Australia and the International Astronomical Union: the 2003 Sydney General Assembly

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Introduction

Thirty years after the initial Australian general assembly of the International Astronomical Union (IAU), another was held in 2003, also in Sydney. The IAU, the international body supporting professional astronomers, holds its general assemblies every three years, in different countries and cities. They are the most important activity for the union and are highly prestigious events for the host country.

The 1973 Sydney general assembly was most successful, though the number of participants was relatively low, and its local organisers faced major external threats.[1] The main problem was that Poland, with the support of the then Soviet Union, was pressuring the IAU to change the host city for the 1973 general assembly to Warsaw, in view of the 500th anniversary of the birth of the Polish astronomer Nicolaus Copernicus. Eventually, a compromise was reached, in which an extraordinary general assembly was held in Poland immediately after the Sydney general assembly. This compromise allowed the Sydney general assembly to proceed but split its pool of potential participants and so contributed to the relatively low attendance.

By the 1990s there was a new generation of Australian astronomers who wanted a general assembly in the country to build collaboration with overseas counterparts and to show off the great developments in Australian astronomy since 1973. A local general assembly was of special importance for postgraduate students as they would not have had previous opportunities to experience a major international conference and to be exposed to a much wider range of research, and research expertise, than normally available in Australia.

The 2003 general assembly also faced external events that could have greatly reduced the number of its participants and threatened the financial viability of not just the general assembly but also that of the Australian astronomical community. These events included the September 2001 attack on the World Trade Center, the Bali bombing of 12 October 2002 and the Iraq war that began

[1] Lomb (2020).

on 19 March 2003. Most disturbing was the spread of the SARS virus that impacted international travel during much of the registration period of the general assembly.

Organisation of the general assembly for 2003 was more challenging than in 1973 due to greater expectations brought on by advances in technology and in styles of presentation. In addition, the organisers took on tasks like acknowledging the increasing role of female scientists in astronomy and in providing a large outreach program to the public, to amateur astronomers, to the media and to local industry. This paper will highlight those aspects of the 2003 general assembly that were like those in 1973 and those aspects that were quite different. It will not give a full description of the organisation and execution of the 2003 general assembly as a highly detailed report is available online.[2] For an added perspective, comparisons will also be made with the 5th International Congress on Industrial and Applied Mathematics, a conference of similar size that was held the week before the general assembly, partly at the same venue.[3]

It is timely to take another look at the 2003 general assembly, as recently there have been moves towards holding another in Australia.[4] On the initiative of the President of the Astronomical Society of Australia, Cathryn Trott, it has been discussed at a meeting of the heads of astronomy departments from the four cities that could possibly host the meeting: Brisbane, Sydney, Melbourne and Perth. The consensus was that the right time to hold the assembly would be in 2030, especially if it was to be held in the Western Australian capital of Perth, as a major new instrument, the Square Kilometre Array, a significant portion of which is being built in the state, is expected to be completed and making scientific observations by that time.

Beginnings

The bid for the general assembly to be held in Australia in 2003 went much more smoothly then three decades earlier. To start the process Mount Stromlo astronomer, Don Mathewson, a former director of the observatory and a vice president of the IAU, invited fellow members of the IAU executive committee to visit Australia. All but two came to attend the 67th meeting of the committee in Canberra on 18–21 August 1995.[5] Attendees included IAU President Lodewijk Woltjer, President-Elect Bob Kraft and General Secretary Immo Appenzeller. While in Australia they also viewed various Australian astronomical facilities plus the then partially completed Sydney Convention Centre at Darling Harbour.

[2] Hyland and Whiteoak (2003a).
[3] Barton (2003).
[4] Trott (2020).
[5] Appenzeller (1996) p. 4.

Initially, the idea was to bid for the 2000 general assembly and to have it in Canberra.[6] However, it was realised that such a large conference would need a greater range of facilities and accommodation than was available in Canberra at that time. Sydney would be more suitable, but it would be logistically difficult to hold it in the same year that city was hosting the Olympics. Instead, as advocated by Jeremy Mould, the director of Mount Stromlo Observatory and the chair of the National Committee for Astronomy, the bid was made for 2003. In preparation for the bid, Mathewson obtained commitments from the federal and the NSW governments for its support. The written bid was prepared at the Australian National University, of which Mount Stromlo Observatory is a part, with input from Sandra Harrison, the secretary of the Anglo-Australian Telescope Board. It was submitted to the IAU in 1995.

Success for the bid came two years later at the Kyoto general assembly in 1997. The IAU executive committee held its 69th meeting at Kyoto and reviewed both the invitation from the Royal Society to hold the 24th general assembly in Manchester, UK, in 2000 and from Australia's National Committee for Astronomy to hold the following general assembly in Sydney in 2003.[7] The executive committee decided to propose to the general assembly to accept both invitations. Intriguingly, this recommendation is prefaced by the statement that the committee was, 'Reaffirming its earlier position', indicating that the decision on the bids had already been made at an earlier meeting. Most likely this was at the previous meeting in Baltimore in June 1996 that had recorded the receipt of the Manchester invitation, as well as its intention to recommend its acceptance at Kyoto.[8]

Representatives of both bidders made presentations at the Kyoto closing ceremony, which was the second working session of the general assembly in 1997.[9] One was an invitation to hold the 24th general assembly in Manchester, made on behalf of the Royal Society and the British astronomical community. Jeremy Mould presented the second invitation, which was to hold the following general assembly in Sydney in 2003. The general assembly voted unanimously to accept both invitations.

Organisation

For the 1973 general assembly the organising committee was small and local so that meetings could be held frequently in Sydney. For the subsequent general assembly of 2003 improvements in communications allowed a National Organising Committee (NOC) to be set up with representatives

[6] Personal communication, R. Ekers, 30 June 2020.
[7] Andersen (1998) pp. 17–18. For the UK the adhering body to the IAU is the Royal Society, while for Australia it is the Australian Academy of Science, of which the National Committee for Astronomy is one of 32 national committees.
[8] Appenzeller (1997) p. 4.
[9] Andersen (1998) p. 31.

from around the country. There were problems in choosing a chair for the NOC as the potential candidates held senior positions in their home institutions that made it difficult for them to devote time to a project outside their normal responsibilities. John Norris, associate director of Mount Stromlo Observatory, chaired the first meeting of the committee on 20 April 1998, five years before the general assembly. There were two other chairs before Harry Hyland, deputy vice-chancellor at James Cook University in Townsville, took over from November 2000. He was joined from April 2002 as co-chair by John Whiteoak, who had retired as deputy director of the Australia Telescope a year earlier. The two co-chairs then led the NOC until its final 36th meeting, held just before the start of the general assembly. Table 1 gives the full list of NOC chairs.

