

Before OAD

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Abstract. OAD, the *Office of Astronomy for Development*, one of the most significant innovations within the IAU, was created at the XXVII General Assembly in Rio de Janeiro in 2009 and opened in 2011. The new office brought together and strengthened several activities of the IAU aimed at helping astronomers in developing or isolated countries to keep in touch with their colleagues elsewhere and up-to-date with the developments in our science. Those activities were mediated through the old commission structure by Commission 38 (*Exchange of Astronomers*) and Commission 46 (*Astronomy Education and Development*) which oversaw the *International Schools of Young Astronomers* (ISYA), the *Visiting Lecturer Programme* (VLP) and *Teaching for Astronomy Development* (TAD). In addition, Jorge Sahade, during his term as IAU President (1985–1988), formed the *Working Group for the Promotion and Development of Astronomy*, as a sub-committee of the Executive Committee, and asked the present writer, then a Vice-President, to act as chair. That Working Group (later renamed the *Working Group for the Worldwide Development of Astronomy*, WGWWDA) operated within the context of the already existing services of the IAU and in cooperation with the United Nations *Committee on the Peaceful Uses of Outer Space* (COPUOS). In this paper, the writer gives an account of the activities of the WGWWDA both during and between General Assemblies, until the year 2000, shortly after which he relinquished responsibility for them.

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1. Introduction

The IAU has been concerned ever since the end of World War II to help astronomers in developing or isolated countries. The first initiative was the founding of Commission 38, *Exchange of Astronomers*, in 1948, which provided small grants to enable individual astronomers to travel to short-term appointments in a country other than their own. The next important step was the founding of Commission 46 (*Teaching of Astronomy*, later renamed *Astronomy Education and Development*) in 1964. Under the aegis of this latter Commission, the IAU began its still continuing *International Schools for Young Astronomers* (ISYA) in 1967 (Perek 1967) and, later the *Visiting Lecturers' Programme* (VLP) which was superseded by *Teaching for Astronomy Development* (TAD). For a fuller discussion of these initiatives, see Hearnshaw (2019). Later still, Jorge Sahade, during his tenure as IAU President (1985–1988) formed a Working Group for the *Promotion and Development of Astronomy* as a sub-committee of the Executive Committee. The initial membership consisted, in addition to Sahade himself, of the writer (as chairman), R. Kippenhahn (both then on the Executive Committee) and P. J. Léna. Although Sahade undoubtedly expected the new Working Group (later named *Working Group for the Worldwide Development of Astronomy*, WGWWDA) to exercise a wide mandate, the immediate impulse for its foundation in 1987 was requests from two separate Latin-American countries for endorsement of astronomical projects. The Executive Committee took the view that it should not interfere in the setting of priorities within individual countries, leaving the new Working Group to define its own terms of references

and objectives. From the formation of the Group until shortly after 2000, the present writer was actively involved in two ways: visiting many developing countries and organizing sessions at IAU General Assemblies (and one Regional Meeting). At the XXV General Assembly of 2003, John Hearnshaw took over the chairmanship of WGWWDA and continued similar work until the IAU Executive consolidated all these activities in the new *Office of Astronomy for Development* (OAD). Funding for the new venture was approved in 2009 at the XXVII General Assembly in Rio de Janeiro, and the OAD was established in South Africa in 2011. In this paper, the writer will summarize the work of the WGWWDA for which he was personally responsible, in close collaboration with several members of Commission 46 and also with Hans Haubold of the United Nations *Committee for the Peaceful Uses of Outer Space* (COPUOS). First, I will describe the visits made on behalf of the IAU, followed by some account of the sessions organized at several General Assemblies. Each visit was described in reports to the IAU Executive which should still be in the IAU Archives. Unfortunately, the writer has not kept copies of these reports and has to rely on memory.

