

Introduction

The issues related to the operation of ALMA in Chile have been discussed in the groups appointed by the ACC. Ian Corbett, Arno Freytag, Robert Dickman, and Robert Brown presented their initial conclusions and recommendations to the ACC in a teleconference on June 15, 2000. On this basis it was decided that an ESO-led option should be explored first although other options should also be studied. At the ACC meeting in Paris (October 13, 2000), the issue was raised by the North American team of the requirement to do a due diligence investigation of the legal implications for the U.S. and potential other participants of an ESO-led approach and its feasibility. Exchanges of legal questions and answers occurred between Norbert König of ESO and Patrick Donahoe of AUI representing the views developed by legal counsel in Europe, the U.S., and Chile.

The ACC-appointed Negotiating Team for relations with Chile (which includes Catherine Cezarsky, Ian Corbett, Arno Freytag, Paul Vanden Bout, Robert Dickman, and Riccardo Giacconi) reviewed these exchanges as well as information provided by ESO and AUI representatives in Chile.

It was concluded, from the information available, that in an approach in which a single institution were to solely represent the ALMA Project in Chile (be it ESO or AUI), there would be no greater protection or immunity provided to the partners than that already provided to each by their individual bilateral agreements with the Government of Chile and that such a single entity-led approach appeared undesirable to the Chilean representatives.

For these reasons it was agreed in the December 4 teleconference of the Negotiating Team to explore a wider range of alternatives in preparation for a meeting with a Chilean group organized under the auspices of the Ministry of Foreign Affairs of Chile.

In particular, Patrick Donahoe of AUI was asked to continue examination of the legal issues with Norbert König of ESO and Riccardo Giacconi was asked to write a “white paper” to start a broader discussion on possible approaches.

The Fundamental Issues

1.0

As we look to the problems of operating a large new observatory like ALMA in Chile we are confronted with issues of principle as well as legal and practical ones that have confronted all observatories operating in Chile since the early 1960's. This includes AURA's Cerro Tololo, ESO's La Silla and Paranal, and, to a lesser extent, Carnegie's Las Campanas. I would like to start this note by examining in turn the most important issues with some background and possible approaches to their resolutions.

2.0 Chilean Participation in ALMA.

Chile is the host state of all of these projects. It has supported, through legislation and executive action, their development and operation and is prepared to welcome ALMA (as stated in the Letter of the Chilean Foreign Minister María Saledad Alvear Valenzuela) and also by the current declaration of the President of Chile, Ricardo Lagos.

In return, Chile expects a degree of participation in this project commensurate with the evolving development of science and technology in the country.

2.1 Observing Time.

A 10% fraction of observing time for use by Chilean astronomers was set aside by AURA since the beginning of Cerro Tololo. Since the legal basis for being in Chile was the cooperative agreement with the University of Chile which, under law No. 15172, provided AURA with the same privileges and immunities as were provided to ESO, it is natural that this 10% would be made available to the University of Chile for its use. With the growth of astronomy interests in other universities in Chile, this generated some questions about equal access by all Chilean astronomers to this reserved time.

Over the years ESO had adopted a policy of assigning time to Chilean astronomers on the basis of Director Discretionary time. It was only in 1996 with the signing of the new ESO-Chile Agreement that Chilean astronomers gained the right to 10% of the observing time on all ESO facilities on the basis of ESO's Observing Time Committee ranking. All meritorious Chilean proposals were accepted without regard for time competition up to 10% of the available time. Some further restrictions applied in the case of VLT time. This approach is considered unsatisfactory by most Chilean astronomers, who consider this time theirs by right. A Chilean entity should be responsible for the disposition of this time, be it the University of Chile or CONICYT, including, for instance, the possibility of making available some of the time to other institutions (such as, for instance, European or U.S. universities) as part of collaborative research programs.

It is my opinion that for ALMA no other approach is viable than the granting of 10% of the observing time for Chilean astronomy with no strings attached. How this time is used is an internal problem of the Chilean scientific community. The issues dealing with possible scientific and/or operational conflicts should be resolved by an ALMA scientific review group that would include Chilean participation.