One of the first tasks for the NOC was to select a firm of professional conference organisers (PCO) to assist in the organisation of the conference. Such firms have a variety of specialist staff to assist with different aspects of arranging conferences. Again, this was quite different from the 1973 general assembly, the organisers of which only employed one paid person to assist as conference secretary. Also, the finances for 1973 were completely controlled by the Australian Academy of Science (AAS), which at that time considered the assistance of conference organisation as one of its roles. A few years later, in 1977, the AAS even set up a conference secretariat with two full-time conference organisers.[10] This unit could not cover its cost and since 1985 the AAS only endorses conferences without taking any responsibility for their organisation or finances. As, of course, the IAU accepts no financial liability for the general assembly, Australian astronomers had to take on the full financial responsibity.

The PCO for the general assembly was selected after a long process. Though one PCO, Tour Hosts, assisted from the beginning, tenders were called in September 1998 for a firm to be the PCO for the general assembly. Five tenders were received and these were culled down to two, Tour Hosts and ICMS Australasia. After the members of the NOC visited both organisations and talked to referees, ICMS Australasia was chosen as the preferred PCO in June 1999. The finalisation and negotiation of the contract took another nine months: it was done with great care and after receiving advice from commercial experts at the CSIRO.

The organisers of the applied mathematics congress went through a similar process though more quickly. They invited four PCOs to tender at approximately the same time as their successful bid to hold the congress was announced in July 1997. Out of these they also selected ICMS Australasia and signed the contract in September 1998.

Being without financial assistance, the NOC needed seed funds to begin organising the general assembly, as well as a legal body to take responsibility for the finances. The seed funding

[10] Fenner (2005) p. 305.

was raised from the various astronomical institutions around Australia. A request for a commitment of $100,000 was made, with more from larger institutions, such as the CSIRO's Australia Telescope National Facility, the Australian National University's Mount Stromlo and Siding Spring Observatories and the now-disbanded Anglo-Australian Observatory, and lesser amounts from various university departments, going down to $70 from Macquarie University's Astronomy department.[11]

The obvious body to take financial responsibility was the Astronomical Society of Australia, the organisation of professional astronomers in Australia, a body which was established in 1966.[12] The council of the society agreed to the request, with some concern in view of its limited funds, and requested safeguards to protect itself against major liabilities. This acceptance was relayed to the then Chair of the NOC, Raymond Haynes, in a letter by the outgoing President of the ASA, Roger Clay, that conveyed the view of the council that 'it would be providing a service to the Australian astronomical community'.[13] The letter indicated four conditions for taking responsibility: the society being represented on the NOC, insurance against losses, the society monitoring the cash flow and the promise of the society receiving 10 per cent of any profits from the assembly.[14] This led to formal society representation on the NOC, provided by Dick Manchester, the new ASA president, and John O'Byrne, one of its two secretaries. Together they monitored all financial aspects of the meeting.

The organisers of ICIAM 2003 faced the same needs of obtaining seed funds, or what they called 'bridging finance', as well as finding a legal body to take responsibility for the congress. Similarly to the case of the 2003 IAU general assembly, legal responsibility for the Congress was taken by the relevant professional society, the Australian Mathematical Society (AustMS) that had been founded in 1956, a decade prior to the ASA.[15] AustMS had sufficient resources that it could provide the necessary bridging finance, in yearly instalments up to the time of the Congress in 2003.[16]

As highlighted by the ASA council, insurance was of concern to the NOC. A priority issue was the personal liability of the members of the NOC, as well as the members of the ASA council. Some members were covered by their institutions, but not all. The suggested solution was for the council to take out directors' and officers' insurance and to record that the NOC was a subcommittee of the ASA so that its members were also covered. The yearly premium was to come out of the seed funding.

[11] Letter, L. Cram to various astronomy departments, 14 December 1998, ASA archives.
[12] Lomb (2015).
[13] Letter, R.W. Clay to R.F. Haynes, 3 July 1999, ASA archives.
[14] As discussed in the section on The assembly, all the profits of the general assembly went to the ASA.
[15] Cohen (2006) p. 321.
[16] Barton (2003).

As the time for the general assembly came closer the workload of the NOC increased and variety of subcommittees were set up to deal with different aspects of the organisation. By March 2001 the following subcommittees were in operation: executive; finance; sponsorship and exhibition; www (website); media/newspaper marketing; hospitality, accommodation and tours; associated events; and program.[17] The work of some of these subcommittees are mentioned in later sections, especially that of the associated events subcommittee that was later renamed the associated promotional events subcommittee. Despite having a membership of senior astronomers, the program subcommittee could only encourage proposals to the IAU, which was responsible for the scientific program. Thirty years earlier, there was only one subcommittee for the 1973 general assembly.

The Sydney Opera House

An iconic part of the Sydney landscape, the Sydney Opera House was opened by Queen Elizabeth II on 20 October 1973.[18] The organisers of the 1973 general assembly had been very keen to hold at least the opening ceremony at Sydney's internationally famous opera house that was then being built. However, it eventually became clear that that would not be possible, as the building was not going to be completed in time for the assembly held in August 1973.

Similarly, the NOC for the 2003 general assembly felt it important to hold the opening ceremony at the Opera House. This was emphasised at a NOC meeting in April 2001 in the presence of Hans Rickman, the secretary general of the IAU, as well as Ron Ekers, then the president-elect of the IAU. Ekers emphasised that the Opera House was 'the most attractive site to hold the Opening Ceremony'.[19] The PCO was to make the booking, but bookings could not be confirmed until eighteen months before the event.

The date and time could not be confirmed as the needs of the main users, such as the Sydney Symphony Orchestra, were given priority. A year later, the availability of the Opera House was clearer and on the preferred possible dates of 15 and 16 July 2003 the concert hall was available, following orchestra rehearsals, from 5 pm onwards.[20] By June the booking was confirmed for Tuesday 15 July 2003, from 5 pm to 8:30 pm.[21] The end time was so that setting-up could begin for a symphony concert to be held on the next day.

[17] Minutes, NOC meeting no. 17, 16 March 2001, ASA archives.
[18] Pitt (2018).
[19] Minutes, NOC meeting no. 18, 19 April 2001, ASA archives.
[20] Minutes, NOC meeting no. 22, 19 April 2002, ASA archives.
[21] Minutes, NOC meeting no. 24, 27 June 2002, ASA archives.

Having the Sydney Symphony Orchestra rehearsing on the same day as the opening ceremony provided the opportunity to use it as part of the program.[22] However, cost was a major factor, even if the orchestra used its own repertoire, which would have been cheaper than requesting special items. In the end, the use of the orchestra was rejected because of the cost, as it had been thirty years earlier. At the actual ceremony, the main musical interlude was a piece composed by jazz musician Sandy Evans for saxophone, trumpet and conch shell with projected images by famed Australian astrophotographer David Malin.[23] In addition, Chief Scientist of Australia, Robin Batterham played the concert hall's grand organ, accompanied by a choir.

