BioInspired!

Volume 4, Issue 2

July 07, 2006

The Biomimicry Institute

Greetings from incredibly gorgeous Montana in our favorite season of the year…

Several years ago, Janine and I recognized the need to keep a growing group of bio-inspired folks up-to-date on the happenings of the Biomimicry Guild. Unfortunately, neither of us had the time to devote to any sort of newsletter. Fortunately, a wonderful persistent gentleman from Canada recognized the need and took on the task. We are both extremely grateful to Norbert Hoeller, archivist, tech guru, teaching philosopher/pragmatist, and community "connect", for his constant watering and fertilizing of this newsletter, which has grown from its original circulation of 20 to a couple hundred at our last issue. We've also had the great fortune to interact with connector extraordinaire John Mlade over the last several years, who not only eloquently responds to the hundreds of biofeedback requests our website gets, but also started the BioInspire newsletter, growing its list to over 800 individuals. John merged his mailing list with ours, and we added all the folks who registered at biomimicry.net and requested a newsletter—which means you're now reading this along with 1295 other individuals who share your interest and passion for bio-inspired design and biomimicry. Welcome to the community!

You'll find in this newsletter bits and happenings of the Biomimicry Guild and its latest bud, the non-profit Biomimicry Institute, as well as biomimicry news from around the world. We've also added a calendar and a student corner, where students who have taken a Biomimicry & Design course at a university can share their projects. We hope you'll be informed and inspired to get in touch, and let us know how you'd like to be involved in our growing, evolving ecosystem. If you have ideas and suggestions for this quarterly newsletter, please send them to newsletter@biomimicry.org

For those of us in the northern hemisphere, the days are long and very full of life right now. We hope that wherever you are, you are able to soak it in and enjoy the majestic splendor that's happening 24 hours a day, 7 days a week, 365 days year…even when we aren't paying attention.

Best to all of you,

Dayna and Janine

Inside This Issue:

Mission of the Biomimicry Institute

The Biomimicry Institute is a not-for-profit organization whose mission is to naturalize biomimicry in the culture by promoting the transfer of ideas, designs, and strategies from biology to sustainable human systems design.

The goals of the Biomimicry Institute are to:

- Educate the general public about the concept of Biomimicry.
- Establish Biomimicry programs in K-12 schools, colleges, and universities.
- Sponsor a "Worthy Challenges X Prize" to encourage a Biomimicry approach to sustainable innovation.
- Seed an "Innovation for Conservation" program in which companies donate a percentage of the sales of bio-inspired products to restore the habitat of the organism that inspired the breakthrough.
- Launch the "Biomimicry Design Portal," the world's first digital library of nature's solutions and online information exchange between biologists and innovators.

For more information about the Institute, please contact me at:

The Biomimicry Institute
P.O. Box 9216
Missoula, MT 59807
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Bryony Schwan

The Biomimicry Institute: Education Overview

The Biomimicry Institute has a passion for both formal and informal public education from K-12 and university to museum exhibits, nature center programs, media, and publications. Wherever we teach biomimicry, we have the choice of teaching it as a separate subject, or incorporating it as a problem-solving method into any number of different subjects. We feel that the later is a more useful way of naturalizing biomimicry in the culture. For instance, teachers can introduce biomimicry as a way to get ideas for green reactions in chemistry class, better structural designs in engineering class, or even better policy in economics class. We think integrating bio-inspired problem-solving into all subjects helps prevent biomimicry from becoming 'siloed'.

What teachers tell us they need, in addition to a description of the method, is access to biological information that will help inspire their students. For this reason, the Institute would like to create 'biological know-how' modules that will simultaneously meet the needs of all of our educational efforts. An example might be a module on how nature filters and purifies water. The module would contain information on nature[1]s champion filterers, such as mangroves, filter feeders, and kidneys, along with case studies of any technologies that have been inspired by these mentors. The same module would serve several different educational venues. For example, photos, content, and case studies might appear as a supplement to a water exhibit at a science museum. Project Wild! type curricula packets on the topic could be posted on the portal for easy distribution to K-12 teachers. Design studios helping direct designers toward specific biomimetic design solutions could also use the same theme-based content. Scientific content on water filtration would also be in the portal, hopefully encouraging engineers and designers to research nature's strategies for their designs. We also plan to write short articles for the media on the topic.

