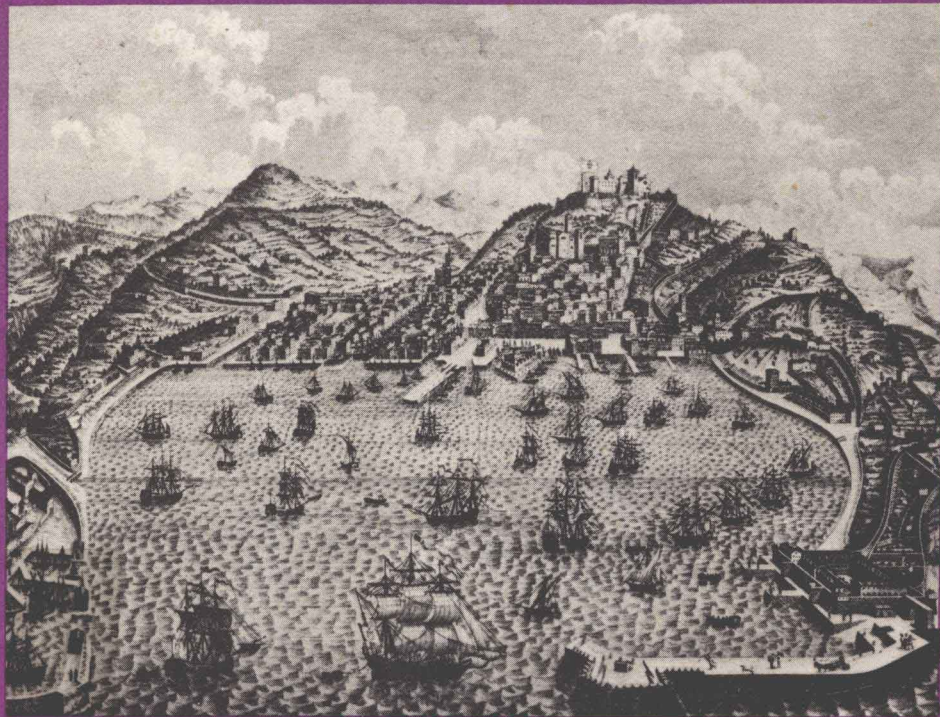


DISARMAMENT AND ARMS CONTROL



Edited by Carlo Schaerf & Frank Barnaby

Gordon and Breach

Disarmament and Arms Control

*Proceedings of the Third Course given by the
International Summer School on Disarmament and
Arms Control of the Italian Pugwash Movement*

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Frontispiece is an early picture of the harbour at Trieste, the town where the Proceedings were held.

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INTRODUCTION

The Italian Summer School on Disarmament has now become an established event in the field of disarmament and arms control. The Italian organisers have succeeded in attracting acknowledged international experts to act as lecturers and an enthusiastic bunch of students from many countries has attended each of the schools. The Proceedings are, therefore, important documents.

It is inevitable, in a volume of this nature, that the style of the papers varies somewhat and that there is a lack of smoothness between sections, since the contents of each section differs considerably from that of the others. Thus, in this volume there are papers on military nuclear technology, on the conventional arms trade, on the history of disarmament, on the nature of conflict research, and so on. But each of these topics is of great importance to the subject of disarmament as a whole and it is valuable to have all of these topics examined in a single volume.

The reader will soon realise how crucial the subject of disarmament is at the present time. Unless real progress is made towards genuine disarmament, particularly nuclear disarmament, in the near future it is doubtful if the human race will survive for many more decades. If this record of the proceedings of the Summer School helps the achievement of disarmament by informing citizens of the facts it will have served its purpose.

All opinions expressed during the formal lectures as well as during the discussions which followed are purely of a private nature and do not represent necessarily the official opinion either of the organizers of the school or of the organization to which the speakers belong.

Proofs have not been corrected by the author and consequently, errors may exist: the Editors ask for indulgence in these matters.

