CHAPTER I

INAUGURAL CEREMONY 1994 AUGUST 17

https://doi.org/10.1017/S0251107X00008518 Published online by Cambridge University Press

CHAPTER I

INAUGURAL CEREMONY 1994 AUGUST 17

The Inaugural Ceremony was held in the Prins Willem-Alexanderzaal of the Convention Center of The Hague. Her Majesty Queen Beatrix of the Netherlands had graciously agreed to be present at the Inaugural Ceremony of the XXIInd General Assembly of the IAU, opened by the Minister of Education and Science in the presence of Prof. Dr. P.J.D. Drenth, President of the Royal Netherlands Academy of Arts and Sciences, Prof. Dr. P.J. Ed van den Heuvel, Chairman of the Netherlands Committee for Astronomy, The Mayor of the City of the Hague and Acad. A.A. Boyarchuk, President of the IAU.

Address by Prof. Dr. P.J.D. Drenth, President of the Royal Netherlands Academy of Arts and Sciences

Majesty, Excellencies, Members and Guests of the International Astronomical Union, Ladies and Gentlemen,

It is my pleasure and honour to speak a word of welcome and respect on behalf of the Royal Netherlands Academy of Arts and Sciences at the opening of this 22nd General Assembly of the International Astronomical Union in the Netherlands.

Not only for formal reasons -the Academy being the adhering body for the Netherlands in the IAU- also on material grounds the Netherlands Academy has always felt strongly attached to the scientific achievements in astronomy and astrophysics and I am pleased to be given the opportunity to express once again its allegiance to this field of science at the opening of this assembly meeting.

The Netherlands Academy was founded in 1808 as a result of foreign intervention. It was the French King of Holland, Louis Napoleon, who created this Academy following the example of the "Institut de France". Before the Napoleonic times the sovereignty of the seven Dutch provinces was prohibitive for the creation of a national Academy. We in the Academy feel that next to the metric system, compulsory surnames and the Code Napoleon, also the foundation of the Academy deserves a place in the -admittedly not too long- list of blessings of the Napoleonic occupation.

By the way, we fortunately gloriously failed to ever achieve the first goal set up for the Academy at the outset: to create a field of national science. One thing the Dutch learned very well from their republican ancestors: nationalism in such a small country as ours could only bring death to life and liberty, and as they realized, to profit. The Dutch must be international or they will not be. Such is the destiny of a small country atone of the main cross roads of human intercourse. And this certainly applies to Dutch science.

As a matter of fact, natural sciences themselves are never restricted by national boundaries and do require international cooperation, but there is probably no science for which this is so evident as astronomy. Looking at the Earth from outer space one observes just one single planet. Conversely, the Big Dipper, Jupiter or the Moon look no different for an observer in America, Russia, China or Japan.

And in this truly international science the Netherlands, in spite of its cloudy skies, has produced a number of prominent astronomers that is disproportionably larger than expected given the size of its population. Oort's comet cloud and constants for the rotation of the Milky Way, Kuiper's belt of comets, Van de Hulst's 21cm line, Bok's globules, stars of Kapteyn and Van Maanen and many other objects or phenomena are connected with the names of Dutch astronomers.

I. Appenzeller (ed.), Transactions of the International Astronomical Union Volume XXIIB, 3-9.

A number of specific circumstances may have contributed to the particular Dutch fascination -some name it obsession- with the stars. First of all as a seafaring nation Holland needed a good basic knowledge of astronomy for the teaching of navigation to the skippers of our fleet. In addition, the Dutch have a long standing relation to a related field, that of optics and the study of light. Early in the 17th century Snellius discovered the law of refraction, and Huygens developed the wave-theory of light, influential up to the present. And, most peculiarly of all: the two most important optical instruments, the telescope and the microscope, were both 17th century Dutch inventions. The telescope by Zacharias Jansen or Lippershey (we will never know who was first) and the microscope by Van Leeuwenhoek. Grinding lenses became a means of subsistence for many people in our country, the philosopher Spinoza being one of the most famous examples. We all know that one year after the invention of the telescope in 1609 Galilei directed one at the moon, the planets and the stars, and revolutionized astronomy and cosmology.

