



Europe Decides to Build the World's Largest Optical Telescope

On December 8, 1987, the ESO Council gave the green light to the ESO 16-metre Very Large Telescope (VLT), an extraordinary astronomers' dream and an amazing engineering challenge. The VLT is to be the largest telescope in the world and Europe's superior eye to the Universe.

The representatives of the eight member states (Belgium, Denmark, the Federal Republic of Germany, France, Italy, the Netherlands, Sweden and Switzerland) agreed that the European Southern Observatory shall embark upon the realization of this marvellous instrument. This decision expresses Europe's confidence in the ambition of her astronomical community and the ingenuity of her high-tech industry; together they will ensure that Europe will be second to none in the exploration of the Universe for a long time to come. The VLT is an essential complement of Europe's astronomical research activities from space vehicles.

Further information about the VLT will be found on pages 28–32 and 53–55.

ESO's Directors General: Retrospect and Prospect

PROF. LODEWIJK WOLTJER

Now that my thirteen years as Director General of ESO are coming to a close, I wish to briefly review where the Organization stands today and what the outlook for the future is.

ESO has experienced a great expansion: upon the realization of the 3.6 m, CAT and 1.5 m Danish telescopes, several new projects were started. The installation of the 2.2 m telescope on loan from the Max-Planck-Gesellschaft and of the 15 m SEST has been accomplished, while the 3.5 m NTT is approaching completion. As major instruments CES, CASPEC, IRSPEC and EFOSC have been built, while EMMI, DISCO and IRAC are on their way. With regard to the present class of telescopes and instruments, ESO is therefore in good shape and in a very competitive position internationally. The construction of the VLT will ensure that this remains so in the future.

The idea of the VLT arose in 1977, a bit before the first ESO large telescope conference in Geneva. The next year, various

PROF. HARRY VAN DER LAAN

In the June 1987 issue of the *Messenger*, Professor Lodewijk Woltjer wrote the leading article under the heading: A Time for Change. Now, six months later, he passes the ESO reins to me, just when a new milestone has been firmly anchored, a milestone to mark the beginning of a new chapter in European astronomy. In a parallel article, Lo Woltjer summarizes what ESO has become and to whose key contributions we owe its present state and its perspectives.

In a broad discussion with Council before my appointment, we agreed that ESO's assignment in the next ten years is threefold: (i) to operate the La Silla Observatory; (ii) to further develop ESO as a meeting place and communications centre for astronomical research in Europe; (iii) to build the Very Large Telescope. Clearly these tasks are interdependent and if carefully managed, each of them will help the others. It is also not farfetched to imagine that the engineering design and construction of the VLT could so dominate ESO's next

internal working groups were given the task to evaluate the relative merits of a single dish 16 m or arrays of four 8 m or sixteen 4 m telescopes. Not surprisingly, the conclusion after a number of years of study was that the middle option avoided a number of the difficulties of the others and was to be preferred for both scientific and technical reasons. Subsequent more detailed studies during the last four years have transformed these early projections into a solidly based project, which will be the centrepiece of ESO's activities for many years to come.

To deal with the results obtained by the telescopes and instruments, much data and image processing is needed. With the development of IHAP and MIDAS and the acquisition of the necessary hardware, also in this domain a satisfactory situation has been achieved. Future developments will lead to further increases in speed and ease of use – essential with the increased data flows from ground- and space-based telescopes.

While the development of advanced instrumentation is ESO's primary mission, perhaps equally important is the role that ESO has begun to fulfill as a scientific centre for the European astronomical community. Every day one may find at ESO in Garching some 40–50 associates, fellows, facility users and visitors from different institutes. Similarly, at La Silla numerous Visiting Astronomers meet while executing their observing programmes. In this way and also through the many workshops and conferences, ESO has become an essential catalyst in the creation of a European astronomical community.