2.2 The Development of Chilean Astronomy.

Development of Chilean Astronomy has proceeded over the years until there are now several internationally recognized Chilean astronomers at the senior professional level. Growth in recent years has occurred both at the University of Chile and at the University Catolica in Santiago as well as by other groups in Concepcion and Antofagasta. As part of the 1996 ESO-Chile Agreement, a fund was set up (approximately \$300,000 dollars per year) under the control of a Chilean-ESO committee. The chair of this committee was the Science Advisor to President Frei, Dr. Claudio Teitelboim. Distinguished foreign scientists were asked to study and recommend the best way to foster development of astronomy in Chile and to judge competitive proposals by the Chilean community to carry out specific programs. While the system apparently worked and dispersed funds to several projects, there has been criticism within the Chilean astronomical community of the tendency of the Committee to foster new initiatives rather than strengthen existing institutions. As to the AURA contributions, there have been (I believe) student and fellowship programs, but the U.S. approach, perhaps due to financial exigencies, has been to ask for financial contributions from Chile rather than granting development funds. (See, for instance, Chilean participation in the Gemini Project.)

I believe that Chile will insist on establishing some type of financial compensation for the use of the land, the potential beneficiaries being the II Region of Chile, where the facility will be erected, and CONICYT. The astronomers are of course most interested in seeing the funds go to CONICYT to be used for the development of astronomy. The II Region is interested in receiving such funds (in lieu of taxes?) for a number of projects of interest to them. I believe that the Chileans would not be agreeable to direct control by the ALMA Consortium in the use and distribution of funds. Much of the “preparation” that is going on in Santiago in the Chilean negotiating group has to do with the ways to secure such funds from the ALMA Consortium and for the local repartition and use of these funds.

Some form of lease agreement between the ALMA Consortium and the Chile entity that ultimately will be the beneficiary of the land might provide an appropriate vehicle. If it were possible to buy the land outright (rather than leasing it), this might be beneficial to ALMA; however, the requirement for development funds both for the II Region and for astronomy will still have to be satisfied.

2.3 Technical Participation by Chile in the Project.

Chile has made very substantial progress along technical development. For instance, software control requirements in the mining industry have created a competent young staff of computer programmers and IT specialists. The fiber optic link in communications going the full extent of the country represents a high level of connectivity. Within the observatories more and more of the technical positions in the staff are occupied by Chilean Nationals. Is there more that needs to be done to meet Chilean expectations?

ESO tried to initiate a collaborative work-learn program with the schools of engineering of the University of Chile and the University Catolica of Santiago without finding much interest. Some of the Chilean scientists have suggested that more subcontracts be given to Chilean firms not only in the construction of buildings and roads, in which they have traditionally done well, but also in areas with greater technology content. It is not obvious to me whether such opportunities do in fact exist and whether the Chilean industry would be interested.

2.4 Participation by Chile in Governance of the ALMA Observatory.

There have been expressions of interest by CONICYT in a greater degree of participation by Chile in the governance of the ALMA Project. It seems quite clear that participation by Chile in the ACC, the Scientific Advisory Committee, and all other appropriate technical/scientific working groups is taken for granted. Chile would like to be perceived as a full partner in the initiative (at about the 10% level) in return for being the host country and for the granting of the many privileges that the observatories enjoy in Chile. What form this partnership might take has not been spelled out by anybody in any detail (but see discussion in 4.1 point D).

2.5 Labor Issues.

The labor issues in Chile regard the relations between observatories and local staff. ESO has its own internal regulations for the Chilean staff. These regulations were modified in the 1996 ESO-Chile Agreement to incorporate the fundamental principles of Chilean labor legislation: freedom of association (unions) and collective bargaining. Still ESO is not subject to Chilean labor legislation and an arbitration tribunal of three eminent jurists has been established to resolve disputes. AURA and

(to my knowledge) Carnegie have adopted Chilean laws for the local staff. They are not or may not be protected by immunity of jurisdiction since they are not ruled by Treaty-level agreements, thus at least in principle they must resolve disputes in Chilean Courts. It is interesting to note that ESO's salary and benefits for Chilean workers are at the level of the 15 best employers in Chile. I have no direct information but I think that AURA and Carnegie salaries are also competitive in the market.