Frank Barnaby
Carlo Schaerf

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CARLO SCHAERF, Director of the School

OPENING ADDRESS

Ladies and Gentlemen,

It is a great pleasure to welcome you here - in this ancient castle - for the formal opening of the third International Summer School on Disarmament and Arms Control.

On behalf of the organizing committee and myself, I wish to thank all of you for your participation. Your presence here indicates the great interest of the people of the city of Trieste and of the Friuli-Venezia Giulia region in peace and international security.

Our foreign guests will be welcomed to-night by:

His Serene Highness Raimondo, Prince of Torre e Tasso;

His Excellence Antonio Santin, Archbishop of Trieste;

Prefessor Agostino Origone, Rector of the University of Trieste, the sponsor of this meeting;

Professor Giovanni Vicario, Member of the Regional Government;

Professor Lucio Lonza, Deputy Mayor of Trieste;

Mister Raffaele Corberi, Deputy Mayor of Duino Aurisina;

Professor Adriano Buzzati Traverso, Assistant Director General for Science, Unesco;

Professor Edoardo Amaldi, Founder and First Director of our School.

H.H. the PRINCE RAIMONDO della TORRE e TASSO

WELCOMING ADDRESS

Dando il mio piu' cordiale benvenuto alle Autorita' presenti ,
proseguo le mie parole in inglese.

It is indeed a great pleasure and privilege to welcome in this
ancient walls several old friends and many new ones.

I mentioned here in 1956, on the occasion of the foundation of the
Association of "the Students of Europe", that I often wondered whether
this tower, built by the Romans under Diocletian to guard the military
road leading from Rome to Dalmatia and Vienna, was not after all meant
for a spiritual scope which established itself during history.

Built on the borders between sea and land, it defied the centuries,
wars and revolutions. Duino-Castle was a meeting place of many humble
and superb minds on their way through Europe searching for a universal
ideal; from Vergil to Dante who saw this tower with their own eyes,
also the Emperors of the Occident, such as Ferdinand the Third, who
crowned here two poets, not to talk more recent eminent visitors such as
Liszt, the Duse, Mark Twain, Kayserling, Kassner, Hoffmansthal, Paul
Valery, many Nobel Price physicists and last, but not least, Rainer
Mario Rilke who composed his immortal Duino Elogies.

This meant appealing to the spirit, and the spiritual always
answered - present!

I always hoped that this venerable old tower, haunted by so many
great memories, should one day become one of the lightspots of a spi-
ritual community which would be a witness of understanding between
peoples and thus serve a creative ideal. It is my warmest wish that
soon all the peoples, without exception, will join all those countries
you represent to affirm their will of peace and their attachment to the
values of the spirit.

It is, maybe, no coincidence that we are all gathered here together
today.

Do you agree with me that this place erected between West and East
may contribute to the understanding of our large family, which is
mankind?

If so -allow me to express to you- to each one of you here today and to all those to come, belonging to the courageous family of architects of a more peaceful world, my warmest wishes for the victory which your noble efforts and ideal deserves.

AGOSTINO ORIGONE, Rector of the University of Trieste

WELCOMING ADDRESS

Ladies and Gentlemen,

I welcome, on behalf of our University, the Third Course of the "International Summer School on Disarmament and Arms Control".

The importance that our University acknowledges to this course can not be over emphasised as all of you know, it granted to the course its formal sponsorship.

However, it is not my business to stress the intrinsic value of these studies, because I am not a specialist in the subject.

Nevertheless, in declaring our support for this course, which takes place in our district, I would like to express some personal impressions.

I would like to suggest that, these courses could have as a motto the old Latin phrase: "lucus a non lucendo". We are indeed, in a world situation characterized by the constant presence of war, and the existing peace is, in fact, a continuous effort to avoid the outbreak of conflicts. Therefore, because your studies are essentially done on a scientific level, I suppose they must have two characteristics.