As the Opera House is such an internationally known symbol for Sydney, it was included in the logo for the general assembly with the five main stars of the Southern Cross above it, as shown on Figure 1. The representation of the building on the logo led to a serious problem when it was noticed that it was too close to the trademarked image used by the Opera House.[24] When the issue was brought to the attention of the Opera House Trust, an infringement was claimed and a demand issued that either the building image be removed from the logo or a licence be requested. The second alternative was taken and a licence fee of $7500 was paid with the cost split between the NOC and ICMS Australasia.[25]

SARS epidemic and other troubles

A variety of serious events took place during the planning for the 2003 general assembly that created fear of international travel, especially on aircraft. Any reluctance to travel threatened the success and financial viability of the assembly, since there were no plausible alternative ways of reaching Australia for most overseas astronomers other than by air.

The first significant incidents were the terrorist attacks in the United States on 11 September 2001, when two planes hit the World Trade Center in New York and another hit the Pentagon in Washington.[26] These led to the grounding of all passenger aircraft for a short period. Just over a year later, terror came closer to Australia with the bombing of two nightclubs in Bali on 12 October 2002.[27] Then on 19 March 2003 the United States and a coalition of other countries began the Iraq war.[28]

[22] Minutes, NOC meeting no. 27, 7 November 2002, ASA archives.
[23] Programme, XXVth IAU-GA 2003 Opening Ceremony, ASA archives.
[24] Email, H. Sim to J. O'Byrne and R. Manchester, 14 October 2002, ASA archives. Minutes, NOC meeting no. 27, 7 November 2002, ASA archives.
[25] Minutes, NOC meeting no. 28, 17 December 2002, ASA archives.
[26] History.com (2020a).
[27] NMA (2020).
[28] History.com (2020b).

The most important problem threatening attendance at the general assembly was the infectious virus that causes Severe Acute Respiratory Syndrome (SARS). On 12 March 2003, just four months before the general assembly, the World Health Organisation issued an alert for a severe type of pneumonia that had been discovered the previous month in people from China, Hong Kong and Vietnam.[29] The illness causing the pneumonia became known as SARS. During the period of the epidemic, SARS infected 8000 people and caused 774 deaths. Many people postponed travel due to fear of infection, as well as possible delays during the ubiquitous airport entry screening on arrival in a new country. A traveller could experience delays if the entry screening found that they had a slight fever from an unrelated condition or if anyone else on their flight had one. In Asia and the Pacific there was a drop of twelve million arrivals in the months the pandemic was occurring, a drop of nine per cent compared to the previous year. Fortunately, unlike SARS-CoV-2 that spread around the globe in 2020, SARS could be quickly controlled by public health measures like the quarantining of infected people. The World Health Organisation could declare on 5 July 2003, a week before the start of the general assembly, that the epidemic was over.

The implications of the 11 September 2001 terrorist attacks were discussed at the NOC meetings in October 2001 and in February 2002.[30] At the first, the consensus was that, 'the situation is not yet drastic'. At the second, correspondence had been received that the IAU executive committee 'noted that despite low attendance at some conferences immediately following September 11, there was a feeling that this should not affect the GA in 2003'…'and that unless there was a another major incident, it was probable that there would be minimal effect on the GA in 2003'.

Despite this, there was concern from the National Committee for Astronomy about the risks involved, especially in case the revenue was less than the expenditure, for reasons such as being locked into unwanted contracts and fewer than expected registrations. Possible savings were discussed, including cutting the cost of coffee breaks or using cheaper rooms at the University of Technology Sydney, that were located only 750 metres from the convention centre.[31] This latter option was not taken up, though it was successfully utilised by the applied mathematics congress that split its meeting between the convention centre and the university.

Disaster insurance was taken out in May 2003, only two months before the start of the general assembly.[32] A shortfall in delegates was covered, but both war and SARS were excluded. The main plan to deal with SARS was to provide information to overseas participants on what to do if

[29] Wilder-Smith (2006).
[30] Minutes, NOC meeting no. 20, 26 October 2001, ASA archives. Minutes, NOC meeting no. 21, 22 March 2001, ASA archives.
[31] Minutes, NOC meeting no.27, 7 November 2002, ASA archives.
[32] Minutes, NOC meeting no. 33, 14 May 2003, ASA archives.

they felt unwell during the general assembly. This was to be in the form of a leaflet to be included in the conference satchel and it was to be translated into Chinese. By early July it was clear that SARS was no longer a major problem and the SARS document was not needed.[33]

Registration on the website went live, after extensive testing, in early November 2002.[34] As shown in Figure 2, registrations initially came in slowly. The causes of the reluctance to commit to attend the general assembly would have been the various international events and SARS, plus the necessarily high cost of registration. The early registration fee of A$880 was 56 per cent higher, in equivalent US dollar terms, than that at the previous general assembly in Manchester, UK in 2000.[35] The two co-chairs explained this in a November 2002 document that this was because of a greatly expanded program and the use of the expensive venue of the Sydney Convention and Entertainment Centre for the general assembly, together with holding the opening ceremony at the Opera House. The introduction of a 10% goods and services tax in Australia in July 2000 also added to the fee.[36]

As can be seen from Figure 2, registrations continued to come in slowly until the middle of April 2003. This was a serious concern for the NOC as the break-even number had been estimated as 1400 registrants in the November 2002 budget review.[37] The cut-off date for early registrations was extended from the end of April until the end of May 2003 to encourage more people to register. For that or for other reasons, from mid-April until early May there was a surge in registrations and the crucial number was passed. The final number of IAU members and invited participants was 1832, sufficient to yield a small surplus. Not only did this number of full fee-paying registrants pass the break-even number, it exceeded the attendance of 1550 at the previous general assembly at Manchester.[38]

For the organisers of the applied mathematics congress, registrations followed a similar pattern with a slow start from late November 2002, followed by a surge of registrations that eventually reached 1407 full delegates.[39] They had similar concerns about SARS and international tensions as the NOC had for the general assembly, but, they had the advantage that abstracts were requested separately and much earlier than registrations. By the end of October 2002 over a thousand abstracts had been received and, as stated by Noel Barton, the congress director, by late December ‘it was clear that congress was shaping up well as a major meeting’.

[33] Minutes, NOC meeting no. 35, 1 July 2003, ASA archives.
[34] Hyland and Whiteoak (2003a).
[35] H. Hyland and J. Whiteoak, Comment on registration fees for the general assembly, 12 November 2002, ASA archives.
[36] Reinhardt and Steel (2006).
[37] Hyland and Whiteoak (2003a).
[38] Anderson and others (2019), p. 331.
[39] Barton (2003).

