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## The Benefits of Discovery Through International Collaboration

Seetha Raghavan

University of Central Florida, [seetha.raghavan@ucf.edu](mailto:seetha.raghavan@ucf.edu)

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## The Benefits of Discovery Through International Collaboration

**By Seetha Ragavan**  
UCF Forum columnist  
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We are more connected than we imagine and have more to gain working together to overcome challenges than we do separately.



Earth as seen from the moon. (Photo courtesy of NASA)

When astronauts had their first glimpse of Earth from space, the effect it had on them was more than just visual. They described an intense state of self-transcendent awe, wonder and oneness, called the “overview effect.”

Heading to space was not an option for me at the time, so the change in worldview that I sought, as a student, came in the form of studying abroad in Toulouse, France. With no knowledge of French, I was headed for three months of intensive language training followed by a master’s in aerospace engineering at Institut Supérieur de l’Aéronautique et de l’Espace , one of the leading aeronautical institutions in the world.

What was I thinking?

It was perhaps the moment the airplane took off that excitement quickly turned into panic as I struggled to repeat unfamiliar phrases playing in my ear. What followed was intense immersion interspersed with experiences of getting completely lost in the city, discovering the beauty of the Pyrénées, memorizing 20 possible essay responses for a flight mechanics oral exam, getting kicked out of a boîte, or nightclub, in Paris, making lifelong friends and so much more.

Armed with my walking guidebook, I spent days in awe of the history surrounding the very places where I stood. Then there were tears of homesickness coupled with a coping mechanism that resulted in a large pile of handwritten letters, complete with drawings of my room layout, still in the possession of my then-fiancé-now-husband.

Until just one day, I vividly remember sitting in the Paris RER train on my way home from work, making small talk with a stranger about the beautiful pink sky at sunset, when realization hit me. In two years, I truly became part of this society that I had come to adopt. Although I had to leave eventually, something in me had changed forever and would never be the same.

Home is not one place but all the places where the opportunity to make a difference provides a sense of purpose and pervades a sense of belonging.

In the end, my shift in paradigm was that home is not one place but all the places where the opportunity to make a difference provides a sense of purpose and pervades a sense of belonging.

In the meantime, scientists and engineers are pioneering new technology in space flight so that we might all one day experience the overview effect and learn more about ourselves through earth observation and space exploration. The most significant part is that these efforts represent some of the largest and most successful examples of international cooperation.

Experiments on the International Space Station, for example, come from researchers in 108 countries and areas around the world. Even within the atmosphere, major aircraft programs such as the development of the F-35 stealth combat aircraft demonstrate that the most ambitious engineering innovation is best achieved through global partnerships.

Yet, STEM fields continue to be the most underrepresented in study or research abroad. This is mostly due to intensive academic programs that leave little time to spare or to acquire the related language training as well as an overall fewer number relevant programs organized and offered.

My first international collaboration was initiated with a simple phone call reaching out to scientists in the United States and Germany with my ideas of joint research on propulsion and energy. Fast forward nine years and three successful National Science Foundation International Research awards later, 20 students have had three-month research experiences with the German Aerospace Center in Cologne and Stuttgart with the collaboration growing to six faculty members on either side.

Teams from both countries have come together to conduct some of the most unique experiments together with scientists at the Argonne National Laboratory in Illinois. It was our ability to leverage strengths in the different ways we approach scientific challenges that has brought us outcomes we could not have achieved individually.

Subsequent Fulbright awards provided some of these students with opportunities to extend their experience over a year. Many have pursued graduate research where their skills in resilience and adaptability from their international experience have proven indispensable. All have gained invaluable mentorship from scientists here and abroad.

Their outreach has been focused on sharing experiences and dispelling the myth that scientists and engineers only learn within the confines of a classroom or laboratory. This has been a crucial part of ensuring these experiences benefit many more.

If these past months have brought anything to stark clarity, it should be that we are all more intricately connected than we imagine and that we have more to gain working together to overcome the biggest challenges we face today than we do disparately.

So, until we all get to experience the life-changing view of our collective home from space one day, it remains a goal of mine to continue delivering that higher perspective I once was afforded — one international experience at a time.

Seetha Raghavan is a professor in UCF's Department of Mechanical and Aerospace Engineering. She can be reached at [seetha.raghavan@ucf.edu](mailto:seetha.raghavan@ucf.edu).