

## Math, struggles, and slash pines

by Carlos Gonzalez



She told me that she did not think she was going to pass her math class, that the teacher was confusing, that she worked full time, went to school full time, and she did not have the energy or time to go to tutoring. She saw herself taking the class once again, she said. It was five minutes before I was taking students on a tour of the Environmental Center. I was drawn into my student's struggle and for a moment wondered what I had to offer her, if anything. In my work I see so many who juggle too much, who struggle and often don't see a way through their challenges because they are so many.

We walked toward the start of our tour, and I felt the heaviness of this conversation. To me it wasn't just one more student merely giving up on a class, but hers was the voice of so many others. Math was not the real issue. It was life itself, life that seemed unfair, harsh, and impossible. Clearly I was hearing her story filtered through my own heaviness, my own sense of struggle, loss, and pain, the past nine years or so of seeing my mother lost to dementia, the breakdown of family bonds, the loss of loved ones, and at times, the loss of hope.

The week before hearing my student's story, I had read over 140 essays. Some of them detailed suicide attempts, painful separations, failed dreams, loss on a scale that surprised me and reminded me how we are more alike than we are different. And as I walked to the entrance of the Center, the air plant growing on the tree caught my attention. It did not do so in a subtle way. It spoke to me and asked me to tell a particular story. This beautiful being, although voiceless, was asking to speak to my student and to me.

The clarity of the communication surprised me. It was now evident to me that I needed to have overheard my student mention her math class. It was also evident that what I was going to do for the next seven hours of teaching was to repeat the message, not so much because of my math challenged

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student but because I, too, needed to hear a good word. I needed a reminder. We needed a story, this story, as Barry Lopez reminds us, “more than food to stay alive” (1990, p. 8).

The Environmental Center is a nine-acre preserve. One enters it through a colorful mosaic gate and is immediately presented with a radically different space. The Center is on the edge of campus, the edge of time, and a text that often is misread or not read at all. It is a reminder of what parts of South Florida used to be, of how the landscape looked before development. It offers a glimpse of a bygone era where slash pines covered the area and the human footprint was less obvious. It is also a clear reminder of the feeble efforts to preserve the often tenuous relationships between humans and other life forms. It is a place where one can experience great peace and also be in touch with a sense of deep loss. It is filled with life and reminders that death is also part of life and the cycle of beginning and endings is infinite.

So what did the epiphyte say to me? This was no joke. Adaptation = Learning. The rest follows.

As I stood before my students, I told them how at some point, millions of years ago, I was guessing, the ancestors of this plant learned that living on the soil was not to its advantage, and somehow learned to live on the tree canopy, gathering food and water from the falling leaves of the host tree and in the process providing a home for small animals such as frogs and lizards.

This particular air plant was about to bloom, and we could see the emerging structure of the flower, an elegant manifestation of perfectly adapted design. We looked at the plant, I caressed its leaves. Students looked at me as if I were on some kind of drug. I assured them I was not. I told them the message from my plant friend: To adapt is to learn and to take on life’s challenges and use them to create what is necessary for survival and the possibility to thrive. We took a moment. I answered some questions. We were quiet. Some were looking at their phones. I hesitated to take steps away from the air plant, but I knew then that I would be able to hear its message the rest of the day. And we walked to the little sliver of slash pine forest.

It was only a hundred feet or so away. At the head of the trail, a beautiful specimen of a tree stands tall. It’s probably 60 or more years old. As I came upon it, I told them that this tree was a Ph.D. in South Florida; that it had learned this area so well that it had specialized in living here and nowhere else. This particular species of slash pine, *Pinus elliotii* var *densa*, is endemic to South Florida (Pine Rocklands—Miami-Dade County). Students looked at me funny. I stared back. I kissed the tree. I thanked it. By now, everyone had been pushed over the edge of weirdness, and they just looked at me and smiled.

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I continued with my message and repeated the mantra the epiphyte gave me: Adaptation is learning. It is the means that all of life has to continue to exist. Change is a constant. Adaptation is a dance with change. It is the engagement of the core challenge associated with change. It is the “yes” in all creatures to life, possibility, and existence.