The Internet Café

International and interstate visitors to the 1973 general assembly communicated with their home institutions and their families mainly by letter or postcard. A special post office was set up in the Carslaw building of the University of Sydney and any mail posted through that facility was hand stamped with a special post mark.[40] This mark featured the name of the general assembly, as well as some star-shaped symbols.

Much faster communication possibilities were the expectation thirty years later, when email was available and widely used. Meeting those expectations was a major issue for the NOC and the plans evolved as the date of the assembly came closer. The issue was one of the items for which feedback was sought from NOC members and other Australian astronomers, who had attended the previous general assembly in Manchester in 2000.[41] The feeling was that there were sufficient computer terminals provided at Manchester but that their distant location from other activities and their lack of availability in the early mornings and in the evenings was problematic.

Originally, at least sixty terminals were envisaged for the 'Internet Café', preferably sponsored by a large computer company.[42] The number of terminals was later scaled back, while the hoped-for sponsorship did not eventuate. The numbers were reduced not just for financial reasons but because the plans had broadened to also provide ports for laptops and, for the first time at a general assembly, a wireless local area network. Forty personal computers were leased for the two weeks of the assembly, together with the required furniture to hold them, and forty eight laptop terminals.[43] To speed up turnover, no seats were provided at the terminals, as shown in Figure 3.

Shaun Amy, then working for CSIRO's Division of Telecommunications and Industrial Physics but originally trained as a radio astronomer, was brought in to provide technical expertise.[44] Amy's first concern was to ensure that there was sufficient bandwidth for all the services that were to be supported. Initially, he proposed a 100 MHz microwave link between the University of Technology Sydney and the convention centre. The university was the New South W ales hub for AARNet, the provider of Internet and other communication services to Australian universities and other research and educational institutions.

A better solution appeared when a senior colleague of Amy's at the Division of Telecommunications and Industrial Physics brought a fibre link to the convention centre for use at a

[40] Anonymous (1973a).
[41] Email, R. Haynes to numerous recipients, 9 October 2000, ASA archives.
[42] Minutes, NOC meeting no. 17, 16 March 2001, ASA archives.
[43] Hyland and Whiteoak (2003a).
[44] Minutes, NOC meeting no. 25, 14 August 2002, ASA archives. Amy is now at CSIRO's Australia Telescope National Facility.

trade fair in May 2003.[45] After negotiations with the company from which the fibre was leased, the fibre connection was made available for the general assembly at a reasonable cost. The cable, which was connected to the convention centre's own fibre links, provided a gigabit link between the centre and the University of Technology Sydney. Amy managed to arrange that the internet charges involved were generously covered by AARNet and GrangeNet, which was a three-year program to install a high-speed communication network between the main east coast cities of Melbourne, Canberra, Sydney and Brisbane.

Such a large bandwidth was necessary as the wired network within the convention centre not only provided Ethernet connections to the Internet Café but also to the exhibition booths, to the main conference rooms and to the media centre.[46] Real-time access was possible to remote computing clusters to demonstrate visualisation techniques and for a direct link to scientists in Antarctica. The wireless network was provided in a variety of areas within the centre, such as the main meeting rooms and the exhibition hall. This heavy use of digital networking was not only a first for an IAU general assembly but was also an innovation for the convention centre. It was based on the then current 802.11b standard that had become the first widely used Wi-Fi standard after its approval in 1999.[47] For comparison, the latest approved standard, released in 2019, is 802.11ax or Wi-Fi 6 and is up to a thousand times faster. It should be noted that Wi-Fi is only possible because the CSIRO's John Sullivan and colleagues made a key, patented contribution to its standards and implementation.[48]

Women in astronomy

A women's subcommittee was part of the arrangements for the 1973 general assembly.[49] Consisting of the wives of local astronomers, they provided hospitality for the spouses of visiting attendees. No special arrangements were made for the relatively few women astronomers, who were attending the assembly. Things were different thirty years later.

The first IAU women in science meeting had been organised by the distinguished astronomers, Vera Rubin and Margaret Burbidge, at the general assembly in Baltimore in 1988.[50] This was followed by a joint discussion, or workshop arranged by a number of different IAU commissions, at the general assembly at the Hague in 1994. The proceedings of this meeting were

[45] Minutes, NOC meeting no. 34, 10 June 2003, ASA archives.
[46] Amy (2003).
[47] Mitchell (2020).
[48] Ward (2014)
[49] Anonymous (1973b).
[50] Bryce (2000).

reported in detail.[51] At Manchester, the prior general assembly to the 2003 one in Sydney, an informal lunchtime gathering was held on the topic, attended by about 60 people, both women and men.[52] The Manchester meeting began with a report on a demographic survey of British astronomers that found that women's careers appeared to stall in their mid-thirties. Similar statistics and experiences were reported from countries around the world.

The first suggestion of a women-in-astronomy meeting in 2003 came at the September 2002 NOC meeting, when co-chair John Whiteoak reported on an email that he had received from the US National Committee for the IAU.[53] In the email Robert Williams, the chair of the committee, proposed a women's networking luncheon similar to that held in Manchester. He commented that the one in Manchester had not been well attended due to a lack of publicity. For the one in Sydney, Williams' committee was offering $US1000 to $US2000 as 'seed money'. Whiteoak contacted well-known University of Sydney astronomer Anne Green, who agreed to organise the event. Green had not only attended the event at Manchester but she had proposed and received strong support for a formal session at Sydney.[54]

The event went ahead as a women-in-astronomy meeting, held during a lunchtime about halfway through the general assembly.[55] Sponsored by the Astronomical Society of Australia in addition to the US National Committee for the IAU and organised by Green and a colleague from Swinburne University, Sarah Maddison, the event was booked out with all 180 available spaces taken. The organisers were encouraged by the attendance of many senior astronomers, such as IAU President Franco Pacini, IAU President-Elect Ron Ekers and the other members of the IAU executive committee. There were, as well, directors of observatories and presidents of professional bodies, together with young astronomers. It was a working lunch with the keynote speech followed by participants at each of the eighteen tables being given forty minutes for a discussion among themselves, before being asked to report back to all 180 attendees. To stimulate discussion, all participants received a flyer with the 1988 Baltimore Charter for Women in Astronomy and a summary of the gender split of the IAU membership at the time. Among the topics discussed was the lack of worldwide data on women in astronomy and the need for role models and mentoring. It was also clear from the comments, that there was a wide range of experiences and problems facing women astronomers from different parts of the world, and that solutions for improvement would vary greatly for different countries.

[51] Torres-Peimbert (1995).
[52] Bryce (2000).
[53] Minutes, NOC meeting no. 26, 17 September 2002.
[54] Bryce (2000).
[55] Green and Maddison (2004).