Most of the labor issues at ESO have not been of an economic nature but rather sociological and political, and of principle. Highly placed Chilean employees in the technical staff at ESO have been active in the trade unions' movement in Chile and represent an expression of Chilean concerns. In their view, Chilean workers in Chile must be subject to Chilean law and benefit from all constitutional protections due to Chilean citizens. The compromise that ESO worked out in 1996 does not appear satisfactory to them and thus the continued and prolonged negotiations over minor issues.

Why then not adopt Chilean labor legislation for Chilean workers? Chilean labor legislation is currently quite favorable to industry, although this condition could change in the future. Neither AURA nor Carnegie seem to have suffered ill effects by adopting Chilean labor laws although I do not believe that either institution has had to withstand legal labor challenges in Chilean Courts. The difficulties that ESO may encounter in adopting this approach because of their Convention could perhaps be bypassed by creating an appropriate joint ALMA entity in Chile that would hire the Chilean personnel on behalf of all the partners. In my opinion it would be very difficult for the Chileans to yield on this point given the current orientation of the Government and the views of the

Parliament. (See, for instance, the text of the new law for observatories which was debated but never passed.)

3.0 Issues and Requirements for the North American and European Partners.

3.1 Use of the Site.

Clearly the partners in the ALMA enterprise must be assured of continued and guaranteed access to the site on which they intend to place 550 million dollars worth of investments.

The ESO-led approach that was mentioned in the introductory statements offered, at least in principle, the most attractive solution to this problem in that ESO would, on behalf of the ALMA Project, negotiate a Treaty-level agreement with the Government of Chile that could not be revoked unilaterally. On the other hand, any agreement that is based on passing an ALMA law in Parliament or on a Presidential Decree can be changed by Chile at any time.

On the negative side of this approach there is, however, the experience during the Paranal controversy. This showed quite clearly that the operation of an observatory in Chile depends on more than the existence of an international Treaty. Delays of months in clearing customs, for instance, can and did damage the VLT project. It is clear that one needs the good will of the host country to operate effectively. On the positive side of a lower-level agreement such as those AURA and Carnegie have been operating under is the relatively trouble free operations of Cerro Tololo and Las Campanas over 30 and more years. On the negative, the recent effort by Chile to unilaterally reduce their contributions to the Gemini operations, while reasonable and justifiable, expose some weakness of the approach.

3.2 ALMA as an ESO Observatory.

There are other aspects of an ESO-led approach that upon examination appear less than satisfactory as a basis for the ALMA Project.

First is the problem of turning ALMA into an ESO observatory. This is in effect what an ESO-led approach would result in doing. ESO would negotiate a new agreement with the Government of Chile in which, in addition to La Silla and Paranal, ESO would receive permission to operate ALMA in Chanjantor.

The North American and (possibly) Japanese partners would then have access to the site through this agreement. Negotiation of the agreement for ALMA could become embroiled in the current negotiations by ESO regarding its existing facilities.

It is not clear that it would be acceptable to the astronomical communities in North America or Japan or to their funding agencies to become subsumed under an ESO umbrella.

Moreover, it is obvious that the immunities and privileges that the North American and Japanese partners would enjoy would be no different from those they currently are granted by virtue of their agreements with the University of Chile. In particular, the immunity of jurisdiction that ESO enjoys could not be used to provide protection to the other partners from legal suits in Chilean Courts. Finally, this approach is viewed by many Chileans as a ruse to avoid open and clear negotiation and therefore unacceptable. (Many of the same considerations would also apply to an AUI-led approach.)

3.3 Requirements of the ALMA Partners regarding Ownership of the Equipment.

It appears that under current rules and regulations the U.S. must retain ownership of the ALMA hardware it delivers to Chanjantor. The North American partners would find it difficult to find a formula that both maintains this ownership but hides it under the ESO umbrella for the purposes of customs declarations and import duties.