> ***"What teachers tell us they need … is access to biological information that will help inspire their students.***

We are confident that our approach will help distribute the seeds of biomimicry much more effectively. Initially, we plan to focus on themes that address pervasive sustainability challenges.

The Biomimicry Institute: Formal Education

The Biomimicry Institute's goal is to establish educational programs in formal educational institutions including schools, colleges, and universities.

K-12 Schools: A pilot project has been developed in several California K-12 schools. Work is underway to develop biomimicry-based curricular materials that meet national and district content standards in math, art, and the sciences.

Universities and Colleges: Biomimicry Courses are being taught at the following universities:

- Ontario College of Arts & Design
- The Center for Biologically Inspired Design at Georgia Institute of Technology
- University of Northern Illinois
- California College of Arts and Crafts
- University of Minnesota, College of Architecture
- Additional courses/programs with biomimetic themes

We have worked closely with the first five schools to set up biology-taught-functionally courses alongside bio-inspired design studios. These are the only biology courses that most of these students will encounter in their university education!

We would like to grow this list by at least five schools every year by hosting train-the-trainers workshops in which experienced teachers from the first five schools meet with the next wave of teachers to pass on best practices. To spread the idea further, curricula and student projects will be posted on our Biomimicry Design Portal.

> ***"Work is underway to develop biomimicry-based curricular materials that meet national and district content standards in math, art, and the sciences."***

For more information, please contact:
education@biomimicry.org

The Biomimicry Institute: Public Education

In addition to general lectures, public workshops, the CBC Nature of Things television broadcast, and an "in-the-works" children's book and coffee table book, our specific education efforts include:

BaDT Training: The Institute has also developed a Biologists at the Design Table (BaDT) course that trains biologists to inspire innovators at the design table. Through this 5-day course, biologists learn the skills necessary to work with designers and practice finding natural models to help solve design challenges.

Exhibits: The Institute is preparing a general public exhibit with the goal of creating a sense of awe and wonder about the natural world. The exhibit will emphasize not just aesthetics or gee-whiz facts, but rather the successful strategies that have resulted in the "survivors" we find on our planet today. Most critically, visitors will see how these strategies can be applied to human challenges to create more sustainable technologies. A walk through the exhibit will expose the visitor to thought-stimulating natural artifacts, case studies, and several hands-on, creative activities designed to allow the visitor to practice and explore a new source of inspiration-nature. A visitor to this exhibit will:

- **Discover ways in which life's strategies can be successfully applied to human systems**. Biomimicry is a problem-solving tool, an approach to innovation. The exhibit will begin to teach this approach and open a wellspring of new ideas that have already been time-tested and are sustainable.
- **Be excited about nature's wealth of untapped solutions**. Nature's catalogue of design blueprints and process strategies is extensive, well-researched, and ready to be explored. Visitors will leave with a sense of hope about an environmentally healthy future.

> ***"The Institute is preparing a general public exhibit with the goal of creating a sense of awe and wonder about the natural world."***

The Biomimicry Institute: Public Education (continued

- **Be inspired to learn more about nature and biomimicry**. In a fun, creative atmosphere, individuals from all walks of life will become engaged in the process of exploring science and design and using bio-inspired technologies to help solve local and global sustainability challenges.

To learn more about this project, please contact:
public@biomimicry.org

The Biomimicry Institute: Innovation for Conservation

The biomimetic path outlined in *Biomimicry: Innovation Inspired by Nature (Benyus 1997)* described four steps:

- quieting human cleverness,
- listening to life's genius,
- echoing what we learn,
- giving thanks.

This all-important thanksgiving gesture will take the form of a program that enables companies to donate a percentage of the sales of products and processes that were inspired by nature. We will work with leading conservation organizations to find projects that will help protect and restore the home habitats of the organisms that inspired the breakthrough.