2. Viet Nam

The recent history of Viet Nam, as is well known, is dominated by the war against colonial government followed by a long civil war. The country, which is now increasing in prosperity, was for a long period extremely poor. The first contact with the IAU was a visit by Y. Kozai, during his term as President (1988–1991). He returned with the impression that astronomy must necessarily be very low on the newly unified country's list of priorities. Nevertheless, there were a number of Vietnamese who wished to develop astronomy and I made two visits to the country in 1993 and 1995. The first visit was to Hanoi and Vinh University (about halfway between Hanoi and Ho Chi Minh City, or Saigon) and the second, which coincided with a total solar eclipse, was to the latter city. Those whom I met during the first visit received their astronomical education in the Soviet Union and were teaching from a Russian-language text in astrophysics. I found that very few books were available, even in Vinh University Library, and that there was hardly any instrumentation. Nevertheless, many had high hopes and there was even talk of building a 2-m telescope in the country. At a meeting in Vinh University presided over by the Rector, I was presented with a wish list that they hoped the international community would help them to fulfil. Two positive results came from the visit: a promising undergraduate student in Vinh was recommended to, and accepted by, the next Vatican Observatory Summer School, and later went on to graduate studies in Paris, under N-Q. Rieu, an ex-patriate Vietnamese radio-astronomer; while, through the generosity of a Canadian amateur astronomer and Canadian Pacific Airlines, a 0.4-m reflecting telescope was delivered to Vinh University.

In 1995, immediately before the total eclipse, the astronomical community of Viet Nam gathered in Ho Chi Minh City for a seminar. Donat Wentzel, then in charge of the ISYA programme came, as did Rieu, complete with a small portable radio-telescope for making observations during the eclipse, which he left behind for further instructional use (Rieu 2001). The site that our hosts had chosen for us to observe the total eclipse was clouded out during totality, but radio observations could, of course, still be made and a total eclipse is still impressive, even if one cannot see the eclipsed Sun itself. Wentzel's contacts with Viet Nam and Honduras (see below) led him to develop the TAD programme, which was first tried out in the former country. The upshot of all this activity is that Viet Nam was admitted as an Interim National Member of the IAU in 2009.

3. Indonesia and Malaysia

On the occasion of my first visit to Viet Nam, I was able also to visit colleagues in Indonesia and Malaysia. Both countries, of course, had emerged from colonial rule and share a common official language. Astronomically, however their histories are very different. The Dutch regime established Bosscha Observatory near Lembang on the island of Java. After independence the transition to operation by Indonesian astronomers, a number of whom are well known, was smooth. In that sense, Indonesia is not, astronomically speaking, a developing country, but the astronomical community is small and somewhat isolated. By contrast, there was little astronomical activity in Malaysia under the British regime. At the time of my visit, there were two centres of astronomical activity: one in Kuala Lumpur, the capital, where Mazlan Othman was then Director of the planetarium; the other in Penang at the Universiti Sains Malaysia, where Mohammed Ilyas had established a small observatory with the primary purpose of enabling precise observations of the first appearance of the crescent Moon – an important phenomenon in establishing the beginning and end of Moslem feasts and fasts. Ilyas has devoted much attention to the problem of synchronizing observance of these rites over the entire Moslem world, which now stretches over much greater ranges of both latitude and longitude than the Prophet could have envisaged (in Canada there is now at least one Moslem community north of the Arctic Circle). His work is a good example of how astronomers in developing countries can harness local interests and needs for the development of astronomy, even though those interests are not necessarily primarily scientific. Both countries now have small but active astronomical communities and are long-time National Members of the IAU.

