

The Andromeda Galaxy

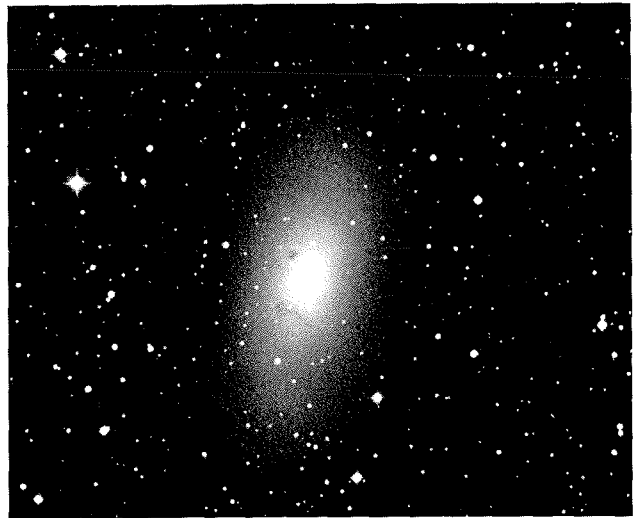
The fact that the astronomical objects on this and the preceding page lie in the northern celestial hemisphere should not worry our readers: please be assured that ESO continues to operate in the southern sky!

The southern part of the Andromeda Galaxy (M31) and one of its companions, the elliptical galaxy NGC 205, are here reproduced from one of the plates from the second major photographic survey, now in progress with the Palomar Oschin (Schmidt) Telescope. The original plates of POSS II are being copied in the photographic laboratories at the ESO Headquarters for the "Palomar Observatory/European Southern Observatory Photographic Atlas of the Northern Sky".

The photos shown here were masked and enhanced by ESO photographer Hans-Hermann Heyer. A comparison with the prints in the "Hubble Atlas" (1961; pp. 3 and 18) serves as illustration of the advances in astronomical photography during the past decades.

Note in particular the splendid resolution of M31 into individual stars and the dark dust lanes in NGC 205. North is up and east is to the left on both photos.

The editor



Contracts Signed for Two VLT Instruments: FORS and CONICA*

H. VAN DER LAAN, ESO Director General

Ladies and Gentlemen,

Welcome to this meeting room at the European Southern Observatory Headquarters; welcome especially to the teams of CONICA and FORS. This day and event mark a milestone on the trajectory of the VLT Observatory. It is something that many of us have looked forward to and worked towards.

It is also a milestone in ESO's history, and in its own way in the integration of European astronomy. I think we all know that throughout Europe there are astronomy groups and institutes, smaller ones and larger ones, who in part rely on ESO as an astronomy service organiza-

tion. Throughout its almost 30-year history, ESO has provided science services for the community, primarily at the La Silla Observatory, but also in important ways here at ESO Headquarters by way of reduction services, measuring machines, computers, and also of bringing people together during Workshops and in Symposia. In fact this year we have a particularly busy Workshop and Symposium programme. The community has advised us primarily through committees such as the Users Committee, the Scientific Technical Committee, the Observing Programmes Committee, the

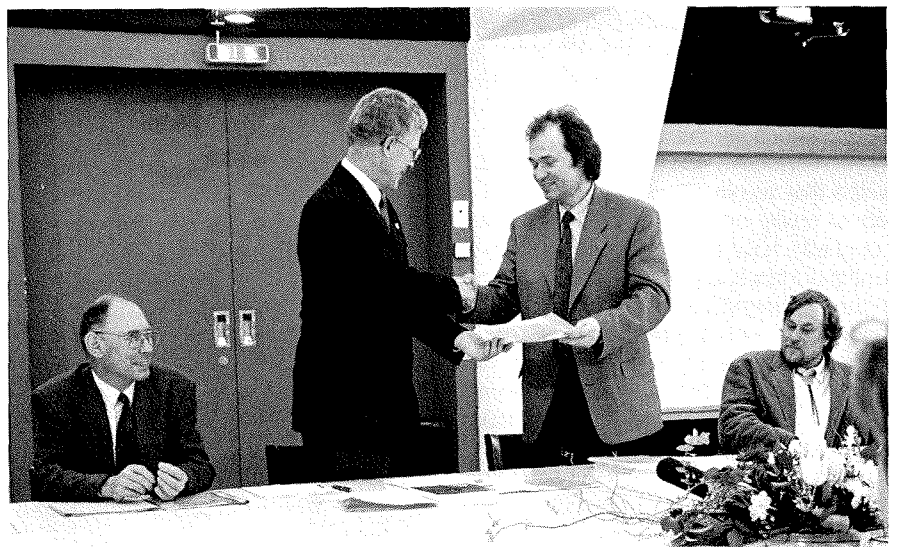
astronomers in Council and through Panels and Working Groups.