After all, shouldn't we properly honor the organisms and ecosystems that evolved these ingenious, sustainable ideas, and thank them for showing us the way? Habitat conservation gives us the chance to give credit where credit is due, while protecting the wellsprings that gave rise to these great ideas.

Next, we'll find a way to give the Nobel Peace Prize to geckos, mussels, redwood forests, and fungi! For more information about the program, please contact: innovation@biomimicry.org

> ***"...help protect and restore the home habitats of the organisms that inspired the breakthrough."***

The Biomimicry Institute: Portal

Practitioners of biomimicry design have one consistent complaint - they lack access to relevant biological information organized by design and engineering function. Innovators working on desalination, for instance, can't learn about how nature filters - mangrove roots, kidneys, and sea bird salt glands - all in one place. Currently, there is no catalogue of nature's solutions to design and engineering challenges.

We're trying to remedy this by creating a digital library of nature's solutions organized by function that is both a cross-pollinating tool and a collaboration forum.

> *Imagine the design insights from 3.8 billion years of evolution being available on demand, for free, to any innovator in the world at the moment they are creating new technologies. The Biomimicry Design Portal is a bio-inspiration website where innovators can learn from nature's solutions, biologists can find a whole new audience for their research, and collaborators can work together to create sustainable, bio-inspired designs. It's amazing what can happen when you build a Rosetta stone that translates knowledge from one world, biology, into the language of design and engineering. The genius flows.*

Fully built out, we hope the Biomimicry Design Portal will provide:

- **Inspiration**: Innovators can browse a catalogue of nature's solutions (organized by design challenge), publish their own design challenge classification schemes, and post questions for biologists.

The Biomimicry Institute: Portal

- **Biology Know-How in Engineering Language**: Biologists can share their knowledge of how life works (How does nature filter? Adhere? Reduce friction? Dissipate heat? Communicate, etc.) by uploading summary articles, visuals, End Note bibliographies, comments, etc.
- **Open-Source Research**: Industry can post design challenges and award "X prizes" for bio-inspired solutions.
- **Education**: Students can take classes online and post their bio-inspired designs.
- **Collaboration**: Innovators and biologists can meet, and bio-inspired breakthroughs can be born.

An early prototype of the portal, available here for alpha-testing, has been created by the Biomimicry Guild and Rocky Mountain Institute. The Biomimicry Institute will be taking this site to the next level with the intent of keeping the information in the public domain. For more information about the Biomimicry Design Portal, please contact: portal@biomimicry.org

Clippings, Resources and Events

Three public-access Weblogs hosted on TypePad are now available to share information of interest to the Biomimicry Community.

- Clippings is for short articles on issues relating to Biomimicry.
- Resources contains pointers to more extensive information.
- Events include workshops and relevant conferences

These Weblogs can be viewed with your favorite RSS Reader. Anyone can post comments. Please be aware that TypePad requires an e-mail address and will display this address to people viewing the comment. Each Weblog has a 'sticky' post at the top with suggestions on how to reduce the impact of getting SPAMed.

Past issues of John Mlade's BioInspire magazine are posted on ThinkCycle. BioInspire will be migrated to TypePad shortly.

Contributions of clippings, resources and events are greatly appreciated! Please see the note at the top of each Weblog for instructions.

Thanks,
Norbert Hoeller

The 2006 "Biomimicry and Design" Workshop

This March, 21 eager trainees and eight staff descended upon La Cusinga Lodge in Costa Rica to bring to life the Biomimicry Guild's annual "Biomimicry and Design" workshop. This year's attendees were a motley crew, comprising mostly architects and industrial designers with a few representatives from the engineering, biological and environmental sciences. Just over one-third of the attendees were students.

I thought the course was brilliantly designed, with just the right mix of classroom and hands-on activity in the field. Sessions were quick-paced and kept us continuously engaged. Class material achieved an effective balance of theory and application, and provided plenty of opportunities for us to practice each step of the biomimicry design process in real time.

