

Ray Tracing Twenty Years at ESO

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In a bottom corner of an inconspicuous page of the last issue of *The Messenger* was a laconic note which is nevertheless momentous to all telescope aficionados and friends of ESO: Senior Physicist Raymond N. Wilson retired from ESO on March 31, 1993.

As a long-time friend of Ray's and currently a spokesman of sorts for the ESO community in matters of instrumentation, I cannot resist taking this opportunity to convey a few words of appreciation to Ray and recall some of his contributions to ESO's current eminence in telescope technology.

My first encounter with Ray remains unforgettable: Returning from my first observing run at La Silla in March 1973, I came on a fine morning to the newly-established ESO TP-Division in Geneva to visit a Danish colleague. Treated to my then standard sermon on spectrograph design, he quickly introduced me to the new Head (and only member) of the Optics Group with a comment that we might have common interests to discuss. Indeed we had: After what seemed like five minutes, the office cleaner politely suggested that we get out of his way; everybody else had gone home long ago!

Many readers will recognize in this episode two of Ray's enduring characteristics: Enthusiasm in everything he does and readiness to listen seriously to

everyone, regardless of rank and seniority – even a green rookie like me. To these qualities, his long-time associates will add those of absolute honesty and loyalty to his work and his colleagues. It is, I am sure, a tribute to Ray's quiet leadership that while a large fraction of the staff decided to remain in Geneva when ESO-TP moved to Garching, the entire (French-speaking) Optics Group came along; almost all of them are still at ESO.

For myself, this first meeting resulted in a long collaboration on telescope planning and testing, spectrograph design for the 3.6-m telescope, and much more, all required to conform to another of Ray's beliefs: "If something is worth doing at all, it is worth doing well." I still consider this time to be some of the most enjoyable and useful I have had so far.

Personality apart, Ray had impressive professional credentials when he took over the responsibility for optics at ESO in September 1972, a critical time in the 3.6-m telescope project. Trained as an optical engineer at Imperial College in London, he already had a distinguished 11-year career behind him at Zeiss (Oberkochen) as Head of the Design Department for telescopes and precision measuring instruments. However, as he once told me, if you love optics but want nothing to do with its military



Figure 1: Ray Wilson during a quiet moment, checking optical measurements during the commissioning of the Danish 1.5-m telescope on La Silla, November 1978.

applications, working on telescopes is the fulfilment of a dream. Luckily so for ESO: In the many large optical contracts ESO has dealt with since then, his profound insight in not only optical design, but also in the industry and the thinking on the other side of the negotiating table have been invaluable time and again.

Chances are that Ray Wilson will be remembered by astronomers primarily as the "Father of the NTT". And it is true

ESO at CNRS Plenary Meeting

On April 22–23, 1993 the Second Plenary Session of the National Committee of the "Centre National de la Recherche Scientifique" (CNRS) took place at the Palais des Congrès in Strasbourg. The focus was on "European aspects of scientific research" and about 600 delegates from France as well as 100 foreign guests participated. The meeting was opened by the recently installed French minister for Research, François Fillon, and resulted, as a conclusion, in 12 practical "proposals" aiming at the optimization of the French research in the new European environment.

ESO had mounted an information stand in the area just outside the main meeting room, and many participants and members of the press used the occasion to inform themselves about the present status of the VLT project.

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Figure 1: The ESO stand at the CNRS Plenary Meeting.