The interest of Dutch astronomers has also resulted in activities within the International Astronomical Union. Three of the 23 presidents of the Union were from the Netherlands: De Sitter, Oort and Blaauw. Furthermore Oort, Oosterhoff and De Jager were Secretary General, Oort even as long as 13 years, including the difficult period of the second world war. In addition many Dutch astronomers acted as chairmen of important Commissions of the Union.

One last observation with relevance to your science. In this time of over-emphasizing the utility and technological applicability of science the Academy of Arts and Sciences feels urged to stand up for the importance of fundamental -if you like conclusion-oriented- research, such as in astronomy. I am not implying that astronomical research findings do not find their way in useful applications. On the contrary. It is not difficult to generate an abundance of examples of such appliances. But the basic raison d'être of this scientific discipline is cognitive curiosity. What is the origin of the earth, what is the nature of the universe, how are space and time related, what determines force and matter....? Raising these types of questions is a existential and unique characteristic of the human species. It should be a pride for any civilized society to promote and to give adequate support to effortful attempts to answer these questions.

This meeting will be another example of such an attempt. I do wish you a very successful and exciting meeting, and a most enjoyable stay in our country.

Address by Prof. Dr. P.J. Ed van den Heuvel, Chairman of the Netherlands Committee for Astronomy

Your Majesty, Excellencies and Guests, Members of the International Astronomical Union, Dear Friends and Colleagues,

It is a pleasure to welcome you on behalf of the Dutch astronomical community. It is for our country -and our small astronomical community- a great honour that the Union has chosen us to host the General Assembly for the second time in its 75-year history. Of course today our thoughts go back to the first time, in 1928, when the Union gathered in Leiden, where De Sitter, then president, was the host. Our Union then had 288 members, of whom no less than 249 were present at the General Assembly, a full 87 percent of all members! Nowadays there are more than 7200 members, a 25-fold increase in 66 years. But less than a quarter of the members are present here today.

As was mentioned by the President of the Academy, Dutch people have a long-standing fascination with astronomy. The first maps of the Southern sky were made by our sailors Frederick de Houtman and Dirk Jansz. Keyser in the years 1595-1597, who carefully measured the positions of 135 stars on their ships sailing the Indian Ocean. Keyser was the chief pilot of the ship Hollandia and later of the Mauritius. The maps based on these measurements were published in Amsterdam by Petrus Plancius (chart maker and

theologian; theology is another field with which the Dutch have always had a special relation). Plancius made the first celestial globe that showed these 12 new constellations, which we all know so well today, such as Dorado, Musca, Tucana, et cetera. Tucana, as you all know, has its beautiful globular cluster 47 Tucanae, with no less than eleven millisecond pulsars, discovered by Andrew Lyne and his co-workers. And in Musca recently the Russian spacecraft Granat and the American Gamma Ray Observatory discovered a black hole binary system.

Later in the 17th century there was Christiaan Huygens, a native of The Hague, who around 1655 discovered Saturn's rings and the satellite Titan of that planet.

After a low period in Dutch astronomy of some 200 years, around 1880 the great astronomer Kapteyn in Groningen brought about a revival. He and his pupils De Sitter, Oort and Van Rhijn, together with the Danish astronomer Hertzsprung, were founders of the present Dutch school of astronomy. In combination with the astrophysics school founded by Pannekoek and Minnaert this school has offsprings in many countries today.