From our comfortable perch atop La Cusinga's hilltop we were able to explore an astonishing variety of habitats, including tropical rainforest, mangrove forest, coral reef, intertidal zone, paramo, and nocturnal settings. Further, La Cusinga itself set an admirable example for eco-businesses to emulate, from sustainable agriculture and resource harvesting to healthy cooking, impeccable customer service, and well-expressed appreciation for nature's gifts.

The 2006 "Biomimicry and Design" Workshop (continued)

As many of the attendees were urban dwellers, we began with exercises designed to ease us out of our usual over-reliance on vision and into a more holistic way of using all five senses to detect, understand and analyze the natural world around us. We continued this hands-on exploration over the course of the week by finding, in real time and space, numerous adaptations that organisms have exploited to achieve survival – leaves formed to shed water, symbiotic relationships established to share light and nutrients, extensive mangrove root systems evolved to fulfill multiple beneficial functions, natural secretions developed to adhere in a watery and violent tidal zone…to list just a few.

Back in the classroom, we focused our attention on tracing the biomimicry design process and practicing our problem-solving skills. As shown in March Biomimicry Newsletter, the process breaks down into relatively intuitive steps. And yet, as one so often finds, the devil is in the details. Table 1 below summarizes the phases and steps of the biomimicry process, along with key points that I took away from the workshop for each.

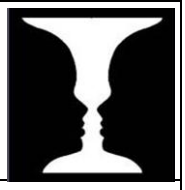
Phase	Step	Key Points
Identify	Develop a statement of need	Frame the need in the most basic concepts and terms possible. Strip away your pre-conceptions as to how a function should be achieved. Begin your search for possible solutions from the broadest base possible to maximize the possibility of finding truly "aha!" adaptations.
Translate	Biologize the question	Identify functions that nature might devise to meet the need defined above. Remember the vase/face optical illusion: just as the "negative" space between the two faces actually presents useful information (the vase), the fact that *no* organisms have chosen to evolve in a certain way provides valuable information about that design. 
Discover	Find the best natural models	Logically speaking, the organism whose very *survival* depends on the function you are trying to accomplish probably has optimized its adaptation most effectively in nature. Look for champion adapters in extreme environments at both ends of whatever continuum you are studying – e.g., desert/rainforest, tropical/tundra, high/low altitude, scorching/freezing.
Evaluate	Play – then design	Nature's solutions are local optima, not universal optima. As such, consider carefully the habitat criteria you identified in "biologize the question" such as climate, nutrient, social and temporal conditions. These constraints will likely also apply to your design proposal. In addition, don't shy away from chimera solutions that borrow from multiple types of organisms.
	Dig deeper	Mimicking the form is not enough, though it is simplest to achieve. True sustainability requires the mimicking of process and ecosystem as well. Nature took 3.5 billion years; expect biomimetic product and process design to require much patience and long-term commitment.
	Double-check your results against "Life's Principles"	We need to wean ourselves from top-down, punch out manufacturing processes. We also need to standardize our basic building blocks to enable wide-scale, cross-functional recycling and bottom-up manufacturing.

Table 1: Phases and Steps of the Biomimicry Process

The 2006 "Biomimicry and Design" Workshop (continued)

For the last three days of the week, we divided into groups of 3-5 to focus on real-world challenges ranging from materials for use in noise abatement, to architecture appropriate for flooding and adverse weather conditions (e.g. New Orleans), efficient packaging of highly perishable food products, space and building design for an on-site spa at La Cusinga, and low cost/high efficiency drainage mechanisms for local use. Some design features borrowed directly and literally from the plants and organisms we encountered during our stay in Costa Rica, while others took more conceptual inspiration. In spite of time constraints and limited access to the internet, I found it invaluable to engage in a practice run of the biomimicry design process from start to finish under seasoned, watchful eyes.