4. Central America

The six Spanish-speaking republics of Central America, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama, have been plagued by internal strife through much of the late twentieth century and, unfortunately, the issues are still not completely resolved. The astronomers in these countries, however, under the leadership of Maria Cristina Pineda de Carias have held cooperative meetings and are creating a modern astronomical community. The region, of course, has a strong archaeo-astronomy tradition inherited from the Maya civilization. I visited Honduras twice in the 1990s and, the second time, also went to El Salvador, where Hans Haubold organized one of the COPUOS meetings on Space Science. Donat Wentzel was also present. At that time, astronomers in none of the six countries thought that they could persuade their respective governments to fund National Membership in the IAU, even at the lowest level, but that possibly they could raise enough for the six countries to join as one unit. The IAU Executive of the time was willing to consider this arrangement and, for the first time, admitted a consortium of countries to the Union. Since 2009, however, three of the countries, Costa Rica, Honduras, and Panama, have been listed separately as Interim National Members.

5. Africa

There is now much astronomical activity in Africa, with the Southern African Large Telescope (SALT) in service and the Square-Kilometre Array coming into being, not to mention the OAD being situated on that continent. At the time of which I am writing, however, the picture was very different. Most of the countries north of the Sahara, with coastlines on the Mediterranean Sea, inherited observatories from the former colonial regimes, and South Africa itself, of course, had major observatories, although these,

too, were colonial in origin. Although there must be a wide variety of indigenous skylore, much of the rest of the continent was astronomically empty, the most significant exception being Nigeria, which built up a tradition of radio-astronomy research after independence, although the country did not become a National Member of the IAU until 2003. Even SALT was still in the planning stage. My own knowledge of Africa is limited to two brief visits, one to Nigeria in 1993 and the other to Morocco in 1996. The visit to Nigeria was on the occasion of a COPUOS meeting on space science, just outside Lagos, again organized by Hans Haubold together with the local cooperation of Lesley Onuora. It attracted people from several countries, including some who travelled across the continent from Kenya. I was impressed by the difficulties under which Africans had to work. Many had no access to e-mail, which was not always reliable for those who did. Some people had to pay to receive e-mails. It happened that my family needed to get in touch with me fairly urgently while I was there and fax was the quickest way available: even that took about 48 hours to reach me. Of course, things are different now: e-mail is more readily available and cell-phones are ubiquitous. Nevertheless, it is well for us who live in the West to remember that there are parts of the world where communications are not as reliable or speedy as those to which we have become accustomed.

Morocco presented a different picture. As already mentioned, there was astronomical activity inherited from colonial times, and the country had been a National Member of the IAU since 1988, although with periods of lapsed membership. The older generation of astronomers was primarily interested in fundamental astronomy and celestial mechanics. A younger generation was keen to move into modern astrophysics and cosmology (Chamcham 2001). There was a solar-patrol telescope in the Atlas Mountains and some site-testing was being undertaken with a view to constructing a major telescope in that range. Naked-eye observation on my one night in those mountains certainly suggested that there might be potential sites there and I recommended that Commission 50 (*Protection of Existing and Potential Observatory Sites*) be involved in the site testing. My visit paved the way for Donat Wentzel to organize a TAD programme for Morocco. Chamcham (2001) had high hopes that this was the beginning of a new era for Moroccan astronomy, but, unfortunately, the IAU web-site shows that the country's National Membership is once again under suspension.

6. Russia and Estonia

Russia is not usually considered to be a developing country, and it has a long tradition of astronomical research of the highest excellence. Nevertheless, in the immediate aftermath of the break-up of the Soviet Union, astronomers there did find themselves facing some of the same problems as their colleagues in more unfortunate countries. This was even more true of the non-Russian republics that then emerged as independent countries. My visits to these two countries in 1989, just before the break-up of the USSR, and 1993, just after, were not primarily in my capacity as Chairman of the WGWWDA, but rather were concerned, respectively, with the celebration of the 150th anniversary of the founding of Pulkovo Observatory and the 200th anniversary of the birth of F.G.W. Struve. Estonia, too, has a long tradition of astronomical research going back, now, over two hundred years. Struve made his name there, before being commissioned to found Pulkovo Observatory, and one of the first successful determinations of stellar parallax was based on observations he made in the Estonian city of Tartu (or Dorpat, as he knew it). Another of Struve's great contributions was his survey of an arc of the meridian through Tartu, from the Arctic Coast of Norway to the mouth of the Danube. Celebrations in 1993 of the bi-centenary of his birth included a meeting in Tartu at which a resolution was passed to submit to UNESCO an application for sites connected with this survey, in several countries, to be declared World Heritage sites.