The potential Japanese partners may have the same difficulties. In effect, then, AUI/NRAO must import the equipment under the provisions and immunities granted under the agreement with the University of Chile and confirmed by the Ministry of the

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Are these immunities sufficient? Experience at ESO, AURA, and Carnegie shows that they are adequate.

3.4 Other Immunities

What about other immunities such as the ones regarding immunities in Chile of staff personnel of the partners? The immunities granted to staff and even contractors of astronomical observatories for importing personal goods, etc. have been quite generous in the past. There is a general tendency in Chile to reduce such immunities to prevent some abuses that may have occurred or in general as a reaction against perceived Colonialistic attitudes.

Such reductions are bound to occur over time and, in my view, they will have to be accepted wherever they do not interfere with effectiveness of the operations or our ability to recruit technical and scientific personnel for Chilean assignments.

3.5 Issues regarding the Use of the Land by the ALMA Partners.

Whether we purchase the land or not, there will be no grant of extra territoriality for ALMA. There never was such a grant for Paranal or La Silla and certainly not for Cerro Tololo and Las Campanas.

However, there have been differing degrees of compliance to local environmental concerns, building permits requirements and restrictions, need for road building permits, and similar issues at the several observatory sites.

The gamut of possibilities ranges from politely informing local authorities of plans being executed (which has been the general practice) to compliance with requirements for prior approval of specific plans, including participation and review by local architects. This last extreme should be avoided as much as possible since it could generate a number of inefficiencies and delays. From this point of view the creation of a Chilean entity by the ALMA partnership has to be carefully studied as to applicable laws and to prevent real future operational difficulties.

4.0 A Third Way?

Having summarized some of the issues that I believe will arise in the ALMA-Chile negotiations, let me express a certain degree of optimism regarding their outcome. I see no real fundamental difference between what we need to carry out a successful project and what support the Chilean Government has been willing to give in the past and is apparently willing to give now.

I also hope that the partners will find it possible to respond to the aspirations of the Chilean side. A win-win situation could be created that would assure long-term fruitful collaboration on ALMA between Chile and the European, North American, and

Japanese partners. I would like to sketch a possible approach that has been discussed in a preliminary way by AUI and ESO representatives and which, in my opinion, may be a way forward.

4.1 Use of Existing Agreements.

ESO, AUI, and NAOJ are legal entities that are recognized and can operate in Chile. ESO does so by virtue of the 1962 Treaty with Chile as further elaborated in 1996. AUI and NAOJ do so by virtue of their agreements with the University of Chile which gives them the same immunities and privileges as ESO.

AUI and NAOJ need to modify their current agreements with the University of Chile to be able to construct and operate a joint ALMA observatory in Chanjantor in addition to carrying out the initial exploration and site testing activities. ESO needs to receive permission by the Chilean Government to extend its activities in Chile to participation in a joint ALMA observatory. Once these steps occur and after a concession for the use of the land is obtained, the three partners can develop the site, import equipment using the immunities and privileges they have, and develop and operate ALMA. All of this can occur under the existing provisions.

The partners would not need to create an additional legal entity called the ALMA Observatory although a joint management office of the ALMA operations would need to be created under a site Director. In order to cope with local subcontracts, the hiring of Chilean staff, and administering the funds destined to the development of the II Region and of astronomy in Chile, etc., a Chilean corporation or an International corporation could be created. Many legal issues would have to be carefully considered, such as the degree of insulation from local litigation that such a corporation would provide to the

partners, the degree to which doing business through such an entity might erode the immunities of the partners, etc. However, there could be significant advantages to the partners if this approach could be adopted.

- A) The initial negotiation by three established legal entities -- ESO, AUI, NAOJ -- with the Government of Chile might become easier;
- B) Each of the partners could retain its identity in a joint ALMA Observatory;
- C) The creation of a local corporation might facilitate negotiations on the use of the land;
- D) The governance of such a local corporation could include Chilean (University of Chile) participation on the Board.
- E) The local corporation would solve the problem of local labor relations with subcontractors and local staff.

While I do not suggest that this is a fully worked out solution, I believe it represents a worthwhile model to study in detail since it satisfies so many of the requirements outlined in parts **2** and **3** of this note.