European cooperation is viable only if it leads to results which are superior to what could be achieved by a simple superposition of national efforts. An organization like ESO, therefore, has an absolute need for an ambitious programme, an economical management and a staff dedicated to cooperate rather than to compete with the institutes in the member countries. The VLT is a fitting measure of its ambition; the fact that its inflation adjusted budget did not change in a decade of growth is an indication of its economical management, and the support it receives in the community is ample proof of an effective cooperation.

While I cannot thank here all ESO's staff members individually, I would like to acknowledge in particular the following persons: Ray Wilson who conceived active optics and the NTT, Massimo Tarenghi who made the NTT a reality, Daniel

Enard who transformed the vague VLT ideas into a real project, and Jean-Pierre Swings who assured the liaison between the VLT and the community; Manfred Ziebell and Daniel Hofstadter who not only developed the electronics so essential in all modern telescopes and instruments, but who also enforced an effective cooperation between La Silla and Garching; Alan Moorwood who conceived and built the IR instrumentation and Sandro D'Odorico who pushed the performance limits of optical instrumentation further; Klaus Banse, Philippe Crane and Preben Grosbøl who created MIDAS, and the late Frank Middelburg who thought of image processing and IHAP before anyone else; Franco Pacini, Per Olof Lindblad and Giancarlo Setti who made the Scientific Division a central element in European cooperation and who gave me friendly advice on many matters, and Piero Benvenuti who made the ST-ECF a success; Arne Ardeberg who directed La Silla with enthusiasm, and Hans-Emil Schuster whose long experience of La Silla and its population has served ESO well; Peter de Jonge who created the TRS which has become the centrepiece of the La Silla activities and who from Grenoble provided the SEST, and Wolfgang Bauersachs who assured the infrastructure on which everything else at La Silla rests; Gerhard Bachmann who has directed the administration with competence, flexibility and diplomacy, Robert Fischer who has assured the optimization of ESO contracts – which will become of even greater importance in the VLT era, and Inge Meinen who for a decade administered La Silla in her dignified way; Philippe Véron and Richard West who brought the "Messenger" to its present distinction, and Jacques Breysacher who has developed the art of scheduling a dozen telescopes to perfection; and last but not least Ulla Demierre who has run my office with efficiency, optimism and tact. To them and to their collaborators my profound thanks. The best wish I can give my successor Harry van der Laan is to have as distinguished a set of collaborators as I have had the good fortune to work with.

A Director General can only function effectively if he enjoys the confidence of Council, Finance Committee and the other advisory bodies. I wish to my successor that his relations with these will be as positive, cooperative and smooth as I have experienced them to be. To all members of these and to all others in the European community who have contributed to the success of ESO my deepest thanks.

decade that both La Silla's observing quality and ESO's communications function might suffer as a result. A large fraction of all ESO resources will somehow be drawn upon to achieve VLT performance goals. Aware of the risks, we will guard against them with persistent care.

La Silla remains Europe's major observatory for the years to come. With the telescopes and their instrumentation as they are now and as they will be by mid-1989, when the NTT is operational and a number of instruments now in the pipeline have been commissioned, the ESO community is as well equipped as any. Developments will from then on focus on VLT systems, but no doubt ways will be found to turn VLT instrumentation ideas into working prototypes for real life trials on La Silla. One must optimistically expect the VLT to be good for La Silla and vice versa. This is equally true for new observing modes and scheduling methods. Service observations, remote control and top priorities guarded against the fatalism of meteorology will all move through experimental phases into optimized routines. La Silla will be the community's and ESO's proving ground for exploiting the full potential of the VLT. It will be an even more interesting place to work: young astronomers and engineers, mark this opportunity!

