

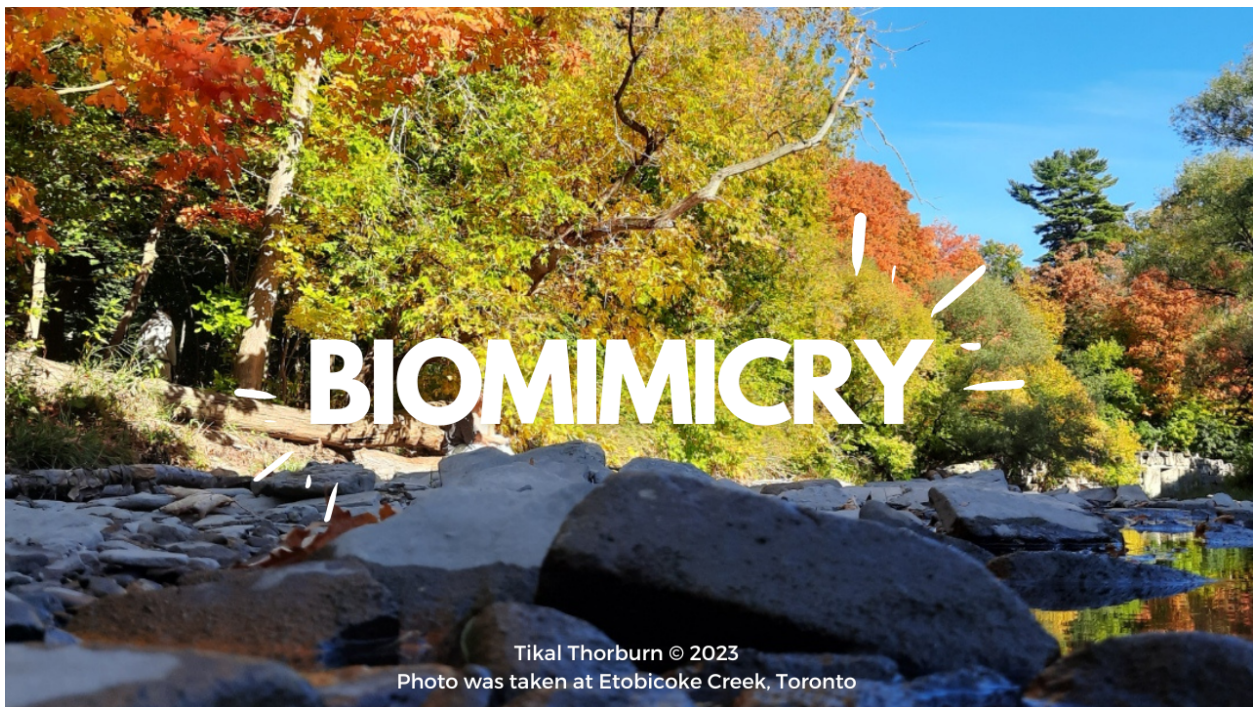
Age: 13

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On the ancestral and treaty lands of the Michizaagiig Anishinaabek also known today as the Mississaugas of the Credit, the rightful caretakers, and titleholders of this land.

Biomimicry is our Fuel for Change



As an environmental activist, my goal is to give *hope* to the climate crisis. I believe that change will come our way. Why? Because everywhere I look, I can see so many current and possible solutions that have what it takes to save our planet. These solutions and ideas provide hope for the future. So, let's inquire together about what we *are* doing to help the environment so far, as well as what more we *can* do to help make the environment of our future more sustainable. Where can we start? The straightforward answer to that question is a scientific concept called Biomimicry. Biomimicry is an innovative practice that learns from and mimics the strategies found in nature to solve our questions, design challenges, and to find hope along the way (*What Is Biomimicry?* n.d.). Nature has sustained itself for over 4.5 billion years. We need to learn from its genius rather than destroy it. There is much that can be learned from the long process of

natural selection, as well as from the design and production of materials, structures, and systems of biological entities and processes.

