



**Ruby Throated Hummingbird**

Photo: chrisdupe, 2011 | Flickr cc



*Interview*  
Ilaria Mazzoleni

Ilaria Mazzoleni is an architect and the founding principal of IM Studio Milano/Los Angeles ([www.imstudio.us](http://www.imstudio.us)). Since 2005 she has been a full time faculty at SCI-Arc in Los Angeles ([www.sciarc.edu](http://www.sciarc.edu)). Her professional and academic investigation relates to sustainable architecture and building technologies at all scales of design, with research focusing on Biomimicry - innovation in architecture and design inspired by the processes and functions of nature.

Collaborating with biologists and other scientists from top research institutions, her team's projects explore eco-systems which suggest methods of developing sustainable urban planning strategies and address solutions to global climate change. More detailed studies focus on natural processes and forms, and apply them to building façades.

Her current investigations use design as a vehicle to promote awareness about endangered species and emphasize the importance of biodiversity in regions around the world. IM Studio explores further the performative capacities of these organic systems through a juxtaposition between real and digital space.

Over the years, Ilaria Mazzoleni's work has been published internationally. She has participated in exhibitions and international conferences and is a regular contributor to architectural magazines.

*What are your impressions of the current state of biomimicry/bio-inspired design?*

**Biomimicry is quickly developing and reaches out to all fields:** expanding from engineering to design, architecture and the arts. As an architect, it is very exciting to see a field initiated only a few years ago easily gaining a critical mass and creating a real impact in producing change.

*What do you see as the biggest challenges?*

By being an actor and having constructive dialogues between the people that work in this field and beyond. The interdisciplinary nature of biomimicry is its strength, however the semantic confusion is currently limiting clear communication and proficient collaborations.

*What areas should we be focusing on to advance the field of biomimicry?*

In addition to refining biomimicry's semantics, as a critical step to elevating communication and shortening the learning process between disciplines, it is critical to facilitate advanced research useful to the business world. Biologists and designers are currently sitting at the same table, but missing are the ones that can bring their new ideas and concepts to the general public. I feel the next big change we need is in economics: at the macro level biomimetic experts should sit at the table with economists and policy makers, who are working around climate change issues, and can bring in a systems perspective. At the micro level, biomimetic experts should sit at the table with business executives and managers that make decision about taking products and services to market. No new biomimetic project, product and service can be successful if there is no involvement of all these parties.

*How have you developed your interest in biomimicry/bio-inspired design?*

Since my undergraduate studies at the Politecnico in Milano, Italy, my professor, Silvia Pi-



**Weaver Ant Nest Making Crew**

Photo: Troup 1, 2011 | Flickr cc

ardi, encouraged me to research methods to design buildings more sustainably. Over time I met more and more people with similar interests that helped me develop these initial thoughts, moving from the sustainable approaches to designing buildings to discovering inspiration directly from nature. While searching for ways of designing beautiful buildings that also performed environmentally, I stumbled upon a book, *Body Heat: Temperature and Life on Earth* by Mark S. Blumberg. This book opened my eyes to a new world, the one that the following book by Janine Benyus helped me to recognize as biomimicry. After teaching sustainable building systems one semester at SCI-Arc in 2004, I quickly learned that my students were interested in the topic, but not in the highly engineered way they were exposed to currently. The engineering of the building system solution leaves limited space for the creative mind of young designers, while nature's solutions provide an incredible "aha" moment for design, thus I started implementing courses in bio-inspired design and conducting more research based projects in my studio.

*What is your best definition of what we do?*

We are helping our species thrive. Someone said that we are not destroying our planet, but rather destroying ourselves. If we are not ok with this, we better do something to survive! And do it fast! Architecture has a powerful and influential position in this restorative effort, and being both a professional and an educator I feel a strong responsibility and desire for the active participation of leading the change.

*By what criteria should we judge the work?*

Improving the way we, with our buildings, insert ourselves in nature. We are biologically part of nature, but over time we have detached and separated ourselves from it. We need to return to thinking we are a part of nature.

