


# A contemplation on the values of biodiversity

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September 7, 2022

According to the Convention on Biological Diversity [1], biodiversity is defined as “the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.” In short, biodiversity can be deemed as the diversity of living species in the Earth’s biosphere, of which human also constitutes the variety. Being a part of the biosphere, humans’ interactions with other species is indispensable; simply think of the meat and vegetation we have in our daily meals to sustain our livelihood. Although scientists have presented myriad biodiversity benefits for humans, I think one significant benefit is still being overlooked: inspiration for innovation.



An 11th Century Pagado in the wilderness, Ninh Binh Province, Vietnam. ©2022 Q. H. Vuong

One of the most competitive advantages of humans is the ability to create innovations. With countless innovations, human has grown to become a dominant species on Earth [2,3], and the impacts created by their activities can even lead to the sixth mass extinction [4]. However, being able to innovate does not mean that humans can do anything they want. Still, the innovation needs to follow the parameters, constants, and laws of the Universe they live within [5]. Therefore, one of the fundamental steps to generating innovation is perceiving (or sensing) information from the surrounding environment [6]. For instance, the gravitational theory was formulated by Isaac Newton after he watched an apple fall and asked why it fell straight down but not sideways or upward.

In the biosphere, species that can exist until now must have been evolving and adapting to the environment through the natural selection process [7,8]. Each species has a unique trait (or set of traits) that contributes to its survival and reproduction. Although evolution is highly stochastic, its direction and degree of change are still confined by the Earth's parameters, constants, and laws (as part of the Universe). In a sense, if a species can exist until now, it has some helpful characteristics that can be replicated, thus inspiring innovation by humans.

Following this way of thinking, the higher number of species on Earth is equivalent to the higher number of possibilities humans can take inspiration from for innovations. Many technological innovations have been successfully generated based on inspirations from wildlife species, such as parasitic wasp-inspired needles, gecko-inspired surgical glue, peacock-inspired biosensors, fiddler crab-inspired artificial vision system, etc. [9,10]. Or, why don't you imagine what human societies would have been without Penicillin if Alexander Fleming had not observed the Petri dishes containing *Staphylococcus* bacteria and noticed something strange. Therefore, it is argued that conserving biodiversity sustains our livelihood and contributes to advancing human civilizations.

## References

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