The resolution attracted the attention of Jim Smith of the *Fédération Internationale des Géodésistes* (FIG), who was already working on such a proposal. As a result, I became the liaison between FIG and the IAU. A resolution supporting the proposal was passed by Commission 41 (*History of Astronomy*) and endorsed by the XXII General Assembly in 1994. In due course, the IAU lent its support to the efforts of Smith and FIG, with the result that UNESCO did adopt sites in ten countries as World Heritage sites in 2005.

7. General Assemblies

While contacts with and visits to astronomers in developing countries were an important part of the activities of the WGWWDA, it was equally important that the Working Group should be seen to be active at the scientific meetings of the IAU, especially the General Assemblies (GA). There was no opportunity to have a formal session at the XX GA in Baltimore in 1988 as the Working Group had been created only during the meeting of the Executive Committee in Santa Cruz the previous year. We did, however, have a lunchtime meeting of the Group and some other interested persons. At the XXI GA in Buenos Aires in 1991, we held an afternoon session at which four speakers talked about what the IAU was already doing for astronomers in developing countries and another five spoke about their local initiatives (Batten 1992). Three years later, at the XXII GA in The Hague, a somewhat longer session was held specifically on *Problems of Astronomy in Africa* with again nine speakers, seven of them from Africa (Batten 1995). At the XXIII GA in Kyoto, in 1997, Joint Discussion 20, a whole-day meeting, was devoted to *Enhancing Astronomical Research and Education in Developing Countries* and was organized in collaboration with Commission 46. A full account of the proceedings was published (Batten 1998). A major effort was mounted at the XXIV GA in Manchester in 2000, at which the Executive Committee authorized a Special Session on *Astronomy for Developing Countries* and financed the publication of all the papers in a special volume (Batten 2001) in addition to a summary in *Highlights of Astronomy* (Batten 2002). There was no session of the WGWWDA at the XXV GA in Sydney (2003) which the writer was unable to attend, but John Percy organized a Special Session for Commission 46 which included discussion of many of the issues important to the Working Group (Percy 2005).

One other activity deserves mention here: the organization of a Schoolteacher's Workshop at the IAU Regional Meeting in Pune, India, in 1993. Such workshops have, of course, been a regular feature of General Assemblies, but the writer believes this was the first to be organized at a Regional Meeting. It attracted teachers from many different parts of India; two ladies travelled all the way from Assam to Pune (a four-day or five-day train journey) and Dr Nirupama Raghavan, the Director of the Nehru Planetarium in Delhi also came.

8. Conclusion

What became obvious to the writer as he travelled in these (and other) countries is the variety of situations that astronomers in so-called developing countries face. Some, as we have seen, have inherited institutions and equipment from former colonial regimes and have often continued their work very successfully, despite limited funding and isolation from the worldwide astronomical community. Others are in countries that are, or have been until recently, poor, but because they are so large have been able to fund impressive astronomical observatories; India and China (which the writer also visited in 1987) fall in this category. Others, like the former republics of the Soviet Union, were temporarily, at least, set back by the political changes in their country. Others still, are simply poor countries in which a few brave individuals struggle to engage in a science that is not directly relevant to economic progress but which is of immense value to the human race.

The writer welcomes the work of the OAD in continuing to help colleagues in these different situations and has tried to trace in this paper, some of the activities of the IAU that eventually led to the formation of this extremely worthwhile initiative, which is, he believes, what Jorge Sahade hoped would emerge from the Working Group he set up.

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