favourite activities is the "Great Magazine Mash-up." Participants grab a magazine they don't normally read from a pile. They open it at random and try to combine whatever is on the page in front of them with the subject of their neighbour's magazine.

At an ideaXchange recently, the Director of the Pathways to Education organization in Regent Park found himself staring at an article about owls. Next to him, a high school student from Étienne Brûlé Secondary School in Toronto found an ad for an interior design company. The group came up with a business proposal for an architecture firm specializing in animal treatment facilities, a company that designs houses for people who rehabilitate birds, and an interior design company that specializes in natural colour palettes based on the colouring of owls.

Not all of the ideas are winners, but enough completely new concepts are created in a short period of time where forward thinking people can go back and revisit conversations that have real potential to affect change. Leaving time for drinking wine and swapping business cards after the hard work is over is crucial to the success of Treehouse events.

Final Thoughts

If you find yourself at your next board meeting drifting off to sleep, ask yourself if you can think of a truly engaging experience that would expand people's horizons and inject some sorely needed ingenuity into the standard model of business. To avoid falling into the trap of group-think, we need to embrace intersections with other disciplines, and have some fun. In a 2002 article in the New Yorker, Malcom Gladwell said it best: "losing sight of what you truly believed when the meeting began is one

way of defining innovation.”