The establishment of an IAU working group on the status of women in astronomy, with Anne Green as chair, was announced at the meeting. This had been approved by the executive committee just a few days earlier. The working group was to report directly to the IAU executive and received good media coverage at the Sydney general assembly. A consequence of the success of the working lunch was that for all future general assemblies, a special session on women in astronomy was to be formally scheduled and listed in the program.

An important need for working women astronomers is family support. Accordingly, childcare was provided at the general assembly for participants, who had brought their children with them.[56] This had turned out to be difficult to organise as day-care places in the vicinity of the convention centre did not take children on a casual basis due to high insurance costs. Instead, a two part solution was devised with a crèche for younger children in the exhibition hall utilised for the general assembly and a small group of student-childcare teachers taking nine-to twelve-year olds on excursions around Sydney. A total of twenty three children took part in the childcare program with positive feedback received from parents afterwards.

Associated events

There were no events for the public at the 1973 general assembly, but for the 2003 assembly the NOC decided that it wanted to make use of the presence of almost two thousand astronomers in Sydney to boost the profile of astronomy, locally and around the country. To that end, it set up the Associated Public Events Subcommittee (APES), with the author, Lomb, as chair, to organise suitable events.[57] APES planned an extensive set of events. Necessarily, many of these events were to be at the convention centre or its vicinity, however, to try to reach as many people as possible, events were also proposed for the western suburbs of Sydney, regional NSW and interstate capitals.[58]

Funding for these events was limited. APES secured a grant of $7500 from the Donovan Astronomical Trust, a trust founded in 1923 for the promotion and support of astronomical education in Australasia.[59] This grant, the largest the trust had awarded to that date, was to be used to hire a consultant to plan events. In the end, the successful applicant for the position, science writer David Ellyard, was mainly concerned with the touring astronomers program. This program was enabled by a grant of $4180 from the British Council Australia, supplemented by the NOC. Though the origin of this grant limited the touring program to astronomers from the UK, this did not turn out to be a serious limitation as suitable speakers were willing to undertake the travel.

[56] Hyland and Whiteoak (2003a).
[57] Minutes, NOC meeting no. 17, 16 March 2001, ASA archives.
[58] Hyland and Whiteoak (2003b), Annex 7, N. Lomb, Associated Public Events Subcommittee report.
[59] ASA (2015).

Local talks began at the nearby Powerhouse Museum and at Sydney Observatory but, when the general assembly started, the talks switched to the convention centre. In the middle of the assembly the professional exhibition for attendees was opened to the public with some additions, such as a blow-up planetarium and an ask-an-astronomer desk, and billed as the AstroExpo. Incorporated with it were a series of back-to-back talks on the weekend by such eminent astronomers as Carlos Frenk, Paul Murdin and Suzanne Débarbat. There were two talks at Parramatta, in western Sydney: by the prolific astronomy communication pair, Heather Couper and Nigel Henbest, and by Jill Tarter on the Search for Extraterrestrial Intelligence.

The touring astronomers program reached the main Australian capital cities: Perth, Adelaide, Melbourne and Brisbane, plus Canberra and the regional centres, Wagga, Parkes and Wollongong. Talks were given by two astronomers from the University of Central Lancashire, Robert Walsh and Don Kurtz, plus once again Heather Couper and Nigel Henbest. There was another program of visits to regional towns, called Astronomy on the Go, which was independently organised by a member of APES, Michael Burton, using the resources of the University of NSW.[60] There were three separate tours with university students, both undergraduate and postgraduate, to different regional towns with presentations to schools. The students gave 130 presentations to a total audience of about 10,000 people.

Amateur astronomers were not forgotten and a group made up of representatives of local amateur societies was set up. This group, under the guidance of the APES chair Lomb and a colleague from the NOC, Tony Turtle, considered how to contribute to public outreach over a long series of meetings. It organised a widely-advertised viewing night at North Sydney oval, kindly made available for the purpose by the local council. This was a most convenient central spot, both for the amateurs bringing their telescopes and the public coming to enjoy the event. The oval is in the middle of Sydney's second central business district and hence in a light-polluted area but to compensate surrounding building owners were requested to switch off their roof-top advertising signs. A most successful trial run was held in 2002, the year before the general assembly, with over 3000 public visitors. The viewing night during the general assembly was almost as successful, though attendance was a little less due to poorer weather. There were seventy telescopes showing astronomical objects, as well as a large colour screen with images from famous Australian astrophotographer David Malin. In addition, the amateurs arranged a one-day conference with speakers chosen from some of the overseas astronomers, plus a booth at the AstroExpo.

Over 30,000 people attended the events and, almost certainly, all this activity would have been the largest outreach effort in any general assembly of the IAU up to that point. To inform the

[60] Hyland and Whiteoak (2003b), Annex 8, M. Burton, Report on the 'Astronomy on the Go' program.

public of the programs available, the NOC hired a public relations and marketing firm and gave them a total budget of $20,000. The media campaign began with a well-attended media briefing at Sydney Observatory for both the public program and the general assembly. In their media campaign the firm claimed to have generated publicity that would have cost almost 1.5 million dollars if paid at casual advertising rates and 27.5 million dollars' worth of editorial coverage in print media, television and radio.[61] There were so many stories being presented to the media that saturation was reached by the second week of the general assembly and stories were being rejected.

Sponsorship

For a scientific conference sponsorship is essential to be able to balance the budget without resorting to registration fees that are unaffordable for most would-be participants. This was a relatively straightforward task in 1973 when only one application for a grant was made and that was to the Commonwealth Government with the assistance of the AAS.[62] The application for a sum of $36,000, which was equivalent to $237,000 in 2003, was to the minister for education and science, who was expected to pass it on to an inter-government committee on conferences.[63]

The applied mathematics congress also sought sponsorship with the congress director, Noel Barton, taking charge of marketing, sponsorship and the congress exhibition.[64] For a while Barton looked for a principal sponsor but found 'this approach just too risky and stressful'. Instead, he and his colleagues looked for smaller sponsorships from gold, silver and bronze sponsors. Over $500,000 was raised with the five gold sponsors either Commonwealth Government agencies or universities. There were, as well, two silver and eight bronze sponsors with a similar make up, except for a bronze sponsorship from the NSW Department of State and Regional Development.