In addition to those listed in Table 1, I offer below a few additional insights that I gained from the course:

- It is important devote more time and thought to defining the basic problem, instead of leaping directly to design of features and components.
- I enjoyed the chance to practice

communicating with group members of dissimilar backgrounds (architects, biologists). I sense the more "generalist" we can become in our knowledge, the more successful we will be at biomimetic design.

- Biomimicry design often requires that we make decisions with imprecise or incomplete information, a challenge for most of us.
- Redundancy is a virtue. Different organisms tackle the same challenge (e.g. collecting sunlight in low light conditions or shedding water in excessively moist conditions) in a myriad of ways. This approach has become largely counterintuitive to humans, who often focus on simplification and standardization, despite the fact that "one-size-fits-all" solutions can be wasteful and ineffective.
- Perhaps most importantly, my time in Costa Rica enabled me to internalize (both intellectually and with all five physical senses) the fact that nothing in nature exists "just because." Every feature or characteristic one sees in the natural world has evolved and adapted to further one purpose – an organism's survival. Given that these adaptations have enabled each organism to win "the ultimate game," one feels their strong potential as design solutions in the human realm.

I feel incredibly lucky to have been part of this year's Biomimicry and Design Workshop, and hope to utilize my lessons learned to catalyze society's quest for sustainability. Kudos to the Guild staff for an extraordinarily well-organized and executed event!

Eileen Stephens

The Biomimicry Spiral Methodology in Action

As part of my third year in Industrial Design at the Ontario College of Art and Design (OCAD), I completed the *Biomimetics: Applications* course. Early in the term, I was introduced to the Biomimicry "Spiral Methodology" (see March 2006 Biomimicry Newsletter for additional information), but did not fully utilize it until my final project on Cigarette Litter.

Open-ended projects require a lot of up-front effort to research the topic, deconstruct the problem, and develop a clear problem statement. I started looking at waste as a general topic and learned that cigarette filters are a major

form of visible waste – worldwide, trillions are discarded each year. Their function as a filter causes them to accumulate toxic chemicals which leach into the environment or are ingested by animals mistaking the filters for food.

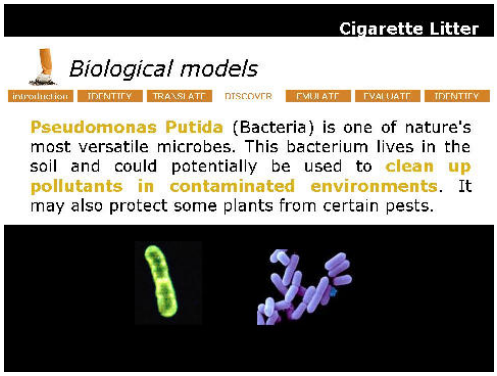
Having accumulated a large amount of preliminary research material, my natural tendency is to immediately skip to the solution. The Spiral Methodology forced me to slow down, encouraging me to think deeply about the research and letting me develop the solution in a natural and unforced manner.

The Biomimicry Spiral Methodology in Action (continued)

By completing each of the five steps, I was able to redefine the root cause and identify ideas that were consistent with the Life's Principles. I found it useful to carefully answer all of the questions, even though some of the questions seemed to overlap – thinking through each question revealed subtle differences that helped clarify the goals of each step of methodology.

I found that I combined the **Identify** and **Translate** steps as part of doing the initial research. I had not considered defining a "target market" – looking at the problem from the perspective of the consumer, the government and the cigarette manufacturers helped me develop a more complete solution. Defining the climatic, nutrient, social and temporal conditions led me to restate the problems as "How does nature neutralize pollutants, collect waste, survive fire and filter air?".

The **Discovery** step was almost a separate project – considerable research was necessary to find good natural analogies. Completing this step after defining the problem helped me keep on track, ensuring that the



research was concise and focused on the revised problem statement.

The **Emulate** step was the most fun – the research was done, and I could start developing and refining ideas that would become part of the final solution. Finally, the **Evaluation** step provided an opportunity to go back and review all the steps.