*What are you working on right now?*

I am on the last editing phase of the book substantially influenced by biomimicry on the analogy animal skins / building envelopes, by CRC Press, due to be released in Fall 2012. The book will be organized in two parts: an introductory one, or Theoretical Framework, and an Applications one, with twelve case studies illustrating the developed methodology. The book is the result of my long lasting collaboration with biologist Shauna Price and includes the committed work with and by my students at SCI-Arc.

More recent research includes work on bio-inspired materials, and natural connections. My recent research examines how individual architectural elements might be improved by studying how nature has been solving morphological issues in relationship to material solutions.

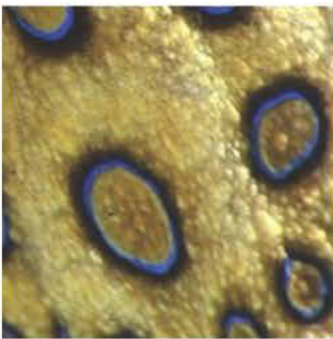
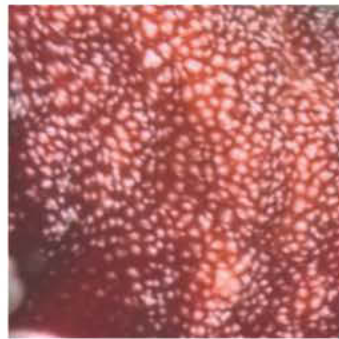
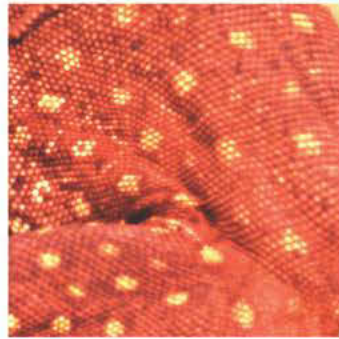
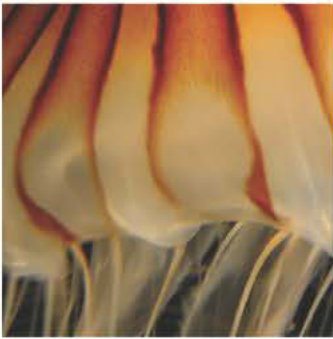
*How did you get started in biomimicry/bio-inspired design?*

After an initial intensive research period, in which I read several books on evolution, animal biology and ecology, and had several conversation with my biologist friends, my first bio-inspired works emerged. As speculative projects, some of which were competition entries, others, like the ones