I told them the little I know about slash pines, that there are other relatives of this tree, but that this species is only found here. I pointed out how this particular pine learned to use the wet and dry seasons, the poor soil conditions, frequent fires to manifest a beauty that is a gift to witness and appreciate. I celebrated the tree in front of me. Everyone did so as well. A little attention, at least, from the more hard to reach. We took a moment to breathe deeply and notice the scent the tree gives off. I was filled with wonder. Some were too. Others looked at their phones. They were receiving messages at the time, but not from the epiphyte, the slash pine, or me.

So many unique elements of this tree’s knowledge and manifestation of life exude in this place, the fringes of this campus where concrete replaced its kin. Its bark is fire resistant, a useful trait given lightning strikes that in the past burned the under story. These fires took place in the wet season and were not destructive. They were energy deposits into the area that these trees knew how to use. The slash pine drops its seeds after a fire into the ash-enriched limestone and the seeds take root.

The specialization worked well for thousands of years. It stopped working once large numbers of people moved into the area. The Dade County slash pine did not specialize in humans, however. It did not take us into account and our aversion to fire. Not surprisingly, the slash pine has lost out to our home building and fire suppression. In a matter of less than 100 years or so, about one to two percent of the endemic slash pine forest is left (Pine Rocklands—Miami-Dade County). This tree adapted to the area but has not been able to adapt to our presence.

The lesson in this is difficult. It presents us with many questions. Primarily, “What’s our responsibility and role in preserving those life forms that don’t have the capacity to adapt to the rapid change we are creating?” and “How do we address those who are not able to learn at the pace of change all around us?” These were big questions, but not the thrust of what I was hoping I was conveying to my students. The message of the air plant, though a species that supposedly lacks judgment, seemed more direct: To adapt means to learn. To stop learning or not learn fast enough means death.

So about one to two percent of the original Dade County slash pine forest is left. Our campus has a couple of patches where once the entire area was dominated by these trees. We walked away from this small patch and felt ambivalent.

The beauty of the trees is obvious; their fate also seems sealed. But. There is always a “but” that carries the possibility of surprise. On the way out of the slash pines, I spotted one solitary atala butterfly heading for its morning breakfast. This small dark blue butterfly with a red belly and metallic blue dots on its wings echoed the epiphytes message and gave it a slightly different intonation.

We paused before leaving the forest and observed the atala dancing amongst the flowers. I mentioned how this exquisite creature was believed to have been extinct as of 1965 and that in 1979 a small population had been discovered in Key Biscayne (Pine Rocklands). The atala had almost disappeared because it, too, specialized and had adapted exclusively to the South Florida environment. Like the slash pines, it found itself challenged to live because we interfered with its environment and eliminated the coontie plant, a once prevalent plant of the hammocks and rock pinelands. The coontie, an ancient cycad, is the sole host plant for the atala. This specialization meant that when the coontie was virtually eliminated from the area, the atalas disappeared as well (Pine Rocklands).

I told students to pay attention to this story. That it offered a detail that was not fully developed in the earlier message of the air plant. What was interesting about this story was that the atala did not die off. Against significant odds, it came back. It was not supposed to survive. But an effort to encourage gardeners to plant the coontie allowed the butterfly to return. This was not an all-out plan by a monied government agency or environmental group. Butterflies are not big money makers! And so I reminded them and me that not all is loss. Not all is a sealed fate. Sometimes we get surprised by the beauty of small miracle stories that don’t allow us to give up. More significantly, the atala reminded us that there’s always a possibility for the creature with the greatest ability to adapt, us, to do so and allow others who may not have the same capacity to survive and thrive.

Our journey through the Environmental Center came to an end as we approached the chickee next to the lake. We sat there and felt the cool breeze. The pitched roof thatched with native palm fronds, the cypress columns, and the setting offered a perfect conclusion. We were sitting under a structure built by members of the Miccosukee Tribe of Indians. The structure was one last reminder of adaptation, where lessons from math, life’s struggles, and slash pine can collide.

## References

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