We of the present Dutch astronomical community are most grateful to have had the privilege of such outstanding teachers and guides. We regret that Jan Oort, the greatest of them all, is no longer with us. How much he would have enjoyed the great spectacle of comets smashing into Jupiter that we have just witnessed last month. The president of our Royal Academy already mentioned J. Oort's very important role for our Union, which he served as secretary for 13 years, including the very difficult war period, and three years as its president. J. Oort always commemorated what great examples Kapteyn and De Sitter had been to him, not only as scientists, but also because of their broad view on international cooperation and their important and active role in such cooperation. And in turn Oort, together with Minnaert, Van de Hulst, Blaauw and De Jager are the great examples for the younger generation of Dutch astronomers.

These are great days for astronomy. It has been said that, apart from the first decades of the 17th century, when Galilei made his marvellous discoveries with the newly invented telescope, there has been no period in the history of mankind that so many new discoveries were made about the universe as just during the last few decades. Pulsars have brought us many delights, including last year's Nobel-prize for Taylor and Hulse for the discovery of gravitational radiation in a binary pulsar system. And Alex Wolszczan discovered two planets around a millisecond pulsar -the first planets ever discovered outside the solar system. Supernovae exploding in bright nearby galaxies provided us with other delights and the Hubble Space telescope after its marvellously successful repair mission made many things clear that looked very fuzzy up to now. The last three years also brought for the first time the detection by the COBE satellite of ripples in the microwave background radiation dating from the very first moments of the Big Bang. We hope to hear during this meeting what all these things mean and whether we can finally understand how the large scale structures originated.

I would like to speak a special word of thanks to the members of the two Organising Committees who during the last three years have worked very hard to get this meeting organized. In particular I would like to mention the names of Professor Hugo van Woerden, Chairman of the National Organising Committee and of Dr. Ernst Raimond, Chairman of the Local Organising Committee, who have carried by far the largest part of the burden and to Theo Jurriens, Luc Braes and Rene Genee for their enormous help. Many thanks to you all.

On behalf of the Netherlands astronomical community I wish you a very successful as well as enjoyable Assembly and a pleasant stay in our country.

Address by Mrs. Louise Engering, Deputy-Mayor of the City of The Hague

Your Majesty, Your Excellencies, Mr Chairman, Ladies and Gentlemen,

It's a great pleasure for me to welcome you -also on behalf of the City Council- to The Hague. For two weeks our city will be the centre of international astronomy: the meeting ground of 2000 to 3000 astronomers from all over the world. The City Council is glad that you have chosen The Hague as the place for your 22nd General Assembly, though The Hague does not derive its chief significance from the specific domain of astronomy. It was, however, the home of Christiaan and Constantijn Huygens who worked here refining the construction of the lens. Their work, I believe, is still regarded as fundamental and pioneering in the world of astronomy.

The Hague is above all a government city, with a rich history. Its international aura is reflected in the many embassies and multinationals located here and the numerous international organisations which have chosen The Hague as their headquarters. The presence of the International Court of Justice and the Organisation for the Prohibition of Chemical Weapons means that activities in the domain of peace and security are strongly represented.

The Hague is a "City of many faces", according to the international press. The reference is to the city's versatility: the city of palaces, theatres and museums, the city with the bustling seaside resort of Scheveningen on the sandy beaches of the North Sea, the city of parks and dunes. Of course, you are here this coming fortnight to explore the further developments and discoveries in astronomy. But perhaps you will be able to find the time to discover the many faces of The Hague.

Your Majesty, Your Excellencies, Mr Chairman, Ladies and Gentlemen, may I close by wishing all the conference delegates, on behalf of the City Council of The Hague, a successful conference.

Address given by Dr. Job Cohen, State Secretary for Education and Science

Your Majesty, Madam Queen's Commissioner, Burgomaster, Members of the Executive Committee of the International Astronomical Union, Ladies and Gentlemen,

It gives me great pleasure to welcome you to the opening of the twenty-second General Assembly of the International Astronomical Union. This is the second time that the Assembly has met in the Netherlands, the first being in 1928. We are delighted that the International Astronomical Union has chosen to come to the Netherlands in this, the year of its seventy-fifth anniversary. I regard this decision as an acknowledgement of the position occupied by the Netherlands in the world of astronomy.