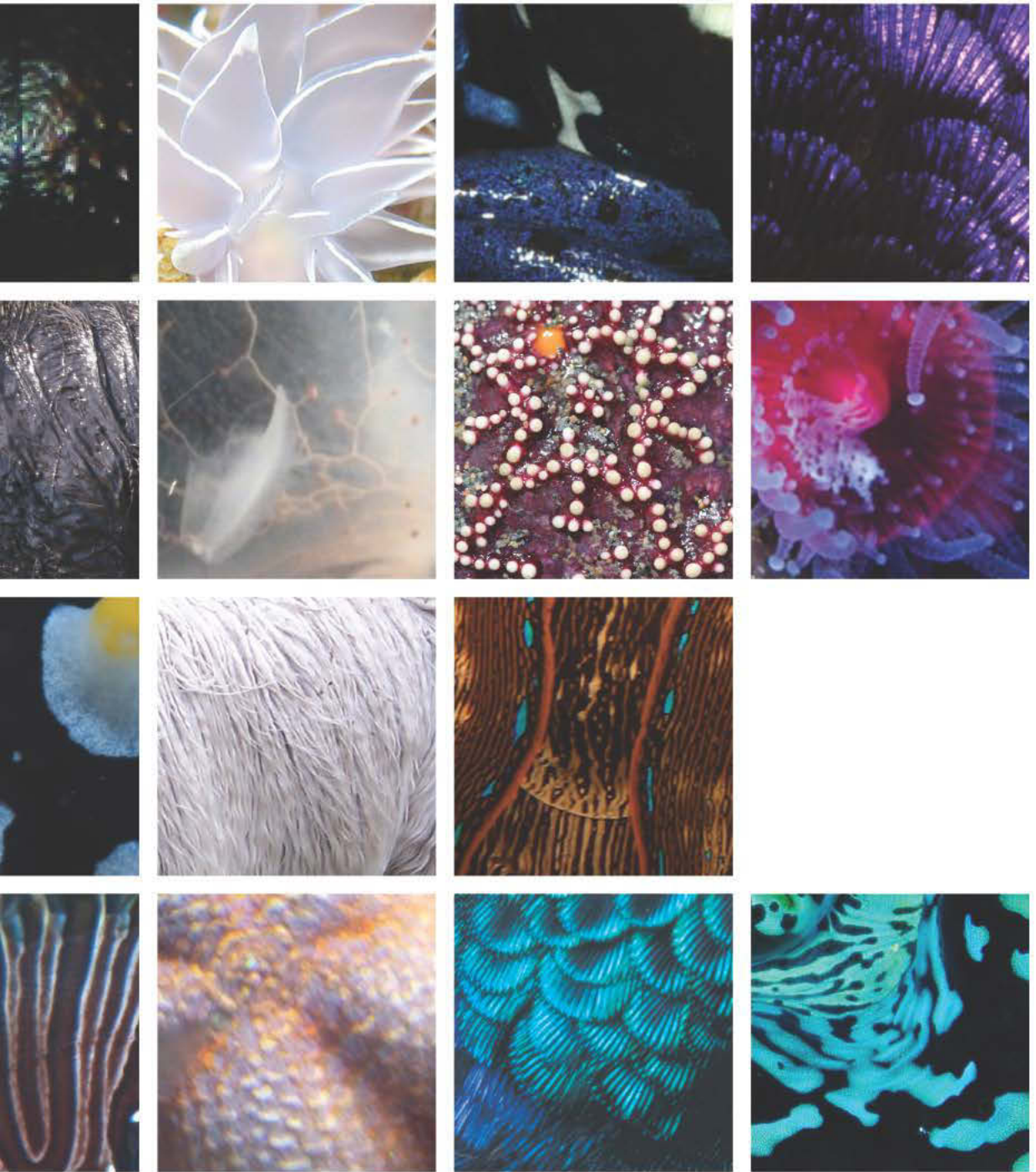
Polar bear on ice flow in Wager Bay (Ukkusiksalik National Park, Nunavut, Canada)

Photo: Ansgar Walk, 1996 | Wikimedia Commons



**Animal Skins**

Courtesy of IM Studio, 2012





prepared for the 11th International Architectural Venice Biennale, *Out there, Architecture Beyond Building*, where I presented, invited by Stefano Boeri and the magazine *Abitare*, five projects inspired by five different animals.

*Which work/image have you seen recently that really excited you?*

Being in nature is the most powerful “image” I keep in my heart. I feel we have been relying upon, perhaps too much, the powerfully developed sense of sight. We read and explore with our vision, but this happens mostly at the level of digital explorations which limits our experiences to only one of our senses. While to really understand and feel “things” we need to immerse ourselves in them. Walking in the woods of my Alpine village is one of the most inspiring experience: all senses are so “taken”, so there, so awake, that all sorts of inspirations arise. What for many is considered only a physical exercise for me is a full body and mental immersion.

*What is your favorite biomimetic work of all time?*

An easy answer would be the work of Leonardo da Vinci, the first biomimetic designer! But I would like to mention the more contemporary work of Yoseph Bar-Cohen. I admire his breath and ability, as a scientist, to focus on his research, yet to act as a catalyst. He has been generously reaching out to many scientists helping spread their research. I admire that generosity and ability as it greatly contributes to built up interest for bio-inspired design.

*What is the last book you enjoyed?*

I just re-read *Cats' Paws and Catapults: Mechanical Worlds of Nature and People* by Steven Vogel,

which continues to be a source of inspiration for me. And I am looking forward to reading his forthcoming *The Life of a Leaf*.

*Who do you admire? Why...*

I admire people that are respectful of and curious about all aspects of nature. Not only about human nature but everything else that composes and is part of our lives. This higher level of respect is found in a few people who tend to be more straight forward, clear and open to diversity.

*What's your favorite motto or quotation?*

Aristotle said: “Nature does nothing uselessly”.

