speckle modes."

The direct outcome of the workshop was twofold:

(a) There was a clear trend that some form of limited array was the right direction for the VLT.

(b) The Scientific and Technical Committee which met after the workshop recommended that a dedicated project group be set up.

At its meeting of June 1983 the ESO Council endorsed this recommendation and mandated the Director General to set up such a group. Soon after Prof. Woltjer asked the author of this account to lead this VLT project group.

Thus, at the end of 1983 a project group existed, though it barely consisted of even one single person for some time. The NTT and instrumentation projects were by no means overstaffed and it was not possible to divert any manpower from within ESO. In fact, a few new positions had been made available, but it was not before the summer of 1984 that the first engineers did effectively arrive.

It was also necessary to ensure that the community be able to express its wishes and that scientific advice be provided to the project group. An advisory structure was set up, consisting of an advisory committee and of specialized working groups (imaging and low resolution spectroscopy, high resolution spectroscopy, I.R., interferometry and site selection). The findings of the W.G. were to be automatically relayed to the VLT advisory committee, composed of the W.G. chairmen and of a few scientists from ESO. The advisory committee was chaired by J.-P. Swings. This structure in which participated more than 40 scientists from the ESO community functioned efficiently till the Venice workshop and should probably continue to play an important role during the execution of the project.

In October 1983 the main question was: "what to begin with"! It could have seemed logical to study in detail a number of concepts in parallel and then establish some trade-offs and ask the community to select the preferred solution. This would have taken many years, would have dispersed the efforts, led to endless and inconclusive discussions and split the community into self-destructive lobbies. Time was pressing and for Europe to have a chance to get a VLT before the end of the century, a great deal of pragmatism was necessary. The VLT concept had to be definitely selected in the months to come for the engineering studies to be fully effective.

After the Cargèse workshop, there were indeed feelings that a limited array would be the best solution. However, to the extent that no engineering studies had been made, it was necessary first to be fully convinced that this solution would be competitive with other alternatives.

An array of small telescopes would not fulfill the I.R. requirements and, used as independent telescopes, would not provide any gain over existing telescopes. This solution, which was also clearly not optimal from the cost point of view, could therefore be safely eliminated.

The segmented mirror approach had considerable attraction. Neither ESO nor European industry had done any work on this technology. Conversely, ESO had a substantial lead in the active correction of monolithic mirrors. Since the segmented mirror appeared somewhat risky, it was decided out of pragmatism to consider exclusively a solution based on large monolithic mirrors. There were two possibilities: the MMT and the limited array.

To discriminate between an MMT and an array was not easy. Both solutions are very similar to the extent that an MMT can be viewed as an array of telescopes on a common mount. The decisive argument was the versatility of the array which was seen as an advantage not only from the scientific point of view, but also for the practical realization of the project: adapting the project to the available flow of resources and offering the community the possibility to use a part of the collecting area at an early stage.

Indeed, the array concept presented a number of problems which had to be matched by adequate solutions. There were three of them: the feasibility of the primary mirror, an efficient way to recombine the beams and a building concept combining a low cost, a minimal degradation of seeing, the best use of the sites topography, and an optimal arrangement for interferometry. A few months of reflexion and discussions with optical firms were sufficient to realize that solutions would be found and also that a mirror diameter of 8 metres was a good compromise between the scientific requirements, especially for the I.R., and the risks during manufacture and handling of the primary mirrors.

A preliminary concept, called the linear array, was presented to the Advisory Committee. After a few meetings it was decided to adopt it as the ESO base line concept. The first public presentation was on the occasion of the IAU Colloquium on large telescopes in April 1984 (No. 79).

By mid-1984, the project group had 4 people, the scientific working groups were operational and the real work began.

Quite a number of contracts mainly on feasibility studies were given to industry and institutes. A number of studies were also conducted by ESO directly. To the maximum extent possible, competitive studies were done in parallel. The result was an incredible amount of information, and a substantial number of new ideas. Parallel studies were found to be highly productive and very helpful to reliably assess the validity and costs of various solutions. The elements of the puzzle were then critically analysed and a coherent and detailed proposal could be presented in October 1986 at the

The Pre-VLT Milestones

1976	Completion of the ESO 3.6-m telescope.
December 1977	ESO Conference on the large telescopes of the future.
1978/1979	First ESO study group on a 16-m telescope (Geneva).
1981/1982	Second ESO study group on a 16-m telescope (Garching).
April 1983	Cargèse workshop.
June 1983	Decision to create a project group.
September 1983	Permanently manned station set up at Paranal.
October 1983	ESO workshop on site testing for future large telescopes.
April 1984	IAU Colloquium No. 79. First presentation of the linear array concept.
1984	Setting-up of the project group and advisory structure.
October 1986	Venice conference.
March 1987	Proposal for the construction of the 16-m ESO Very Large Telescope.
December 1987	Decision to fund the project.