

Industry and Astronomy

By Prof. Giovanni Bignami

Galileo too had started like this. That is, by building telescopes for the Serenissima Republic of Venice, in 1609, as soon as he learned that some glass specialist in Flanders has discovered a lens combination which allowed one to see things afar as if they were near-by. Galileo, who had been professor in Padua for over 17 years, knew very well that Venice has the best glass in the world, and went personally to Murano to order lenses of various sizes and curvatures. But then he immediately realized that a lens is just as good as it is polished, and thus proceeded to polish his lenses by his own hand. In this he was amorously supported by a young and beautiful girl from Venice, Marina Gamba, who was then living with Galileo “in sin”(and had given him three children..).

Galileo mounted his lenses, polished to the same optical quality as for reading glasses (occhiale, in Italian), at both ends of a tube, resembling a small cannon, and, *pronto*, there was a “cannocchiale” (cannone + occhiale...), i.e. what today we call telescope with a fancy Greek name. The rest, as they say, it’s history: it was the birth of observational astronomy.

EIE, alas, did not exist at the time, and Mestre was just a hamlet of fishermen who did not for a moment think about telescopes. Nor did INAF exist (nor even Italy), and even less so ESO or a united Europe. Today, on the other hand, we are all here to celebrate EIE, which 25 years ago started in Mestre, more or less like Galileo, but with no need of Dutch people to take optics lessons from (this is true even today, after all). So now we know that it’s up to EIE to carry forward, from the Serenissima to Italy and to Europe, the challenging heritage of Galileo, the telescope maker and observational astronomer. We shall leave aside, for the time being, other Galilean traditions, including that of seducing pretty Venetian ladies.

The present writer has been interacting, as INAF president, with EIE and Gianpietro Marchiori only for a few years. But I had seen him in action, always in the Serenissima, starting about fifteen years ago, when we both used to play around with space technology. Even at that time, I had understood that working with EIE was, in the end, a sure way to success. In the end, I said, because at the start one was sure to experience some fear and uncertainty, owing to the feeling of recklessness with which we both entered seemingly impossible challenges. And, after the inevitable success, there regularly comes a feeling of admiration for the sheer courage that EIE, and Gianpietro, had shown and continue to show.

With INAF, as with ESO, EIE has done all sort of things. They had to handle photons from the radio to the ultra-high-energy gamma rays, covering two decades in time and in two hemispheres in space. We are talking about projects which range from VST (just now brilliantly accepted by ESO), to ALMA, for example: a project in which EIE has had an important technical role but also that of project financial supporter...we learn that without the help from Gianpietro we would never have been able to carry out ALMA.

With the Telescopio Nazionale Galileo (TNG), it was another success. This time all-Italian, but also very Galilean, thanks to a strong joint contribution from Padua and Florence. Nowadays, TNG is experiencing a second youth, with a new European instrument just mounted on it and discovering, from the Northern hemisphere, extrasolar planets galore, just like its more famous Southern counterpart.

But it’s more with an eye to the future that EIE and INAF are now collaborating. EIE has just delivered to us a true jewel, the prototype telescope for ASTRI, the first for of the series to be delivered by Italy for the CTA project. It’s a machine to render visible the invisible, it’s for high-energy gamma-ray astronomy. The prototype telescope was built exactly on time and within cost (except, here again, for a small financial support from EIE, taking over the role of the MIUR at times...). It works so well that our colleagues from South Africa and Brazil are now ordering a few more models for themselves.

Once again, in my life as an astronomer, I have had the incredible sensation of having conceived a new project and then, after only an apparently short time, of seeing it in its optical and mechanical flesh, with a prototype ready and working, with colleagues and technicians operating it, as if it had always been there. But no, it's true, we just imagined it and then we made it come real together.

The best it's still to come, in terms of future projects for astronomy, even if this time it will be very far away from the Serenissima. We are jointly plunging into the SKA project, an absolute folly for a country, like Italy, which is certainly the weakest partner, at least in Europe, when it comes to organizing industrial support for astronomy at a political level, at least so far. But both INAF and EIE believe in SKA, with its thousands of antennae scattered over the Southern hemisphere of our planet.

Together, INAF and EIE are trying hard to create this concept of a political support for industrial astronomy. To succeed, this time we will have to start from Rome, since, alas, we seem to lack the support of a Grand Duke of Tuscany or a Doge of Venice for financing us. The key to success, today just like yesterday, will be making it felt, at all levels, what science and industry can achieve together, if they really believe in a project.