The first one is that, now the war is a technological activity based on the worst applications of scientific progress, it is right that the means of avoiding it should also be considered on a scientific level.

The other one is that if it is necessary to expound the disarmament problem in a scientific way, and, particularly, according to the science of nature, we can also deduce that the phenomenon of war must be reconsidered in the same manner: this means that people should be involved with the causes and effects of the world situation, which are only a necessity and not a rule. Therefore, the reaction of the human spirit in collaboration with science can employ the same natural forces, making a free selection which, in this case, is dictated by a moral rule.

I will finish my speech by expressing to His Highness, the Prince of Torre and Tasso, our gratitude for supporting this course by his great help and his excellent hospitality.

LUCIO LONZA, Deputy Mayor of Trieste

WELCOMING ADDRESS

Ladies, Gentlemen, Authorities,

By pronouncing these words of welcome in the name of the city of Trieste and its people, I wish to express our total agreement with your interest in your subject.

The noble purpose for which the scientists for international peace and disarmament work, is of great interest to the town of Trieste which finds its life-blood in world peace. History has taught us that Trieste is a very sensitive thermometer and that all the events of war have a direct or indirect influence on its development, its trade and, moreover, on its human and civil sensibility.

Thus, Trieste is very interested indeed in the progressive establishment of an increasingly stable relationship between peoples and countries: in fact, only in this manner will it have a more important role in the world.

For that reason, I think that Trieste, and Duino-Castle, which in the past centuries has seen many international events, is a place particularly suitable for your conference, which I hope will have a profitable result. Everyone who works for and believes in peace hopes for its. I believe that progress in disarmament, for which you are active protagonists, will result in international co-operation, development and welfare.

On this occasion, I would also like to welcome the Members of the Scientific Council of the International Centre of Theoretical Physics who are our guests in Trieste, for establishing an institution that Trieste has always supported very much, aware of the importance it has for the international role of the town.

I want to say that Trieste, as many of you already know, looks with particular interest at the proposal for a world university of physics and it wishes that the present meeting will lead to a positive interest in our town by the entire scientific world.

I give all the delegates who are here, our kind and friendly welcome and my best wishes for a successful meeting.

EDOARDO AMALDI

INTRODUCTORY ADDRESS

Ladies and Gentlemen,

My friend, Carlo Schaerf, has introduced me as the founder of the Disarmament Schools, the first of which took place in 1966 at Frascati, the second in 1968 at Pavia, and the third of which is now taking place at Trieste. But I should say that the idea of these schools was originally put forward by Carlo himself and that if the two previous schools were successful, as I believe they were, then this was mainly due to the efforts made by a few of my younger colleagues. From among these, I must mention Carlo again, for the continuity of his work and for his organizational abilities, and Francesco Calogero, for making a number of very valuable suggestions and for having some bright ideas which enable us to keep the subjects of our seminars and discussions close to the development of world affairs, so far as the unique problems of disarmament and arms control are concerned.

Thus the meeting, held in these days at this ancient castle, is the third of a series of meetings, organised each two years, by the Italian Pugwash Group. The international Pugwash movement originated from a 'Manifesto', signed by Bertrand Russell, Albert Einstein and a few other scientists, and published in London in 1955. In the Manifesto, the very dangerous situation arising from the continuous development of nuclear weapons was emphasised. And all of the world's scientists were invited to prompt their governments so that they recognised, publicly and privately, that their objectives could no longer be achieved by world wars and that conflicts must be settled by peaceful means.

The first international Pugwash conference, attended by about 30 scientists from many different countries, took place at Pugwash, Canada, in the summer of 1957. Since then the Pugwash movement has organised about twenty international conferences, attended by a number of participants varying from by then 100 to almost 500. These conferences took place in different countries including: the United States, the Soviet Union, Britain, Canada, Czechoslovakia, Poland, India, Ethiopia,

Yugoslavia, France and Italy. In 1964, the 14th Pugwash Conference took place in Venice near the Cini Foundation. Not long ago it has been decided to limit these conferences to one per year - the next one the 20th, will take place near Chicago at Fontana in September.