I think the new element which is marked today is that henceforth the community will not only advise ESO, but will also work for and with ESO in a very substantial manner. The scope of the VLT programme is in a sense too large for this organization. It is not only the largest programme ever in ground-based astronomy, in relative terms, it's also much larger for ESO than, say, LEP was for CERN, or HERMES is for ESA. The people in our organization were almost entirely occupied by providing the

* Ed. note: This is a condensed version of a speech given on February 6, 1992, at a brief ceremony in the ESO Headquarters on the occasion of the official start-up on the work on two of the VLT instruments, FORS and CONICA, described in the following articles in this *Messenger* issue. On behalf of the FORS team participated Prof. I. Appenzeller (Landessternwarte Heidelberg), Principal Investigator, FORS team, Prof. K. Fricke (Universitäts-Sternwarte, Göttingen), Dr. H. Niklas, Dr. W. Seifert (Landessternwarte Heidelberg), Prof. W.-P. Kudritzki (Universitäts-Sternwarte München), Dr. Muschinok (Universitäts-Sternwarte München) and Dr. Kiesewetter (Universitäts-Sternwarte München).

The CONICA group was represented by Dr. R. Lenzen (Max-Planck-Institut für Astronomie, Heidelberg), Principal Investigator, Dr. S. Beckwith (Max-Planck-Institut für Astronomie, Heidelberg), Dr. K. Wagner, Dr. A. Eckert, Dr. R. Hofmann (Max-Planck-Institut für Extraterrestrische Physik, Garching), Dr. Roberto (Osservatorio Astronomico di Torino).

Present also were a number of ESO engineers and astronomers, who will be involved in the FORS and CONICA projects.



At the ceremony, from left to right: I. Appenzeller, H. van der Laan, R. Lenzen and R. Kudritzky.

services that are expected from us and which are expected to be maintained and always be state-of-the-art, at La Silla and at Headquarters. It was with quite great difficulties that over the last four years we have been able to reorient resources, so that now we devote about 60 person-years per year directly to the VLT programme.

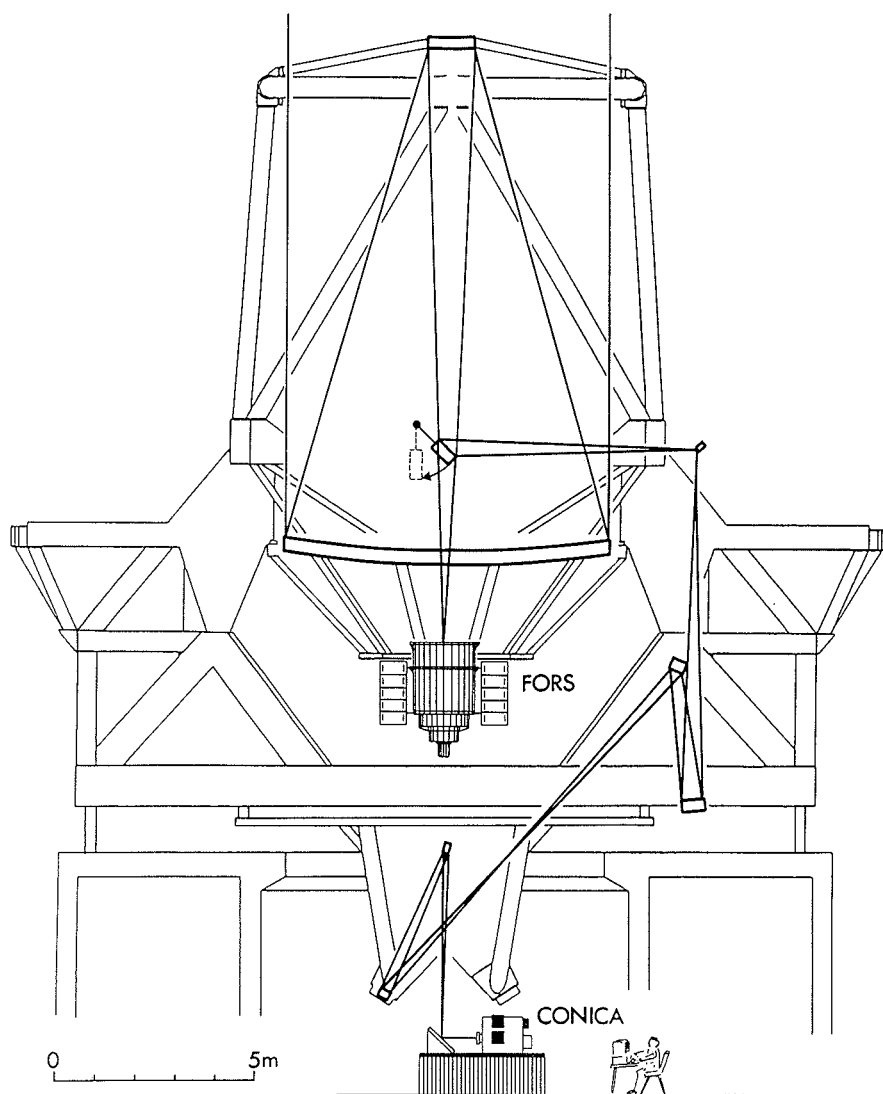
In about 1984 and 1985, at which time I was myself a member of the STC, we started to discuss ways and means of mustering resources in our community for the VLT programme in more than advisory capacities. This community is largely university-based and they often have plenty of clever and ambitious people, but most universities also have a chronic shortage of money. Having worked in universities for decades myself, I am well aware of this situation. And so the idea in the STC, ultimately blessed by Council, was that we would have an instrumentation programme for the VLT which would enable us to put together the many talents in the universities with the relatively few people at ESO, and with cash that comes from member states more easily to ESO than to the numerous universities throughout our member states. Especially in the last three years we have worked in-house in dialogue with the Working Groups and Committees to develop the VLT instrumentation plan. A policy had to be evolved with completely new features which differs from, say, ESA's well-known way of contracting focal-plane instruments for its satellites, but which also differs from our own tradition. I wish at this time to pay a particular tribute to four people who did a great deal of work in consultation with me to articulate this policy and to give it body and substance. They are Alan Moorwood, Head of the Infrared Instrumentation Group, Jacques Beckers, who was till recently Head of the High-Resolution and Interferometry Group, Sandro D'Odorico, who heads the Optical and UV Instrumentation, and Robert Fischer who did so much in the Contracts Department. Especially Sandro, who coordinated this whole effort, did a masterful job of finally articulating it, so that we could also have it approved by our governing bodies and gain wide acceptance in the community.