Over four hundred years ago Simon Stevin, a native of Bruges who later moved to the Netherlands, climbed the crooked spire of the Oude Kerk in Delft. From a height of ten metres he dropped two lead spheres on to a platform. One sphere was ten times heavier than the other, and according to prevailing Aristotelian theory the heavier sphere should have landed before the lighter. Stevin observed that the two spheres landed at practically the same moment, and that the ear could not distinguish between the two sounds. A few years later Galileo made the same discovery, although whether he performed the same experiment from the equally crooked Leaning Tower of Pisa remains shrouded in the mists of time. In any event, Simon Stevin founded a long Dutch tradition in astronomy. He was followed by a long line of Dutch astronomers, among them Christiaan Huygens, whose work was of great significance to the development of mathematics and physics as

well as astronomy. Nor should we forget the names of learned men such as Kapteyn, Oort and Van de Hulst, who made important contributions to modern understanding of the structure of the Milky Way. These are great names which illustrate the importance of astronomy in the spectrum of scientific research in the Netherlands.

At this point I should like to examine in more detail a number of elements of science policy in the Netherlands for which astronomy can serve as an example. I shall focus in particular on the role of basic research, public support for science and technology and, lastly, the need for international cooperation.

The days when scientific research was conducted in a crooked spire, an ivory tower or -in your case, ladies and gentlemen- at the top of a mountain are now firmly in the past. Over the last twenty of thirty years, science policy as pursued in the Netherlands and other countries has concentrated, among other things, on harnessing scientific research simply because applied research is supposed to take priority. Far from it. The rapidly expanding need for knowledge in countless sectors calls for a sound foundation for long-term research and for integration of the results obtained in different disciplines. Basic research is indispensable in this connection. It is the source from which strategic and applied research can and indeed must refresh themselves. For their part, researchers should always take account of society's thirst for knowledge and direct their work towards quenching it. A look at astronomical research reveals that it stimulates advances in the natural sciences in general, to say nothing of the challenge presented to engineers by the need to develop apparatus for use by astronomers and the benefits which such apparatus have produced in quite different fields. In addition, basic research is an excellent way of training young researchers. A distinguishing feature of courses in astronomy is their broad base in mathematics and physics. In addition to specially astronomical knowledge, students learn to handle complicated apparatus and to process complex data. This produces a combination of knowledge and experience which graduates in astronomy can put to good use in areas other than astronomical research. In practice, therefore, astronomers prove to be qualified for a varied range of jobs. In short, even in a field such as astronomy, whose direct value seems far removed from its usefulness in everyday life, we can discern the importance of basic research -not directly, but indirectly; not immediately, but unmistakably. The example of astronomy is one among many which demonstrate the importance of investment in basic research, certainly in a knowledge-intensive society as the one we live in.

The second point I should like to raise is directly connected to the first. I refer to the importance of a broad public support base for research and technology. In this connection, it is important for government and researchers alike to keep the public informed of the merits and results of scientific research as well as of the risks. Publicity, and taking account of what public opinion believes to be desirable and undesirable developments, should all form part of science policy. We in the Netherlands, as in other countries, devote a great deal of attention to this point. Here, too, astronomy is a good example. Public interest in astronomy extends far beyond the specialists in the field. Many members of the public visit the amateur observatories, of which there are over twenty-five in this country, many staffed by enthusiastic volunteers. You yourself, Your Majesty, recently opened the refurbished Simon Stevin amateur observatory. Countless magazines, including those aimed at young people, publish articles on astronomy. In other words, much is done to keep the public informed on advances in knowledge. The fact that broad public support for astronomy clearly exists is another argument, alongside those I have already put forward, in favour of government investment in research and the expensive equipment it often requires. I refer here to pure curiosity, a factor that has a particular appeal when it comes to astronomy.