The Spiral Methodology increased the amount of effort required to complete the final project, but produced a much better product by encouraging 'deep' thinking. It improved my efficiency by defining a clear path with well-articulated steps. Instead of being 'yet another methodology', I found that it integrated well with existing design processes, enhancing skills that I had already learned.

Biomimicry has become part of who I am as a designer. Since being introduced to the world of Biomimicry, I have tried to use it as a tool to solve design problems and to better evaluate my designs.
Biomimicry offers designers an endless source of inspiration and possibility.

Mauricio Affonso

A New Life for BioInspire!!

Launched in January 2003, BioInspire's near-monthly publications helped readers explore the interface of human design, nature and technology. Sharing essays on topics ranging from biophilia, sustainable style, faith in sustainability, and technological innovation, BioInspire cultivated a niche in the growing expanse of environmental publications. By the last issue in July of 2005, the listserv exceeded 800 members from organizations as diverse as national laboratories, academia, architecture and biology.

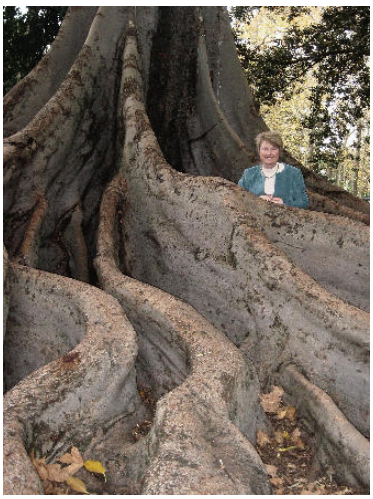
Since then, the list has been largely dormant and I am excited for merger of BioInspire with the re-launched *BioInspired!* newsletter, published by the Biomimicry Institute. The newsletter consistently collects and publishes fascinating stories, events, initiatives and insight into the exciting art and science of biomimicry.

I am continuing to work in sustainability, as a green building research manager for Perkins+Will, serving on the executive committee of the Bioneers Southeast Leadership Forum, and instructed a course entitled "Learning from the Bioneers" at Georgia Institute of Technology.

The course, developed in support of the Center for Biologically Inspired Design (http://www.cbid.gatech.edu), a biomimicry research center at Georgia Tech, is the second of its kind ever taught. Course materials, based on 2005 Bioneers plenary sessions, covered topics as diverse as urban agriculture, ecological design, biomimicry, and global energy issues. The course drew a great response from students and is notable as the first course at the university to be cross-listed between architecture and biology…and a new rank of bioinspired students was born!!

John Mlade

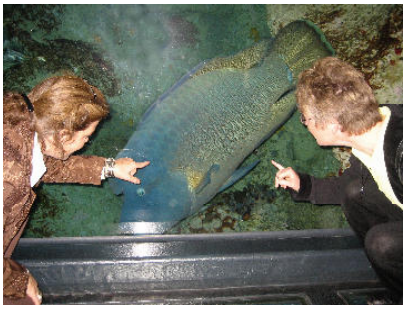
Biomimicry Down Under



In Mid May, Janine and I ventured down under to share the meme of Biomimicry with the Aussies. Two weeks and six cities later, we were exhausted yet delighted with the support for the message and the spirit of innovation that exists there. Our stops included Brisbane, Townsville Adelaide, Melbourne, Canberra, and Sydney. At each location, we spoke to groups equally populated with government representatives, industry professionals and academicians. One would think that they worked in this smooth collaboration on a daily basis but in reality this unique group of individuals was brought together by our tour hosts the Natural Edge Project:

http://www.naturaledgeproject.net

Under the auspices of Engineers Australia, this group of young engineers is working to partner with leaders in sustainability to bring these actionable strategies to Australia.



Although on the road constantly and presentations every day, we had a few hours out to visit with the locals.