After this policy was articulated and approved, there followed the Call for Proposals for the first round. There were the information meetings, the responses and the assessments which brought the conclusions leading to this meeting today that the first two external instruments will both be built in Germany and, in fact, both with Principal Investigators (PIs) in Heidelberg. In our organization we have an esprit de juste retour. We try

to distribute work, contracts and many other things that our organization does equitably over the member states. We are also subject to peer review, subject to financial rules and that in the short term always leads to bunching and to non-even distribution. It's only in the long term and in retrospect and integrated over many services, many aspects of our activities that the equitability is actually attained. It can be demonstrated that the intention works if you convolve events over a large enough area of both time and character. It's now my time to congratulate the two teams on winning these Europe-wide competitions. You have demonstrated that you have ideas, talents and capacities which are world-class and which give us confidence that your goals will be achieved.

The contracts were less simple than one might have expected. The new policy after all was implemented for the first time and needed many iterations before it converged to a result that could receive signatures from both sides. For

CONICA it was somewhat easier than for FORS. Nevertheless, it took practically the same amount of time. Perhaps we put less pressure on it as we were so concerned to also complete the FORS contract and that's why we can celebrate this event for both teams on the same day and really start the work. The FORS contract was complicated by the legal realities of the new Germany and by the fact that this is a federated nation with very strong competences of the Länder, so that if you make a contract with three or four institutes you have to deal not only with these universities, with the institutes, with the faculties, with the Rectors of the universities, but also with the Ministries of Education, possibly with the Ministries of Finance of these Länder and the whole thing becomes interestingly complicated. To solve such a puzzle takes time and good will, and I want to thank all of you who worked to achieve the result which is on the table today. We wish you all in the coming years a lot of pleasure in design-



CONICA and FORS at an 8.2-m VLT Unit Telescope.

ing and constructing these instruments. I have no illusion that we will not have problems. We will run into technical, financial or schedule problems, we might even run into some contractual problems, but that is not a serious worry. There is enough talent and enough good will on both sides to solve the problems as they arise. At the end of this phase of design and construction,

there is the commissioning of the instruments when both your teams will be rewarded, not only with doing the challenging work, but also with the opportunity to carry out very major science programmes. With your instruments on 8-m telescopes on Cerro Paranal, you will enter wholly new domains of parameter space which will no doubt lead to spectacular

results and interesting discoveries. I close by reiterating the satisfaction in our organization of having attained these contracts, of expressing our confidence in the talents and abilities of the teams and of anticipating with pleasure our collaboration in the many years to come until we meet on Cerro Paranal to commission these beautiful devices to explore the southern sky.