Biomimicry is a sustainability concept that is being put into action everywhere one turns. The US Naval Academy has been working on making wind turbines more effective and energy-conserving from the design of a humpback whale's fin (Orcutt, 2010). Researchers at MIT have found a way to harvest clean drinking water from the air by examining the survival methods of a *Stenocara* beetle in a desert (Owano, 2016). An architect, by the name of Mick Pearce, has proven how to efficiently cool a building in one of the hottest and most humid countries on the planet by using a ventilation system that mimics the structural technique of one of the toughest species in the world, termites (Hu & Sayler, 2019). A foundation by the name of EConcrete has learned from and mimicked forms, textures, and chemical properties of ocean ecosystem engineering species like oysters, corals, and tube worms to create more sustainable concrete alternatives (Shirazi et al., n.d.). The PowerCone is a wind turbine technology that has learned from the resistance in the movement of maple seeds and kingfisher birds to channel incoming wind (*Retrofit for Wind Turbines Inspired by the Kingfisher and Maple Seeds — Innovation — AskNature*, n.d.). A team at ChangeWATER has been able to dispose of human waste by evaporating its toxins through mimicking the natural process of evapotranspiration, where plants pull moisture from the soil and release it as water through their leaves (*Nature-Inspired Solutions From the Biomimicry Institute*, n.d.). These are only a few examples of what can be accomplished. We must continue to create products, processes, policies, and new ways of living that are well-adapted to life on Earth over the long haul.

We live in the third era of global urbanization. After having built cities on nature, then cities on and around cities, we are now repatriating nature into the city to protect our biodiversity. To this end, we need the help of ecological architects to design buildings that take into account several aspects of sustainability. A Belgian man named Vincent Callebaut does this such thing. He has made many eco-prospective architectural designs that plan the future for the third era of global urbanization. Some examples of Mr. Callebaut's work are "Lilypad", "Dragonfly" and "Tao Zhu Yin Yuan". "Lilypad" is a floating city intended to welcome climate refugees. Its structure is inspired by the leaves of the giant Amazonian water lily and is built from green algae and recycled plastic waste (Stevens, 2021). "Dragonfly" is a vertical farm in New York whose greenhouses are inspired by the crystalline structures of dragonfly wings. It advocates the development of urban agriculture in order to reintegrate places of organic food production in short circuits, in the heart of places of consumption (*Building Through Biomimicry*, 2021). "Tao Zhu Yin Yuan" is inspired by the beautifully intricate designed patterns found in the DNA of certain animals. It integrates rainwater recycling, wireless monitor control of LED lighting, fiber optic connection, light guide systems, and solar/wind power to conserve energy (Shuangyu, 2021). Using biomimicry, we can create architectural projects designed as metabolic ecosystems, like those by Vincent Callebaut, to shape a greener future.

Vincent Callebaut’s eco-friendly architecture designs are all great real-life examples of biomimicry that mimic strategies, patterns, and practices found in nature. We need to imagine projects that advocate the right symbiosis of the humanity-nature balance by drawing inspiration from the forms, structures, and feedback loops that exist in nature. As Janine Benyus, natural sciences writer, once said: “Biomimicry is about valuing nature for what we can learn, not what we can extract, harvest, or domesticate. In the process, we learn about ourselves, our purpose, and our connection to each other and our home on earth.”

The global implementation of biomimicry is crucial to meeting the United Nations #11 Sustainable Development Goal regarding sustainable cities and communities. We need to learn from nature’s omniscient ways and apply these teachings to make our human settlements more safe, adaptable, efficient, and sustainable. In order to fulfill the requirements of this goal, we must use biomimicry as a tool to improve our air quality, sanitary waste systems, resistance to natural disasters, food waste, and other sustainability issues. Consequently, an eco-friendly global society *can* be achieved with hard work and determination. We can use nature’s ways to be inspired and to inspire. Let’s take on the biomimicry challenge! Get outside and learn from nature. Observe, sketch, explore! Go on a walk with your community eco-team, or plan a visit to a nature preserve and look for ways to bring biomimicry to life in our homes and cities! As Steve Jobs once said, “The biggest innovation of the 21st century will be the intersection of biology and technology”. Change starts with each and every one of us!

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