For the IAU general assembly in 2003 the initial commitments that the Commonwealth and NSW state governments had made to Don Mathewson were not legally binding and were not honoured.[65] Thus the sponsorship subcommittee had to begin searching for sponsorship from the beginning. This was found to be difficult and little, if anything, had been achieved by April 2002. Part of the difficulty was that unlike subjects like chemistry and medicine, astronomy does not have direct links with profit-making commercial and industrial interests. To try to speed up progress, David Ellyard was contracted by the ASA to be the chair of the sponsorship subcommittee.[66] This was

[61] Hyland and Whiteoak (2003b), Annex 13, P. Opfer, Marketing report.
[62] Lomb (2020).
[63] Reserve Bank of Australia (2020).
[64] Barton (2003).
[65] Personal communication, R. Ekers, 30 June 2020.
[66] Minutes NOC no. 22, 19 April 2002, ASA archives.

a separate and independent contract to that with the associated public events subcommittee. Ellyard developed a strategy involving encouraging links between sponsors and exhibitors, as well as more than 70 options for sponsorship.[67] He also drew up a master list of possible sponsors that was largely biased towards United States organisations. However, medical problems and a return to the NSW public service meant that Ellyard could not follow up on these contacts and by September 2002 the ASA had terminated the contract with him.[68]

Instead, the international fund raising firm DVA-Navion was brought in at a retainer of $5000 per month for six months plus 20% commission.69 Consultants from the firm indicated that they would take a different approach of trying to obtain larger sponsorships instead of looking for many small ones. This approach was successful with initial sponsorship from the engineering firm Connell Wagner of $30,000 of which $20,000 was in kind and from CSIRO business Development and Commercialisation of $100,000 of which $60,000 was in kind. Later, grants of $50,000, $100,000 and $40,000 were obtained from three Commonwealth Government departments. There were obligations with two of these grants: for an Australia Pavilion to showcase Australian science and technology to the international visitors at the general assembly and the holding of an Industry Day. The latter is described in the following section. Though the sponsorship target of $420,000 was not reached, the substantial funds raised by DVA-Navion were a considerable help with the general assembly budget.

The assembly

The final list of general assembly participants contains 2042 names, consisting of 1832 IAU members and invited participants, plus postgraduate students, media, exhibitors and teachers.[70] Figure 4 shows the origin of those 2015 participants whose country is listed, with countries grouped to allow direct comparison with the corresponding Figure 2 in the 1973 paper.[71] Surprisingly, there is a striking resemblance between the two pie charts with little change in the countries from which the participants came. At the 1973 general assembly astronomers from the United States made up 32% of the participants, while in 2003 the fraction dropped slightly to 30%. Western Europe increased from 27 per cent to 30 per cent and Eastern Europe, that is, Russia and the former countries of the Soviet bloc, remained at three per cent. This low fraction suggests that even in 2003 obtaining

[67] Report on sponsorship and exhibition matters, David Ellyard, Annex 1, minutes NOC meeting no. 25, 14 August 2002, ASA archives.
[68] Minutes, NOC meeting no. 26, 17 September 2002, ASA archives.
[69] Hyland and Whiteoak (2003a)
[70] Hyland and Whiteoak (2003b), Annex 12, Delegates list. 27 people do not have any institutional or country affiliation given. Most of these appear to be Australian student-volunteers, who had worked on the conference newspaper, The Magellanic Times.
[71] Lomb (2020).

permission for foreign travel, as well as the high cost of a trip to Australia was still difficult for astronomers and their institutions in those countries. However, the representation from Poland grew from one to sixteen individuals between the two general assemblies. Australia and New Zealand decreased from 21 per cent of the attendees to 18% in 2003, despite Australia's numbers being increased by student volunteers and media plus small groups attending special events, namely teachers and lighting engineers. The rest of the world increased from 14% to 22%, partly due to the good representations from Japan (137), China (96) and Canada (47).

A serious issue arose when fifteen astronomers registered as being from Taiwan and were issued with the corresponding name tags.72 This led to a high-level complaint from the Chinese Embassy as it was contrary to the protocols that had been established to enable China to re-join the IAU at the Patras general assembly in 1982.73 The name tags were reissued to say, according to the protocol, 'China-Taipei'. The other China is 'China-Nanjing', with both included as 'China'.

The relatively low attendance of 1550 at the previous general assembly in Manchester was at least partially attributed to a scientific program that 'had not been very exciting'.[74] The NOC had no control over the scientific program for the 2003 general assembly but Australian astronomers were active in initiating proposals to the IAU, including a successful one for a symposium on 'Star Formation at High Angular Resolution'. Fortunately, a large and wide-ranging scientific program was arranged for the general assembly in Sydney by the IAU, no doubt contributing to its success in attracting participants. The program consisted of six symposia, twenty one joint discussions, four special sessions and three invited discourses.[75] The number of joint discussions was increased from fourteen at the previous general assembly to twenty one at Sydney, causing extra complexity in organisation and in the number of rooms required at the convention centre.[76]

The titles of the symposia, such as 'Young Neutron Stars & their Environment' and 'Dark Matter in Galaxies' would have had some meaning and relevance in 1973, though the content of the discussions would, of course, have been very different. The editors of the proceedings of the first symposium mentioned above explain that 'a neutron star is formed in a supernova explosion, then drives a relativistic wind bubble into the resulting expanding supernova remnant, and ultimately travels outward at high velocity into the ambient interstellar medium'.[77] The editors of the second

[72] Personal communication, R. Ekers, 14 October 2020.
[73] Andersen and others (2019) p. 125.
[74] Minutes, NOC meeting no. 21, 22 February 2002, ASA archives.
[75] Rickman (2003) p. 27.
[76] Hyland and Whiteoak (2003a).
[77] Gaensler and Camino (2004) p.xv.

state that the reason for holding it was 'the disparity between the successes of the Cold Dark Matter (CDM) model (and its variants) on large scales, and its perceived failings on the scale of galaxies'.[78]

Some of the joint discussion titles, such as 'Non Electromagnetic Windows for Astrophysics' and 'Astrotomography' would have been more mysterious to participants at the 1973 general assembly. The joint discussion on the first of these topics considered the detection of neutrinos, cosmic rays and, the then undetected, gravitational waves.[79] The second of these looked at a technique that allows the mapping of astrophysical objects, such as stars and accretion disks, using the time variation in their emissions.[80] Some of the other joint discussions were on Mercury, the Sun, oscillations in the Sun and other stars, quasar cores and jets and planned large telescopes. The proceedings of all the joint discussions and the four special sessions have been published in *Highlights of Astronomy*, volume 13.[81]

One of the special sessions was on the 'Effective Teaching & Learning of Astronomy', the proceedings of which were published, in addition to the proceedings in *Highlights of Astronomy*, by Cambridge University Press.[82] The session was attended not only by members of the relevant IAU commission on education but also by 24 local educators. Following a tradition first set at the 1973 general assembly, a teachers' day was held at the end of the general assembly at the Powerhouse Museum.[83] The presenters at the teachers' workshop were some of the world's best-known astronomy educators, who had also presented at the special session. Other meetings with outside invitees included one organised by IAU commission 50's working group on controlling light pollution, for which IAU members were joined by 21 local lighting engineers. As required under the terms of one of the government grants, an Industry Day was also held to brief Australian industry about opportunities to assist in the building of new astronomical facilities, such as the Square Kilometre Array.[84] This was well attended with 125 people registered from 75 companies.

