

# Free essay about give-and-receive situation with the plants

[Environment](#), [Plants](#)



This paper considers the ecological relationships among organisms in two paintings. While the obvious, mutualistic situations jump out immediately, consideration is given to the potential for other symbiotic types of co-existence. The possibilities are endless. This is not so much because of what is in the paintings, but because of what is missing.

What is most amazing about the presence of living things on Earth is the way they depend on and impact one another. If it were possible to use a string to connect living things to one another (based on how they directly or indirectly affect one another), the world would look like a giant cluster of webs. This string would reach all the way down to tiny microbes. Just as some bacteria depend on Komodo dragons for a home, they in turn provide toxins mixed with the saliva and serve as a weapon for the Komodo when it's hunting other animals for food. The relationships shared among organisms are quite complex, but can be classified as four symbiotic or two oppositional types. The oppositional relationships include competition and predation. For instance, competitive inhibition may occur among the roots of two different plants that are set in the same small pot. The symbiotic relationships include: parasitism, commensalism, amensalism and mutualism. These names indicate if one or both living things in the relationship receive a benefit or disadvantage. The availability of food and natural resources within ecological habitats both play a role in shaping these relationships. There have been times when two large species of mammals have to fight to drink from a pond with limited water. At the same time, an alligator hides under the algae waiting for one of them to reach down for a cool drink. After the alligator has his fill, some scavenging aquatic species might be waiting to

finish the left overs. Nature has a way of minimizing waste and preventing too many of one species from over populating so that ecological homeostasis can be maintained. Despite efforts to sustain this balance, disease and natural disasters or human impositions can often tip the scales and consequences may be imposed. For instance, chopping down trees can be catastrophic for certain birds. Even more than the fact that they must find a new higher ground for their nests, the moths that ate the bugs in those trees disappeared. If the main source of food for that bird was the moth, they may suffer. What happens to the animals that preyed on those birds for food? Because all living things are somehow connected by this string, one hurting species may be a blessing or a curse for another. There are cause and effect issues brought by these complex and delicate relationships.

Living things have been inspiring artistic portraits since the beginning of time. Some artists have elected to draw dolphins guiding a fisherman's boat away from danger, unknowingly creating a bright display of commensalism. Others have brought to life on canvas a scene of predation and parasitism between two swift and muscular mammalian species. Two portraits in particular offer a mystical and yet realistic image of pleasant habitats for living things. One is called, *Expulsion from the Garden of Eden* by Thomas Cole. It has a dark and punishing appearance compared to the colorful imagery of the fruitful Garden of Eden (depicted in Biblical scriptures).

Another example of a scene with an ecological relationship is depicted in *Passion Flowers and Hummingbirds* by Martin Johnson Heade. It is a misty wetland wherein two birds get to enjoy no competition for the sweetness that the flowers offer. To an artist, both of these paintings can be analyzed

according to their brush strokes and paint composition. However, for a life scientist the main thing that jumps out of the frames might be the obvious relationships among living things. For these paintings, (despite their differences) the symbiotic relationship of mutualism is brighter than the pink flowers or the sunlight beyond the cave.

It would be nice to go back into time to interview both artists. Did they know that they were providing exactly what each living thing needed with their paintbrushes? Even if Adam and Eve were evicted from Eden because of disobedience, they would still have fresh oxygen from the abundant trees and grassy fields. The trees have access to water in this scene. Since the plants can get water and sunlight, they can make the oxygen that this couple would have needed. However, Adam and Eve along with other oxygen breathing species offer carbon dioxide. Carbon dioxide is welcomed by plant cells as a much needed ingredient for their biochemical process. Surely if there was a snake in the Garden of Eden, then there should be plenty of serpents in this disciplinary landscape. Though they might not have posed for the picture, one must assume that other living things exist in that world created on canvas. Plants give oxygen as a waste product equally as much as non-photosynthetic living things excrete carbon dioxide. This creates a wonderful, mutual relationship that Cole might not have realized. Secondly, if Adam and Eve were indeed banned to cope in this lonely land, they might have had no choice but to eat the plants along with the fruits they offered. This would have created a parasitic relationship wherein the plants were the victims. Meanwhile, this sexually enlightened couple would have all the energy needed from the plant's sugar to endure painful procreation and

populate this land with more babies. These babies would in turn breathe carbon dioxide which would have benefited endless generations of plants. Not to spray a funk over such a lovely painting, but the excrement of Adam and Eve would have enriched the soil. This would have been beneficial for the plant life as well. Indeed, Mother Nature was the master of recycling long before human technologists claimed to coin the term.