In addition to the conferences, the Pugwash Movement now organises 4 or 5 symposia per year, in which about 30 experts participate and in which specific topics are discussed. Examples of such topics are: implications of anti-ballistic missile systems, the problem of the world shortage of protein, the consequences of advances in military technology and so on.

The meetings organised by the Italian Pugwash Group, such as this one in Trieste, differ from both the symposia and the international conferences. In contrast to the symposia, which last for 3 or 4 days, and to the conferences, which last for one week, our meetings last for about 2 weeks, during which time all the participants, both speakers and listeners, live together. Whereas in the symposia all of the participants are experts, in our meetings only some of the participants are experts, others are young Foreign Office officials, and still others are students and people interested in disarmament topics.

The main purpose of our meetings is to disseminate relevant scientific and technical information-the understanding of which is most important to an appreciation of many current political decisions. Therefore, it is different from both the purpose of the symposia, which aim at examining specific topics, and of the conferences; which examine the conclusions of the symposia, look at the general world situation and at any changes which have taken place in the latter during the preceding year. The purpose of our meetings is to inform a certain number of people, so that they have a better understanding of the problems of disarmament and arms control.

The meetings are not encounters between statesmen who express opinion prepared and written beforehand, nor are they meetings of pacifists who propose immediate action in pursuit of high moral goals which, in reality, are far off.

From this point of view, the two previous meetings, at Frascati and Pavia, were successful. The presence of a number of young people anxious to learn had a psychological effect on the speakers - they tended not to side with their respective governments, even if it was their original intention to do so. The group discussions and private conversations we hold during each meeting are valuable and interesting particularly because many people with different political opinions participate.

Our enterprise is widely known to many of the official bodies to which we have applied for assistance during the past year. But its

organisation is always fraught with difficulties. Very often the words 'disarmament' and 'arms control' receive cool receptions and make people suspicious, and our projects are often only considered seriously after people have carefully examined our advertising literature and the proceedings of the previous schools.

We are fully aware of the existence in Italy of a few organisations, such as the Foreign Office, that could organise such meetings easier than we can. But they would, I am sure, be very different to ours that are organised by a restricted number of citizens, having no professional knowledge of disarmament, since they devote most of their time and activity to other fields.

The complete freedom of expression of opinions of all the participants is, however, paid with some difficulty in collecting the finances necessary to the operation of the school. This year, for example, it was only during the evening of August 17, after the participants had arrived at Duino, that we knew for certain that the finance would be forthcoming for this meeting.

Among the topics which we will discuss during the next two weeks I would like to mention the following:

- the strategic weapon systems of the great powers,
- chemical and biological warfare,
- aspects of the arms trade to developing countries, and
- the theories of conflicts.

Our meetings can be criticised because these topics are not discussed in great depth - this is mainly due to the different standards of knowledge of the participants. It is simply not possible to discuss each subject in detail. However, in an attempt to overcome this difficulty in one subject at least, we have organised this year a symposium, to take place after the main meeting and to last for one week, to discuss in depth the topic 'Theories of conflict resolution and simulation'. We hope that some actual sociological experiments will be performed in this field to investigate the behaviour of humans under special political conditions.

Among the experts who will participate in this meeting at Trieste I would like to mention:

- Eng. Jules Moch, Former Member of the French Government,
- Vassilli Emelyanov, Chairman of the Commission on Scientific Problems of Disarmament of the Academy of Science, U.S.S.R.,
- William Epstein, Chief of the Disarmament Affairs Division, United Nations, New York, U.S.A., and
- Anatol Rapoport, of the Mental Health Research Institute, University of Michigan, Ann Arbor, U.S.A..