To give you an idea of the breadth of the presentations, here are some of the events on the schedule. Janine addressed the National Leadership Forum's annual meeting in Brisbane, the National Press Club in Canberra (which showed Janine Live on ABCTV), a group of over 300 students from ages 8-28 in an outdoor event in Townsville, public lectures in 4 cities and many specific industry meetings and events. In Townsville to the north, where the weather reminded us of Key West, we ran an Introduction to Biomimicry for local business persons sponsored by the local city council. In each of these events, Janine was sought after for more information, next steps and requests for a return visit. Industries are interested in Amoeba to Zebra reports, database modules, and further training for staff. There is also strong interest from the university sector to have the Biomimicry Institute assist in developing curricula at the University level. Janine had the opportunity to meet inventors of technologies she cites in her talks such as Peter Steinberg of Biosignal and Dean Cameron of Biolytix.

The support for the ideas is already beginning to show in the emails and follow up at the Guild offices. We are looking at the possibility of workshops at the reef next spring. Stay tuned and get out the snorkels!!

Catherine Bragdon

BIONIS: the BIOmimetic Network for Industrial Sustainability

BIONIS was founded in 2002 with the object of fostering collaborations between UK biomimetics researchers and UK industry, but it soon grew beyond that. Its mission now is to 'promote the application of Biomimetics in products and services and its use in education and training' worldwide. The network now has members from 40 countries, the largest contingents being from the UK, the USA, India, Germany and New Zealand.

The public face of BIONIS is its website, http://www.biomimetics.org.uk, which is full of useful information about biomimetics. The home page leads you into the site, with features on sources of inspiration from nature, information about the twelve BIONIS focus areas and frequently updated information about events and current issues in biomimicry. The focus areas were chosen with industrial applications in mind. Links take you to other pages, including the BIONIS members' page, where you can complete a registration form to join the Network.

Registration is free, and once your registration has been approved you can search the members' database. This is a most useful feature of the network; the ability to contact biomimetics researchers, industrialists with an interest in biomimetics, and other people in your part of the world who want to learn more about biomimicry. You will also receive a monthly emailed newsletter, containing network news, news of recent research, biomimetic publications, seminars and conferences.

There is also a lively discussion forum, and useful links to members' websites, other networks, funding agencies etc.

> ***"Its mission now is to 'promote the application of Biomimetics in products and services and its use in education and training' worldwide. "***

BIONIS is now run by a Management Committee and funded by one of its members, LUL in Sweden. There are plans for an annual conference from next year, and a prize for biomimetics research. Members will be the first to hear about these plans as they progress.

Jo Lakeland
BIONIS Co-ordinator
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Biomimetics 11: Biomimetics and Sustainable Environments

The biomimetics community within the UK has, since 1995, held an annual one-day mini conference devoted to disseminating the results on ongoing biomimetics research. This year's meeting will be held in the Gordon Theatre at the University of Reading on 29th September.

The theme of the meeting is 'sustainable environments', which will showcase current developments in the application of biomimetics to the built environment. Architects have been increasingly using nature as inspiration, for functional as well as aesthetic reasons, and during 2003-4, the Victoria and Albert Museum in London held a special exhibition, Zoomorphic: New Animal Architecture, devoted to buildings inspired by animals. It is not just the whole design of buildings that is using lessons from nature; innovations such as self-cleaning paint, inspired by leaf textures of the lotus plant and passive ventilation systems derived from termite mounds and animal burrows.

We anticipate participation from researchers and practitioners from a variety of disciplines, including architecture, structural engineering, building services and materials. In addition to oral presentations, there is also the opportunity to make a poster presentation. Further details and a booking form for the meeting can be found at: http://www.reading.ac.uk/biomimetics/events.htm

This year, we are pleased to welcome Bioinspiration and Biomimetics, the new journal from the Institute of Physics, as a main sponsor for the event:
http://bb.iop.org

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Calendar of Public Events

Date	Location	Event
July 22-27	Dupuyer, Montana	Biologists at the Design Table course, Theodore Roosevelt Memorial Ranch, (JB, DB)
Sept. 15	San Diego, California	US Green Building Council (JB)
Sept. 19	Sarasota, Florida	Rethinking Sustainable Construction (JB)
Sept. 29-Oct. 1	St. Paul, Minnesota	New England Environmental Education Association conference (DB)
Note: A full listing of fall events will be included in the next newsletter		