On the Sunday in the middle weekend of the general assembly a special event was held to unveil a plaque and a replica radio telescope at an important site for the history of Australian radio astronomy. As shown on Figure 5, the plaque was unveiled by Marie Bashir, the governor of NSW, and Ron Ekers, the director of the Australia Telescope National Facility and the incoming president of the IAU. Around 150 guests, including some eminent retired radio astronomers, attended the event, which was hosted by Ekers with Miller Goss of the National Radio Astronomy Observatory, New Mexico, USA, as the master of ceremonies. Between 1946 and 1954 scientists from CSIRO's Division

[78] Ryder and others (2004) p. xii.
[79] Cesarsky (2005) pp. 45–46.
[80] Cameron and others (2005) pp. 279–281.
[81] Engvold (2005).
[82] Pasachoff and Percy (2005).
[83] Hollow (2003)
[84] Hyland and Whiteoak (2003b), Annex 11, A. Chippendale, IAU Indus try Day Final Report.

of Radiophysics used the site of a former radar station on the cliff face at Dover Heights, a suburb in Sydney's east, to make a series of major discoveries about the radio sky.[85]Among these discoveries were the identification of the radio source Taurus A with the Crab Nebula and the radio sources Virgo A and Centaurus A with the galaxies M87 and NGC 5128, respectively. The two galaxy identifications were the first radio sources identified beyond the Milky Way galaxy.

The opening ceremony was held in the Concert Hall of the Sydney Opera House with an audience of over 2000 people. In addition to the musical interludes previously mentioned, there were speeches from Rachel Webster, the chair of the National Committee for Astronomy, Robin Batterham, Australia's chief scientist, Franco Pacini, the outgoing president of the IAU, and a formal welcome from Brendan Nelson, the Australian federal minister for education, science and training.[86] There was also a recorded video message from John Howard, the prime minister of Australia, who was overseas. The presentation of the Peter Gruber Cosmology Prize for 2003 to Rashid Sunyaev of the Max Planck Institute, Germany (see Figure 6) was a highlight of the ceremony, as well as a new addition to IAU general assemblies.

As was usual, the opening ceremony was followed by the first business session of the general assembly, chaired by Franco Pacini. The second business session was held ten days later at the convention centre. Among the items of business at the two sessions was the approval of a revised set of statutes and by-laws for the IAU.[87] Unnoticed by most at the time, one change removed the right of individual members of the union to vote on scientific matters. As members started to realise this, there were many objections and the right was reinstated at the first business session at the following assembly in Prague. This enabled the historic and controversial vote at the second business session there on the definition of a planet and hence on the status of Pluto, which was demoted to a dwarf planet. Another item of business is the putting of resolutions. Of the three resolutions in 2003, the most interesting was the proposal from Pacini that the year 2009 be declared the International Year of Astronomy, as that year was to be the 400th anniversary of Galileo's first observations with a telescope.[88] After initial reluctance, the United Nations did finally declare 2009 as the International Year of Astronomy. With international 'cornerstone' projects and numerous public events and activities organised at national levels, it is estimated that the year reached an estimated 815 million people around the globe.[89]

[85] Bolton (1982).
[86] Hyland and Whiteoak (2003b), Annex 3, Opening Ceremony.
[87] Andersen and others (2019) pp. 240–247. Ekers (2019).
[88] Andersen and others (2019) p. 256.
[89] Andersen and others (2019) p. 267.

An important aspect of any general assembly is the convention dinner. This time instead of a conventional dinner, a stand-up 'banquet' was held in the banquet hall of the convention centre.[90] A variety of food types was available and a band provided dance music. The relatively high cost of $130 Australian for the separately charged ticket deterred many of the general assembly participants from attending, leaving only about 600 guests at the banquet. For those who did attend, the format provided exceptionally good opportunities for mingling and relaxed interaction with astronomers from many countries.

At IAU general assemblies there is a tradition of a daily newspaper, which helps to set the atmosphere of each assembly. In 1973, the single page broadsheet, simply called *Astronomy 73*, had an editorial team of three from the CSIRO.[91] In 2003, *The Magellanic Times* had eight colour pages and its editor was Seth Shostak from the SETI Institute in California.[92] Shostak provided his services for free but the NOC paid for his airfare, hotel costs and registration.[93] He was assisted by a layout artist from an agency and a team of mainly student reporters. Helen Sim of the ATNF was responsible for the prior organisation of the newspaper by arranging the budget, the printing firm, the equipment, a suitable office and liaising with Shostak in planning issues in advance. The *Magellanic Times* reported on events at the general assembly, acted as a bulletin board about coming activities and carried a variety of astronomical articles and the occasional humorous piece, such as on how to speak Australian. Participants at the general assembly eagerly grabbed their copies each morning from outside the main halls and venues.

After the end of the general assembly the final income and expenditure was tabulated.[94] Total income was about $2.18 million, while expenditure, including the repayment of the original seed funds from Australian astronomical institutions and some other loans, was about $2.11 million. This left a surplus of around $70,000, the use for which became a matter of some discussion within the ASA. It set up a working group to seek the views of society members on the best use of the funds. According to the report of the working group, the best supported option was a school for postgraduate students.[95] The ASA council accepted this option and the first use of the funds was to finance a 2008 graduate summer school in theoretical astrophysics at the University of Tasmania's Cradle Coast campus.[96]

[90] Hyland and Whiteoak (2003a).
[91] Astronomy 73 (1973).
[92] The Magellanic Times (2003).
[93] Minutes, NOC meeting no. 33, 14 May 2003, ASA archives.
[94] Hyland and Whiteoak (2003a).
[95] Gordon Robertson, Paul Francis, Tamara Davis and Ron Ekers, Report from working group, Use of Funds remaining from the 2003 IAU General Assembly, 24 March 2005, ASA archives.
[96] Da Costa (2007).

Conclusion

In 2003, as in 1973, Australian astronomers delivered a memorable and successful IAU general assembly. Again, as in 1973, there were challenges for the general assembly, this time in the form of terrorism, a war and, most crucially, the SARS epidemic. If these challenges had discouraged attendance by enough IAU members, the Astronomical Society of Australia could have found itself in serious financial difficulties that would have had serious repercussions for the Australian astronomy community. Instead, there were sufficient participants for a meaningful and productive general assembly, as well as to allow the conference budget not only to balance but to make a small profit.