Coudé Near Infrared Camera Instrument Contract Signed

R. LENZEN, *Max-Planck-Institut für Astronomie*, and O. VON DER LÜHE, *ESO*

The Coudé Near-Infrared Camera (CONICA) will be one of the first instruments to be constructed outside ESO for the Very Large Telescope (see the review article on VLT instruments in *The Messenger*, **65**, pp. 10–13). A contract for the construction of CONICA has been signed by ESO and a Consortium headed by the Max-Planck-Institut für Astronomie (MPIA, Heidelberg), with the Max-Planck-Institut für Extraterrestrische Physik (MPIE, Garching) and the Osservatorio Astronomico di Torino (OATo, Turin) as partners. The signature of this contract is the first step implementing a policy of active ESO community participation in instrument development. Equipping four large telescopes with four foci each is clearly beyond the capability of ESO, and the success of the VLT will depend significantly on the ability of the astronomy community in Europe to build state-of-the-art instrumentation.

CONICA is the instrument which is labelled High-Resolution Near-Infrared Camera in the VLT Instrumentation Plan. It will be located at the coudé focus of the first unit telescope, where it will provide diffraction-limited images, and do polarimetry and low resolution spectroscopy. The instrument will cover the 1 μm to 5 μm wavelength region. Where possible, it will use directly the diffraction-limited images provided by the VLT adaptive optics system. Speckle imaging methods, image selection, and methods combining partial adaptive optics or rapid guiding with image selection and interferometric imaging can be used when the adaptive optics system does not produce a diffraction-limited focus. Spectral resolution will be achieved with about 40 broad-band and narrow-band filters, as well as with a selection of grisms which provide a spectral resolution between 500 and 1000 throughout the wavelength range. Polarimetry can be done using a set of

wiregrid analysers and two Wollaston prisms. Scientific programmes which will be pursued with CONICA include studies of outflows and disks of young stellar objects, search for low mass companions of nearby stars, imaging of envelopes around red giants, studies of the galactic centre, the energetics of Seyfert galaxies and quasars, and highly resolved images of radio jets and hot spots.

Figure 1 shows the optical concept of CONICA. The telescope light beam passes a tunable atmospheric dispersion compensator (TADC) before entering the camera proper. The TADC is removable, and is needed only for

broad-band imaging at shorter wavelengths. The entrance window (EW) seals the cryostat, which maintains the cold optics at a temperature of about 70°K, and accepts a field with 90 mm (45 arcsec) in diameter. Cooling of the cryostat is provided by a closed-cycle cooler. The focal plane assembly (FPA), located at the coudé focus, consists of two wheels that carry sets of field-of-view masks, slits, coronagraphic stops, mirrors, and test targets. The light which is reflected from the telescope-oriented faces of the various focal plane stops is used to feed a visible field-viewing camera which guarantees proper pointing of the instrument.

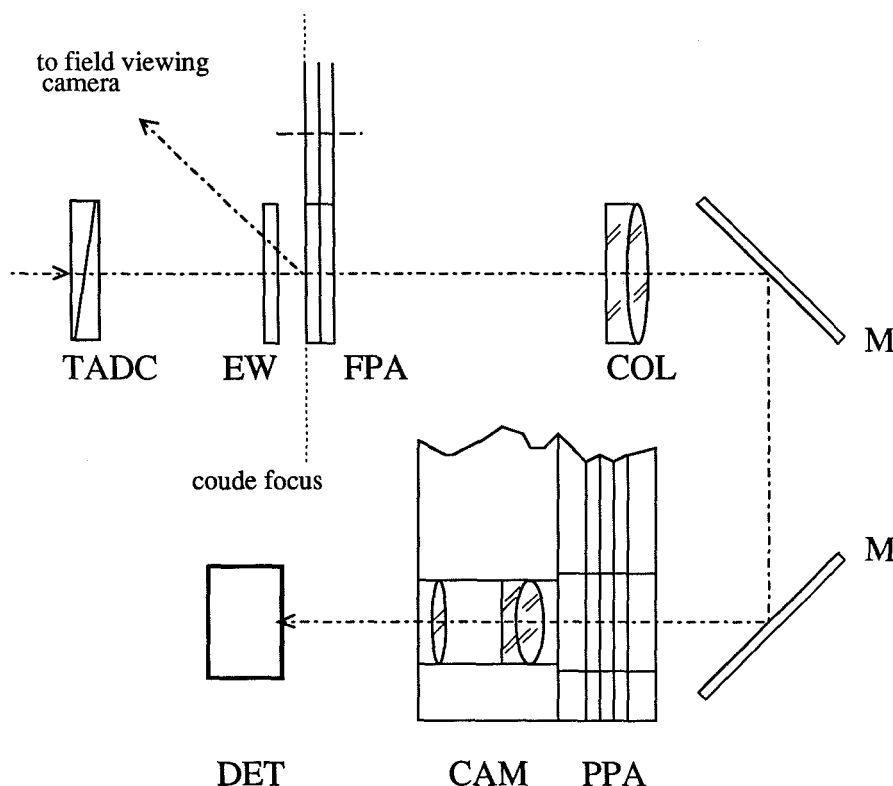


Figure 1: A schematic of the CONICA optical layout.