Passion Flower and Hummingbirds is contrary to Cole's painting in that it evokes a cheerful feeling rather than a silent sadness. The bright pink petals outshine the sunrays even in the dimmest of lighting. First, it seems as though the two birds are completely in tune with one another's songs. The bird on the lower branch has an extended neck reaching up to nearly kiss the bird above it. Not only are there flowers in full open bloom, but some are younger and set to blossom soon. These birds have all that they need: each other, moisture and sweet nectar from present and future generations of plants in their habitats. Aside from the obvious, mutual love in their relationship, there is a mutualistic dance between the plants and the birds. The birds give carbon dioxide and inhale oxygen. The plant cells gladly accept the carbon dioxide and return many thanks with abundant oxygen. The plants get more than just one molecular ingredient for photosynthesis from the birds. They get to send their pollen on road trips by way of the little bird's feet. When birds land on flowers to drink the sugary nectar, they get pollen on themselves. This is the genetic material that spreads around this landscape as the birds travel from one section to the next. The result is proliferation of the plant species and even more colorful plants due to genetic diversity. This might explain the one yellow flower near the lowest

extended branch of the painting. The bird droppings would also serve to enrich the soil wherein the plant roots are grounded. Perhaps it is the optimism inspired by this painting which drives the assumption that the birds are mutually in love. Their relationship would be equally symbiotic as the

On the other hand, there is a potentially parasitic scene that could take place here. If that yellow splatter of paint on the lower branch is really a butterfly, then the birds might be the reason why there is only one in the painting. Caterpillars crawl on trees and leaves hoping to make it to the pupa phase to emerge with the ability to fly. If the birds have eaten most of the caterpillars (just as they eat worms) then these delicate flying beauties would be parasites. This might be beneficial for the plants because their greedy, crawling enemies would be lifted away from eating their fleshly leaves. This would add another point supporting the mutual benefits among birds and plants. It would also explain why there is only one yellow butterfly in the painting. Unless of course, that yellow brush stroke is really just a flower which validates the argument for botanical genetic diversity. A final consideration is the height of the branch upon which the bird is perched. If they are as high above ground as the picture insinuates, then careful consideration should be given to the reason why. Are there predators on the ground that would try to eat the birds if they flew low enough? These birds could be kissing because they just escaped a starving reptile or mammal below. When analyzing a painting, it is important to consider what is not there, instead of only seeing what the paint brush left to dry. With regard to the secondary Eden, abundant fruit and colorful flowers are not there. The most religious folks in a crowd might say that God purposefully didn't put

them there because Adam and Eve indulged in forbidden fruits before. However, a biologist might assume that there are other primates who gathered all of the fruit to store for their offspring since a colder season is fast approaching. This would make the monkeys parasitic to the trees for stealing their fruits and seeds. It would also create a competitive relationship with Adam and Eve who may not be as swift with the climbing ability to reach the highest foods. If there is water, in Cole's painting, then there must also be aquatic life. This would be great for Adam and Eve to get some much needed protein. However, it would also make them parasites. This is truly possible unless there are flesh-eating eels in the water which would turn the tables in favor of the marine life. Paintings cannot be limited to descriptions based on what is present. They can also be explained in terms of what is missing.

Even more fun than admiring portraits, is imagining the biodiversity, threats and comforts that organisms offer in these painted habitats. It is almost possible to taste the moisture among these black and white birds. It is definitely possible to imagine God's anger when looking at this grim corner of Earth that Adam and Eve may have been banned to inhabit. The humor in this is that man will continue to create landscapes of Earthly destinations. With each time, there will be relationships inevitably formed as long as two or more living things are drawn into the scene. They will fight, compete, benefit or show indifference to one another. Survival of the fittest and the ability to adapt to change are what determine graduation into the future. If the birds in Martin's painting create offspring, they might certainly need to gather more sources of protein. If the flowers are going to sustain their luster

and beauty, they might need more sunlight than the artist cared to offer. In fact, some of the leaves appear to be pitifully droopy and famished. It could be that there are tiny creatures eating the leaves while serving as a meaty meal for the birds. However, two birds might not eat enough to sufficiently remove the pests and restore the health of the leaves. There are so many ways to tell the stories of biological relationships in these paintings. With the inclusion of elements both present and missing, the story telling could be endless. Yet with regard to symbiosis, if only taking into account what can be seen with the naked eye, both paintings innately show mutualistic relationships.