This brings me to my last point, ladies and gentlemen. International cooperation plays a very important role in Dutch science policy. This is a matter of necessity, as we are a small country, but that is not the only reason. More and more disciplines call for cooperation on an international -nay global- scale. We in the Netherlands consciously

endeavour to build up our profile on the basis of what we do well. Some years ago, for example, a fund was set up for the internationalisation of centres of excellence in research and to attract international facilities to this country. Here again astronomy constitutes a good example. Money from the fund in question, and contributions from various European countries, will be used to establish the centre for processing data from the European network by Very Long Baseline Interferometry in Dwingeloo.

As I said a moment ago, the pursuit of expensive disciplines such as astronomy is now virtually impossible without international cooperation. In view of the expenditure involved, astronomy is one of the disciplines the OECD has labelled a megascience. At a recent expert meeting on astronomy to the OECD's Megascience Forum, further progress was made towards worldwide coordination of investment policy. In fact, the Megascience Forum used astronomy as a kind of test case. I understand that this conference will provide a follow up to that meeting. I sincerely hope that you will be able to make further steps towards that sorely-needed world of investment strategy.

International cooperation stands or falls by the people involved. One essential factor is the will to cooperate, a willingness to learn from others. The tradition you, as astronomers, have built up in this regard is something which politicians have every reason to envy. It is a tradition supported by the International Astronomical Union, which this year is celebrating its seventy-fifth anniversary. I trust, therefore, that your meeting will be productive and your stay in the Netherlands a pleasant one. In conclusion, may I suggest that you do not only look up at the heavens. The Netherlands can offer you a great deal to look at on the ground!

I hereby declare the General Assembly open.

Address by Acad. A.A. Boyarchuk, President of the International Astronomical Union

Your Majesty, Members of the IAU, Distinguished Guests, Ladies and Gentlemen,

On behalf of the IAU I have the privilege and the great pleasure to express a deep gratitude to the Netherlands Astronomical Community, the Royal Academy of Art and Sciences, the Ministry for Education and Sciences for offering the opportunity to hold the XXIInd General Assembly in The Hague. We are honoured that Her Majesty is taking part in the Inaugural Ceremony.

The Netherlands has well-developed culture traditions. Worldwide known are its artists of the XVII century as Rembrandt, van Dyck and others, beautiful paintings of whose we can see in numerous museums of Amsterdam, The Hague and other cities. Landscape, architecture and famous Dutch flowers create a good working spirit.

The Netherlands has also deep astronomical traditions. As early as in the XVIIth century Huygens was one of the first scientists to build an optical telescope, which he used to study details of the planets. The names of Kapteyn, Pannekuok, Minnaert, Oort and others are closly related to the key moments in the history of astronomy. Leiden, Utrecht, Amsterdam, Groningen and Westerbork are worldwide known centers of astronomical science.

The merits of Dutch astronomy were highly estimated. Four IAU Presidents, including the next one, Prof.L.Woltjer, are Dutch astronomers. Only the United States gave the same number of presidents. Three General Secretaries were from The Netherlands, as many as from the UK and more than from other countries.

The IAU, as well as other scientific organisations, undergoes changes. This General Assembly is different from the previous ones in its format. Instead of a cluster of

symposia bound in time with a General Assembly, but scattered over neighbouring countries, all symposia will run in parallel at the same place as the General Assembly. We hope that this change will allow more astronomers, especially young ones to participate not only in symposia, but also in other scientific and business events.

I think that there exists a very important problem of restructuring of the commissions. The development of astronomy made some commissions less important than they were in the past and on the other hand new directions in astronomy require more efficient coordination. This problem should be properly discussed.

We also hope to discuss new scientific results obtained from space missions as well as from ground-based telescopes, especially of a new technology.

So, we have all good reasons to think that the XXIInd General Assembly will be a success.

https://doi.org/10.1017/S0251107X00008518 Published online by Cambridge University Press