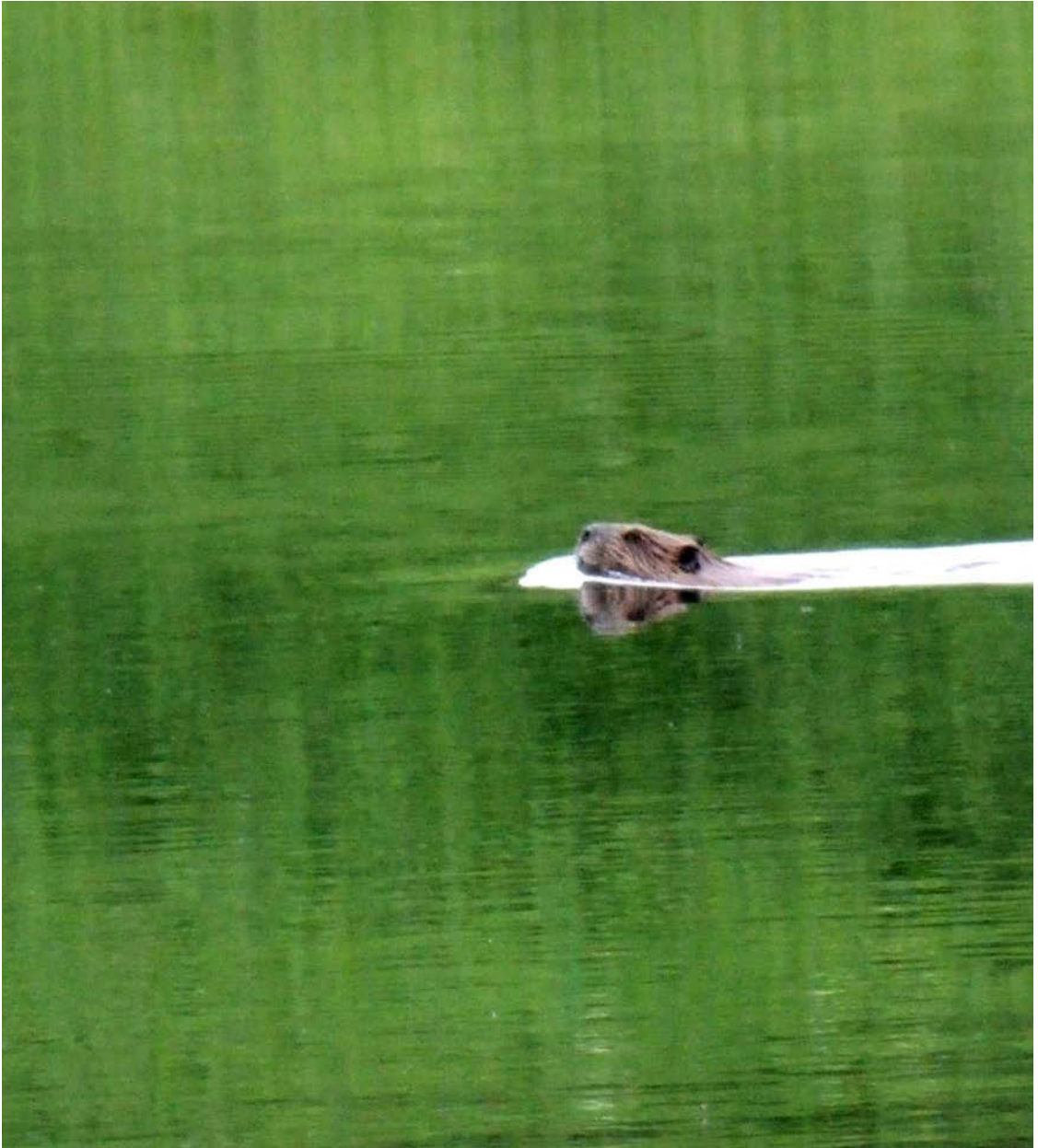
*What is your idea of perfect happiness?*

Living fully which means action (contributing with what you can and what you know) and to continue learning. Doing what one likes with passion and full commitment. This way one would be a better person, for oneself and for the ones around him/her.

*If not a designer/educator, who/what would you be?*

A zoologist. I always liked the idea of field studies, traveling to remote places of the world to observe and learn about animals and their environments, document them and so ultimately... be inspired to improve the way we, humans, are transforming our planet.

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**Beaver**

Photo: Travis S., 2007 | Flickr cc