

# TURNING POINT

## Riccardo Bevilacqua

*In the middle of his PhD, Riccardo Bevilacqua left Italy for the United States to pursue his passion — designing spacecraft. He secured a three-year young-investigator grant this spring from the US Office of Naval Research (ONR) to design a low-Earth-orbit satellite to forecast space weather.*

### How did you first pursue your interest in spacecraft?

I completed a five-year *laurea*, essentially a master's programme, in aerospace engineering at the University of Rome in 2002. My thesis explored ways of controlling the orientation of spacecraft. I worked for a year in Spain developing software for satellites, and realized that I wanted to focus on research. I went back to Rome for a PhD, and my research adventure led me to the United States.

### How did that happen?

Sometimes you have to be in the right place at the right time. I was at a conference where Marcello Romano from the US Naval Postgraduate School in Monterey, California, was demonstrating technology that could perform simulations I had worked on during my *laurea*. The Italian university system will sponsor a PhD student for up to 18 months abroad, and Romano was happy to host me. In his lab, I worked on optimizing the fuel use and timing of spacecraft operations — for example, docking a space shuttle at the International Space Station. I continued in his lab with a three-year postdoc.

### Describe your job search.

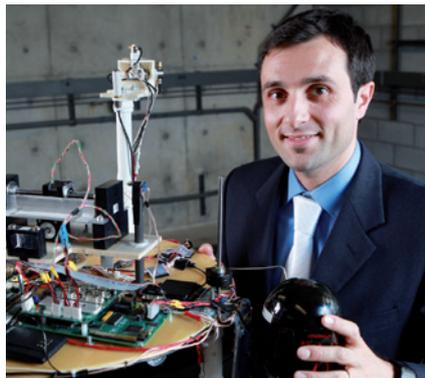
From the start of my postdoc I applied for at least 20 jobs, but I only got my first interview nine months before the end of the postdoc. All of a sudden, it was the right time in the job market. I had five interviews in a month.

### You ended up at the Rensselaer Polytechnic Institute (RPI). How has that been?

After spending so much time in California, I didn't expect to end up in Troy, New York. But I also didn't expect the RPI to be so aggressive and supportive in terms of start-up funds, which was crucial for starting my lab, getting students and making important connections.

### Do you have any plans to return to Italy?

The most difficult decision was to leave my country. I was receiving interview calls from Italian companies as I was accepting the postdoc position. That was a turning point — Italy has one of the worst research situations in



Europe and I realized I won't be back there for a long time. For me, it was the right decision to come to the United States — I grew up with the shuttle and all the amazing things this country has done in space. With support from funding agencies and the RPI, my research interests are better served here.

### What does the award mean for your career?

The ONR award [US\$510,000] is funding my work building small spacecraft that can measure variables in low Earth orbits. Last year I received a \$334,000 young-investigator grant from the US Air Force Office of Scientific Research to support my work to prove that you could use the atmosphere to steer small spacecraft without propellant. That grant helped me to get the ONR award. The most important aspect of these grants is not their amount, it's the visibility. People know what you are doing and that leads to more projects that splinter off the original research.

### Have the cuts to US federal spending affected your research goals?

I'm expecting cuts to existing grants but don't know by how much. I have four graduate students and would love to recruit more, but with the funding situation, I'm not sure how quickly I can grow my lab. Still, my research is attractive partly because we design small, cheap spacecraft that can do science at a reduced cost.

### Where do you get your inspiration?

Inspiration can come from anywhere. One undergraduate showed me his origami designs and wondered how to apply them to my research. After thinking about it, I realized we could use those folding strategies to develop a sail to steer our spacecraft. ■

INTERVIEW BY VIRGINIA GEWIN

## UNITED STATES

### Jump start for postdocs

The US National Institutes of Health (NIH) in Bethesda, Maryland, has shortened the eligibility requirement for its popular Pathway to Independence award, a grant of up to US\$947,000 that helps postdoctoral researchers to establish their own labs. From February 2014, applicants must have a maximum of four years of postdoctoral training experience, rather than the current five. The change is intended to encourage postdocs to complete their training more quickly, says Sally Rockey, the agency's deputy director for extramural research. Lorraine Tracey, chair of the National Postdoctoral Association's board of directors in Washington DC, says that applicants should start planning their next career phase within their first postdoc year. The NIH hopes eventually to make awards to 30% of applicants, up from 23% at present.

## EUROPE

### University funding cuts

Public funding for universities in some European countries has dropped precipitously from 2008 to 2012 as a result of the global recession, leading to weakened research capacity and risking a 'brain drain', says a report by the European University Association (EUA), released on 10 June. Of 20 nations studied, 13 had less funding for universities in 2012 than in 2008, with the greatest cuts affecting Greece, Ireland, Lithuania and Hungary. "The prospects are dim," says Thomas Estermann, head of the EUA's governance, autonomy and funding unit. "If these trends continue, it will be much more difficult for researchers thinking about where they want to start their careers."

## MEETINGS

### Help with expenses

Early-career astronomers who need financial help with child or dependent care to attend the annual meeting of the Division of Planetary Sciences (DPS) of the American Astronomical Society, based in Washington DC, can apply for a US\$250 grant from the DPS. The division has set up the Susan Niebur Professional Development Fund to offer support to qualifying members, including graduate students and postdocs. The DPS has launched the fund with \$2,500 and is seeking contributions from its members and the astronomy community. This year's meeting is in October in Denver, Colorado.