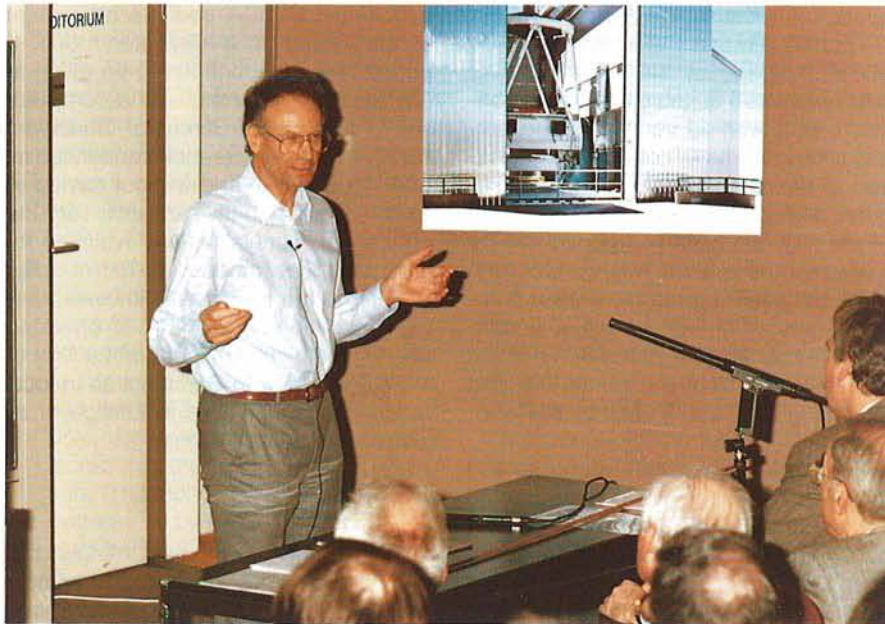


Figure 2: Ray Wilson giving his retirement speech at ESO Headquarters in Garching, April 2, 1993.

that those stunning first-light images in March 1989 (*The Messenger* No. 56) changed overnight and forever the way that large telescopes will be designed: On-line wavefront analysis and active optics will be – no, *are* already – a must. A number of professional honours have been bestowed on him for this achievement, and well deserved they are.

In a wider perspective, the NTT demonstration also gave confidence that the thin VLT mirrors can be adequately

controlled in practice. This not only considerably eases the figuring tolerances, but the novel feature that Cassegrain, Nasmyth, and coudé foci can be fed with a single secondary mirror depends on the ability to adjust the shape of the active VLT primaries.

Yet, achieving and maintaining the best optical quality of *all* telescopes has been Ray's lifelong ambition, a sustained long-term effort with the NTT as its splendid culmination. Figure 1 shows

Ray back in 1978, contemplating on the carefully designed system for aligning and testing the optics of the Danish 1.5-m telescope – another effort promptly rewarded with success (*The Messenger* 17, 14). With on-line, turnkey wavefront analysers rapidly becoming available, poorly-supported and -collimated mirrors will soon be as socially unacceptable as dirty ones, also on smaller telescopes.

Thus, although it is hard to believe, Ray celebrated his 65th birthday on March 23 and left ESO after more than twenty years. On April 2, the occasion was marked with a small symposium in Garching. In his final address (Fig. 2) he conveyed, true to form, the lessons and admonitions the rest of us should keep in mind after his retirement (note how little this young man changed between Figures 1 and 2!).

“Retirement” is, however, a rather misleading term for Ray's present activity: He is hard at work for a stern taskmaster – himself. The first draft of a two-volume book collecting a lifetime's experience with astronomical optics is ready, but he expects another year of full-time work before it is completed to his satisfaction. Uniquely, it will treat both the design, testing, alignment, and support of telescope optics – no doubt an indispensable reference for telescope builders for decades to come. Meanwhile, Ray defers all social invitations until “WTBIF”: When The Book Is Finished!

Remote Observing with the NTT and EMMI/SUSI: a First Assessment

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Introduction

Although some observatories started earlier and others are catching up very quickly, ESO at the moment probably is the ground-based optical/IR observatory with the largest experience in routine remote observing. The Coudé Echelle Spectrometer (CES) at the Coudé Auxiliary Telescope (CAT) on La Silla has been used regularly by Visiting Astronomers at ESO Headquarters in Garching since 1988/89. In the present Period 51, usage will reach almost 110 nights or about 60% of the available time. During 497 nights in the four years

of 1989–1992, the availability averaged 98.9%, and the downtime has always been less than that caused by instrument or telescope failures (for a more detailed report see Baade 1993).

Recently, a technically rather different system has been put into operation for remote observations with the New Technology Telescope (NTT), the ESO Multi-Mode Instrument (EMMI) and the SUPERB Seeing Imager (SUSI). Its technological foundations have been described by Wallander (1990, 1993) and permit it to be used also from places other than Garching (Balestra et al.

1993, Franchini et al. 1993). Here we wish to give a first assessment of the performance of this remote control (RC) system during observing programmes carried out by Visiting Astronomers.

Does it Work?

Although this is still the most often heard question, already our first test nights convinced us that the answer is yes. The more relevant question is how competitive remote observing will be. We now believe that, as for the CAT/CES, the limiting factor will eventually be