There is no need to dwell on ESO's role as a meeting place: the series of symposium and workshop publications as well

as the constant stream of working visitors to Headquarters and to La Silla provide ample evidence. There is an additional goal ESO may pursue and indeed will have to in preparation for the VLT. That is to map the technical as well as astronomical talent in the member states and to bring that talent into a coherent collaborating pattern. I envisage more and more intensive working visits to ESO by astronomers, established as well as post- and pre-docs. Doing research on La Silla and in Garching, they will more readily collaborate across national boundaries once back home. Technical scientists, instrumentalists and systems engineers, will also be welcome as we try to determine with whom to conceive and build the VLT's instrumentation. It is my ambition to make it as easy and as natural for institutes and individuals from, say France, Switzerland and Sweden to form a team or consortium as it is for such relations to arise between California, Massachusetts and New Jersey, at least in astronomy.

ESO's new assignment, designing and constructing the VLT, is a task at once exciting and daunting. During the past ten years, our user community has engaged in intense discussion with our staff, searching for the most attractive instrumental deployment of hoped-for resources for a scientifically fruitful, technically innovating future. The VLT concept now approved by Council and funded by the member states

originated in that structured community-wide consultation. Heated debate as well as numerous studies, crossing all sorts of boundaries, of both nations and of disciplines, stimulated the emergence of countless ideas, new problems and original solutions. In spite of great diversity, in starting positions, national astronomy cultures and engineering traditions, a consensus formed that culminated in the momentous decision by the ESO Council on December 8, 1987.

The ESO community owes much to the leadership and foresight of two key people: Lo Woltjer, ESO's Director Gen-

eral, who orchestrated both the scientific discussion and the political process towards this ambitious goal; and to Daniel Enard, the gifted engineering scientist who led the evolution of the conceptual design and will now play a central role in its engineering realization.

It is a privilege as well as a challenge to succeed Lo Woltjer at just this juncture. European astronomy is deeply indebted to him for the depth and persistence of his efforts. We wish him well and look forward to his further contributions to ESO and to astronomy.



The ESO Council in session on December 8, 1987.

About "The Messenger – El Mensajero"

You have the 50th issue of the ESO *Messenger* in your hands.

It all began in the early 1970's with a growing ESO staff in Chile and in Europe. The Director General of ESO, Professor A. Blaauw, felt there was a need for increased communication between the ESO communities in Hamburg, Geneva, Santiago, La Serena and La Silla, not to forget the individuals in other places who were in some way connected to ESO. In May 1974, the first issue of the new ESO journal was launched with a total of 6 pages. After somewhat irregular publication dates during the first two years, a quarterly schedule has been adhered to since issue No. 4 in March 1976. As the readers will have noticed, the scope of the ESO *Messenger* has become broader and it has grown, culminating with a 60-page issue in March 1987 that included the first news about SN 1987A.

Although the first 50 issues together have brought 1,500 pages, other semipopular journals have published many more during the same time. And although some colour pictures have been brought in the more recent issues, there are other journals which by far surpass the *Messenger* with glossy views of the sky. Scientific articles abound in the professional journals, so why the *Messenger*?

Because it brings the latest news from ESO, the main organization for astronomy in Europe. As the astronomical research at La

Silla and in Garching reflects an increasingly broader section of front-line astronomy, so the *Messenger* has become a multi-faceted mirror of modern astronomy and astrophysics. The articles are mostly written while the research is still underway and frequently convey the thrill of discovery. Although the guidelines to authors indicate that contributions in general should be written for a wide audience, we do not attempt to edit everything into a uniform format. The articles and news reflect the style of their authors and by difference in level and form, they enliven and bring variety to the *Messenger* issues. We do not expect that every reader will read everything, but there should be something for everybody.

With a circulation of more than 4,000, the *Messenger* reaches a wide audience, in the ESO member countries and elsewhere, including professional and amateur astronomers, as well as other groups like teachers and decision makers. For some years now it has been indexed in the semi-annual volumes of "Astronomy and Astrophysics Abstracts", and a growing number of references in the professional literature to *Messenger* articles indicate increased awareness in many places.

On the occasion of the "golden" jubilee, we wish to thank all authors for many excellent contributions. In return, we shall continue to publish the ESO *Messenger* rapidly and efficiently so that their achievements will become better known to more people. *The Editors*