Arranging the 2003 general assembly was much more complex than the one 30 years earlier due to larger attendance and greater expectations, such as the provision of internet access, together with special meetings on women in astronomy, education and lighting and the holding of an industry day. An extra challenge was the extensive campaign of public outreach to boost the profile of astronomy throughout the country. All this was achieved through five years of planning and hard work by the many people on the National Organising Committee, its executive and its many other subcommittees. During this long period, there were changes to membership in these groups at all levels, including the chairmen (Table 1), as some people found that they could not keep up their research and/or teaching commitments while working on the general assembly. Of course, the general assembly would not have happened without the great contribution of its PCO, ICMS Australasia.

Support from the Astronomical Society of Australia and the National Committee for Astronomy was crucial to the success of the organisation. Similarly, support from the major astronomical institutions, such as CSIRO's Australia Telescope National Facility and the Anglo-Australian Observatory, was also of great importance as they provided the bulk of the seed funds and allowed staff members to spend a good fraction of their working time on the general assembly, instead of their normal projects. The presence of three retired astronomers, John Whiteoak, Raymond Haynes and Tony Turtle, on the NOC was helpful as they had less work commitments.

The 2003 general assembly, like the one three decades earlier, provided a boost to Australian astronomy. Astronomers could meet and mingle with overseas counterparts and form useful research partnerships. This was especially true for the 94 postgraduate student-volunteers, who had the opportunity to take part in a major international meeting, probably for the first time, in return for a few days' assistance in its running. The various additional meetings, such as on education and light pollution, further extended the influence of the general assembly. The public profile of astronomy in Sydney, NSW and in main capitals around the country was also increased through the substantial public outreach program. As an illustration, visitor numbers to Sydney

Observatory rose 20% to nearly 150,000 during the year from mid-2003 to mid-2004, thanks to the general assembly, as well a number of major astronomical events during that period, such as the close Mars opposition of August 2003 and the transit of Venus in June 2004.[97]

Another IAU general assembly to be held in Australia in 2030, as has recently been suggested, would again give an interval of approximately thirty years between general assemblies as between 1973 and 2003. In that interval there is a new generation of astronomers taking over with new interests and enthusiasms. By 2030, some of the students who took part in the 2003 general assembly would have moved far along in their careers and would be in charge of Australian astronomy. There will also be new postgraduate students, who will welcome the opportunity to take part in a general assembly.

As yet, in 2020, it is unclear what conferences will be like in the post-Covid world. Will scientists still be willing to travel to distant places, risking infection on plane flights and ignoring the greenhouse gases created by the burning of aircraft fuels? Will astronomers and astronomical organisations in a country be willing to spend years of great effort in organising a conference that could be cancelled or become a financial disaster at the last minute due to an international incident or a new pandemic? During 2020 great experience was obtained, through necessity, in holding virtual meetings. For example, the American Astronomical Society is planning its next meeting, the 237th, in January 2021 to be held online.[98]

Virtual meetings have been found to have many advantages such as being much cheaper to organise and, in a democratisation of attendance, allowing scientists to take part, without the inconvenience of travel and with little cost, from their home or their institution. Such meetings do have the disadvantage of restricting the important personal interactions of in-person meetings. This disadvantage, however, maybe reduced by improvements in technology that allow interaction to take place through the virtual representation of individual participants or avatars.[99] These avatars can be created to closely resemble each participant's physical appearance and can hold conversations with other participants as at a real-world conference. A likely scenario for future large scientific meetings is that they will be hybrids with some intrepid travellers attending in person, while others take part virtually.

Conflicts of interest

The author is a long-time member of the Astronomical Society of Australia.

[97] Daley (2004).
[98] AAS (2020).
[99] Virtway (2020).

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Table 1

Chairs of National Organising Committee meetings

NOC meetings	Chair	Institution
1–4	Professor John Norris	Mount Stromlo and Siding Spring Observatories
5–7	Professor Lawrence Cram	University of Sydney
8–16	Dr Raymond Haynes	Australia Telescope National Facility
17–36	Professor Harry Hyland	James Cook University
22–36	Dr John Whiteoak	Australia Telescope National Facility

Figures

Figure 1. The logo of the International Astronomical Union general assembly 2003. Reproduced with permission of the Astronomical Society of Australia.

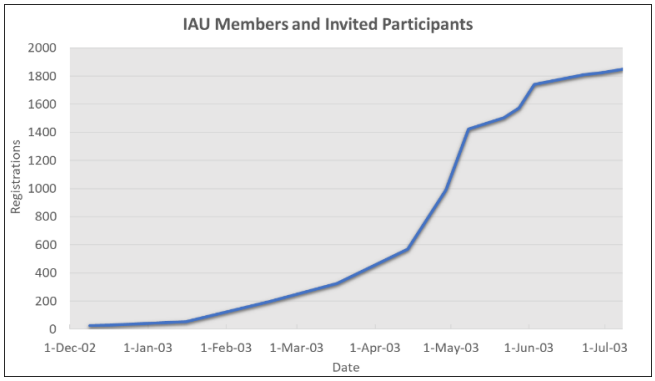

Figure 2. Registrations of IAU members and invited participants against date for the 2003 general assembly. Data from section 2.6.10 of Hyland and Whiteoak (2003).

Figure 3. The terminals of the Internet Café, with a view of the tea serving areas and the poster paper section at the top left. Photo Shaun Amy. Image Credit: CSIRO Radio Astronomy Image Archive.

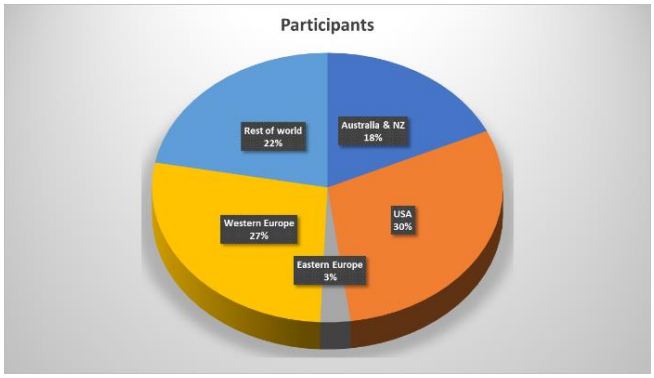

Figure 4. Source countries of participants at the International Astronomical Union general assembly 2003. Data from Annex 12, Hyland and Whiteoak (2003a).

Figure 5. The unveiling of a plaque at Dover Heights on 20 Jul 2003 by the Governor of NSW, Her Excellency Marie Bashir, and the President of the IAU, Ron Ekers. Miller Goss, who was master of ceremonies, is in the background. Photo David Smyth. Image Credit: CSIRO Radio Astronomy Image Archive.

Figure 6. The outgoing President of the International Astronomical Union, Franco Pacini talking with the winner of the 2003 Gruber Cosmology Prize, Rashid Sunyaev, at the welcome reception, held at the Sydney Opera House, before the start of the opening ceremony. Image Credit: ICMS Australasia.

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