

## FOREWORD

We have arrived at the third volume of this useful series on *Organizations and Strategies in Astronomy (OSA)*. It contains seventeen articles on a wide range of topics, from virtual observatories, astronomy organizations in various communities (Czech Republic, Slovak Republic, South Africa), and the rôle of ground stations in space observatories, to quality assurance in UK higher education.

In this foreword, I shall give some views on ideas expressed in this volume, in particular from my personal experience when I was project officer for the Canada-France-Hawaii Telescope (CFHT).

Let me first remind readers that present and future astronomy is increasingly dependent on high-level management. Not everybody knows that the scheduling of the Hubble Space Telescope is performed by a neural-network software called SPIKE, described in the stimulating workshop *New Observing Modes for the Next Century*<sup>1</sup>, partly reported in OSA Volume II by I. Robson. New observing facilities, in space or on the ground, are so complex that they need highly qualified engineers and rigorous management procedures. Each observing hour on the Very Large Telescope (VLT) facility is worth about EUR 7,000, including the amortization of the capital expenses over 30 years. This does not leave much room for amateurism, neither in the time allocation procedures, nor in the daily telescope control.

Allocation of observing time is a tricky matter, since the balance between the amount of risk involved in a proposal weighted against the probability of a potentially important result can be a fairly subjective matter.

More amenable to codification is software or procedure “quality” in the sense of “quality assurance” discussed in this volume. If the definition of *quality* poses problems, just realize what can happen when you do not worry about it (as exemplified by a number of web sites<sup>2</sup>) and improve your way of

<sup>1</sup>Borson, T., Davies, J. & Robson, I. (Eds.) 1986, *Astron. Soc. Pacific Conf. Series* 87, San Francisco, xxiv + 262 pp. (ISBN 1-886733-08-2).

<sup>2</sup>See for instance <http://www.ima.umn.edu/~arnold/disasters/disasters.html>.

programming as well as your verification procedures. With multiple “IF”s, it is very easy to forget checking one of the various possibilities. People should be prevented from using a software outside its range of validity!

The contribution by D. Enard on *Organizational Issues in Large Scientific Projects* is at the very heart of the topics dealt with by this series of volumes. As past CFHT project officer and as former Executive Director of the CFHT Corporation, I am able to speak from personal experience of what the author is talking about. I had the chance to deal with the centralized model and with a team deeply motivated towards the success of the project, with weekly meetings in which everybody took part and reported on the activities of the week. Excellent personal relationships between the chief engineer, Pierre Bely, the administrative manager Claude Berthoud and myself also helped a great deal, although I found that so natural at the time that I did not realize that it could ever be otherwise.

Later on, I have also seen another project in which there was a large distance (both literally, in meters, and in the way of thinking) between the technical staff and the administration, and a project scientist who had no line management authority. Not surprisingly, this project experienced great difficulties. So I can testify that the statements expressed by D. Enard in this book are no abstract considerations, but principles that you cannot neglect without paying for it dearly.

The centralized model implies that the agencies involved in a large project establish a legal entity to manage the construction and operation of the facility. For the CFHT, a US corporation was established in the Big Island of Hawaii. Doing this was of course a brand new experience for the astronomers involved. Thank goodness, the French side was represented by the administrative and financial Director of the CNRS of the time, Pierre Creyssel. One day, the question of the social benefits for the future employees of the corporation came under discussion. The French representative raised the question of maternity leave. Bang! The concept was just unacceptable, because violating the US constitution as “a discrimination against sex, race or religion”. It is incredible what astronomy can lead you to learn.

A further very general point on which I would like to say a few words is the place of astronomy and astrophysics in the general structure of teaching and research. When I was in my teens, most professional astronomers were mathematicians. Now most of them are physicists. But nobody can be sure that, later in this century, the major focus in astronomy will not be extra-terrestrial biology. So I would like to propose that any branch of science should consider that its realm of action does not stop at any conventional distance from the Earth, but should always include an astronomical perspective. In the UK, the very strong link between particle physics and astronomy has been fully recognized, including organizational aspects. So

please, my dear colleagues and fellow astrophysicists, use the language of the general science in astronomy and, for example, stop calling oxygen a “metal” as is currently done in stellar astrophysics.

At this point I should also like to comment on an interesting statement from the chapter *Public Relations for a National Observatory* by D.G. Finley that “Indeed for a tax-supported institution, public relations is part of everyone’s job. Every employee, whether involved in a professional organization or a community activity, is perceived as a representative of the observatory.”

Very true! Do not think that because you hired a public-relations officer, you have solved your problem. In Hawaii again, there was a political problem with astronomy, considered as an intrusion on a “sacred mountain” and an offence to the environment (this happens elsewhere too). Do not believe that your public-relations officer is going to solve this! All members of the organization should become an integrated part of the local community, hire local people, buy at the local supermarket, give lectures for a wide public, invite people – and progress will ensue.

I learned with interest from the chapter *Astronomy and Astrophysics in the Czech Republic* by J. Palouš, J. Vondrák & M. Šolc, that Doppler had published in 1842 his major discovery, called the “Doppler effect”, in a local Bohemian journal and that the discovery remained practically ignored until Ernst Mach, professor of physics at Prague University, became instrumental for the general recognition of Doppler’s priority. With Tycho Brahe, Kepler, Doppler, Mach and Einstein, Prague is really a “haut-lieu” for astronomy. Taking advantage of its long tradition, the Czech Republic now gives strong support to space as well as to ground-based astronomy.

Reading OSA Volume III, you will enjoy many other topics not specifically mentioned here, but all interesting ones!

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May 2002.