Table 2: Biomimicry Guild Events (JB=Janine Benyus, DB=Dayna Baumeister)

Date	Location	Event
July 29-Aug. 4	Munich, Germany	5th World Congress of Biomechanics
Sept. 10-13	Chanhchun, China	International Conference of Bionic Engineering
Sept. 29	Reading, UK	Biomimetics 11: Biomimetics and Sustainable Environments
Oct. 20-22	San Rafael, California	17th Bioneers
Dec. 17-20	Kunming, China	Conference on Robotics and Biomimetics

Table 3: Other Events

Calling all Biologists! Biomimicry Workshop with Janine Benyus

The Biomimicry Institute and the Biomimicry Guild are hosting their Third Annual Biologists at the Design Table (BaDT) course.

This year's BaDT course will be from July 22 – 27, 2006 at the breathtaking Theodore Roosevelt Memorial Ranch in Dupuyer, Montana (near Great Falls), beginning with dinner on the 22nd and ending after breakfast on the 27th.

This course is led by Janine Benyus, author "Biomimicry: Innovation Inspired by Nature," and Dayna Baumeister, PhD and teaches biologists how to use their backgrounds to help develop biologically inspired, sustainable solutions to modern design challenges. The course is a crafty combination of didactic learning, field trips, team challenges, and an "on your feet" design session with real designers and engineers looking for solutions to real-world problems.

Unfortunately, registration has closed and the course is full, but plans are already in the works for the next course.

If you would like to be alerted to future courses, please contact Rose at:
roset@biomimicry.net
or 406-495-1858.

> ***"What you'll take home: A sense of possibility, because sustainable models already exist...right outside!"***

Rose Tocke

"Biomimicry (from *bios*, meaning life, and *mimesis*, meaning to imitate) is a new science that studies nature's best ideas and then imitates these designs and processes to solve human problems. Studying a leaf to invent a better solar cell is an example. I think of it as "innovation inspired by nature."

The core idea is that nature, imaginative by necessity, has already solved many of the problems we are grappling with. Animals, plants, and microbes are the consummate engineers. They have found what works, what is appropriate, and most important, what lasts here on Earth. This is the real news of biomimicry: After 3.8 billion years of research and development, failures are fossils, and what surrounds us is the secret to survival.

Like the viceroy butterfly imitating the monarch, we humans are imitating the best and brightest organisms in our habitat. We are learning, for instance, how to harness energy like a leaf, grow food like a prairie, build ceramics like an abalone, self-medicate like a chimp, compute like a cell, and run a business like a hickory forest.

The conscious emulation of life's genius is a survival strategy for the human race, a path to a sustainable future. The more our world looks and functions like the natural world, the more likely we are to endure on this home that is ours, but not ours alone."

A Conversation with Janine Benyus

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Norbert Hoeller

Help support the new Biomimicry Institute!

Dear Friends of Biomimicry,

So many of you over the years have asked "how can I help?" or "how can I get involved?" Well now you can in a very practical way. In 2005, we founded the new not-for-profit Biomimicry Institute and in January we opened the Institute's office in Missoula, Montana. As with many new ventures early support is critical to success. As you can see from the lead article in this newsletter, we have many wonderful projects we are working on, all of which need financial support. So we are inviting you to please become a friend of the Biomimicry Institute by sending in your tax-deductible contribution. We are happy to receive a gift of any size, whether it is $10 or $10,000. Until we receive our official non-profit status from the IRS, Women's Voices for the Earth (WVE) in Missoula has agreed to serve as the fiscal sponsor of the Institute. To ensure your gift is tax-deductible, please make your check out to WVE but write "Biomimicry Institute" on the memo line and mail it to:

The Biomimicry Institute
P.O. Box 9216
Missoula, MT 59807

Your contribution will go a long way in helping us build the Institute and its programs. We hope you will join us in this new and exciting venture and help us spread the concept of bio-inspired design.

Bryony Schwan
Executive Director
The Biomimicry Institute