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“MANY COUNTRIES WILL HAVE THE BOMB: THERE WILL BE
HELL”:* EDOARDO AMALDI AND THE ITALIAN PHYSICISTS
COMMITTED TO DISARMAMENT, ARMS CONTROL AND DÉTENTE

The aim of this chapter is to analyze Edoardo Amaldi's strong commitment to disarmament and détente in Italian society during the Cold War years. One of the most famous Italian physicists of the twentieth century, Amaldi (1908-1989) grew up in the extraordinary environment of the via Panisperna boys. In addition to being a well-known nuclear physicist, during the Cold War he became a representative of a group of scientists, who felt a “moral duty” to devote their time and their expertise in making people aware of the dangers of the nuclear age and – at the same time – urging governments to engage in arms control.

This research is mainly based on the papers of the Archivio Amaldi, stored in Rome at the Department of Physics of the University “La Sapienza”. Besides these archival sources, this chapter is built on some publications about Amaldi's life,¹ as well as on historiographical works on international movements, the Cold War and Italian history. Other key sources are the memoirs and biographies of some of Amaldi's friends and colleagues² and the conversations I had with a few of them.³ The issue of transnational net-

* Edoardo Amaldi, in Alberto Ronchey, “L'ultima occasione per il mondo di fermare la catastrofe nucleare: Intervista con i fisici Amaldi e Calogero”, *La Stampa*, February 24, 1967, 1.

1 Edoardo Amaldi, *Da via Panisperna all'America. I fisici italiani e la Seconda guerra mondiale*, ed. Giovanni Battimelli and Michelangelo De Maria (Roma: Editori Riuniti, 1997); Carlo Rubbia and Piero Angela, *Edoardo Amaldi, scienziato e cittadino d'Europa* (Milano: Leonardo Periodici, 1992); Fernando Ferroni, ed., *The Legacy of Edoardo Amaldi in Science and Society*, Proceedings of the Conference held in Rome, 23-25 October 2008 (Bologna: S.I.F., 2010).

2 Regarding the members of the “Via Panisperna Group” see: Laura Fermi, *Atoms in the Family: My life with Enrico Fermi* (Chicago: University of Chicago Press, 1954); Giuseppe Bruzzaniti, *Enrico Fermi: il genio obbediente* (Torino: Einaudi, 2007); Emilio Segrè, *Autobiografia di un fisico* (Bologna: il Mulino, 1995); Simone Turchetti, *Il caso Pontecorvo. Fisica nucleare, politica e servizi di sicurezza nella guerra fredda* (Milano: Sironi, 2007); Miriam Mafai, *Il lungo freddo. Storia di Bruno Pontecorvo, lo scienziato che scelse l'URSS* (Milano: Mondadori, 1992); Valeria Del Gamba, *Il ragazzo di via Panisperna. L'avventurosa vita del fisico Franco Rasetti* (Torino: Bollati Boringhieri, 2007); Carlo Bernardini, Luisa Bonolis, Maria Grazia Melchionni et al., *Fisici italiani del tempo presente: storie di vita e pensiero* (Venezia: Marsilio, 2003).

3 Prof. Francesco Calogero, conversation with author, June 10, 2008, Roma; Prof. Carlo Schaerf, conversation with author, June 27, 2008, Roma; Prof. Ugo Amaldi (Edoardo's son, and physicist himself), email exchange with author, 2013-14.

works has been outstandingly addressed by Lawrence Wittner and Matthew Evangelista,⁴ the case of Pugwash has been described in detail by Joseph Rotblat (one of its founding members),⁵ and the available bibliography about some prominent scientists is plentiful.⁶ However, despite the current growing interest in nuclear history, the analysis of the personalities and organizations involved in the various nuclear disarmament campaigns is still in its infancy. In my opinion it is useful to explore other perspectives beyond the prevalent “political-diplomatic framework” of nuclear history, enhancing the research about international movements and associations committed to the arms control process.

This chapter is divided into three parts: the first one addresses the early years of Amaldi’s professional life in the via Panisperna group, the second one deals with the beginning of his “civil commitment,” and the third one describes the Non-Proliferation Treaty (NPT) debate as a significant case study of Amaldi’s engagement in arms control issues.

THE VIA PANISPERNA YEARS: FROM AN INTERNATIONAL SUCCESS TO “AN UNBELIEVABLE COLLAPSE”⁷

As mentioned above, Amaldi’s education took place in the exceptional context of the via Panisperna group, the scientific team led by Enrico Fermi in Rome from the mid-1920s to the second half of the 1930s, when the tightening of the Fascist regime after the introduction of the Racial Laws in 1938, and then the outbreak of World War II, forced many of its members to leave Italy. This group quickly reached a high level of international prestige, collaborating with the most important research centers at the time – like those of Frédéric Joliot-Curie in Paris, Niels Bohr in Copenhagen, Werner

4 Lawrence Wittner, *The Struggle against the Bomb*, vol. 1, *One World or None: A History of the World Nuclear Disarmament Movement through 1953* (Stanford: Stanford University Press, 1993), vol. 2, *Resisting the Bomb: A History of the World Nuclear Disarmament Movement, 1954-1970* (Stanford: Stanford University Press, 1997), vol. 3, *Toward Nuclear Abolition: A History of the World Nuclear Disarmament Movement, 1971 to the Present* (Stanford: Stanford University Press, 2003); Matthew Evangelista, *Unarmed Forces: The Transnational Movement to End the Cold War* (Ithaca: Cornell University Press, 1999).

5 Joseph Rotblat, *Science and World Affairs: History of the Pugwash Conferences* (London: Dawsons of Pall Mall, 1962); Rotblat, *Scientists in the Quest for Peace* (Cambridge: The MIT Press, 1972). Joseph Rotblat, Daisaku Ikeda, *A Quest for Global Peace: Rotblat and Ikeda on War, Ethics and the Nuclear Threat* (London: I.B. Tauris, 2007).

6 Besides those quoted above, we mention here the autobiography of another Italian: Bruno Rossi, *Momenti nella vita di uno scienziato* (Bologna: Zanichelli, 1987); and the book about the well-known Hungarian-American physicist Leo Szilárd: Leo Szilárd, *La coscienza si chiama Hiroshima. Dossier sulla bomba atomica*, ed. Gertrud Weiss Szilárd and Spencer R. Weart (Roma: Editori Riuniti, 1985).

7 Edoardo Amaldi, “The Italian Team”, interview with Domenico De Masi, *Rivista IBM* 3 (July 8, 1986): n. p. Amaldi’s expression, in Italian, is “uno sfascio che non si può descrivere”.

Heisenberg in Berlin, Ernest Rutherford in Cambridge, and Robert Oppenheimer in the United States – and contributed to the groundbreaking findings achieved by nuclear physics during that period.⁸ The members of the group (Fermi, Franco Rasetti, Emilio Segrè, Bruno Pontecorvo, Ettore Majorana and Amaldi) were all extremely young and had a very good personal relationship with each other. Because of this synergy among them, many scholars wrote then about the “school” of Rome, at a time when teamwork in science was not significantly widespread yet. The end of this fruitful cooperation, due to the different paths taken by the via Panisperna boys during Fascism and then the war, was a dramatic event for all of them.

The story of the via Panisperna boys is closely linked to the “brain drain” of Jews and political opponents from the European countries ruled by Nazi-fascism, mainly to North America. Many scientists left Italy for racial or political reasons, and Amaldi himself was tempted by this prospect.⁹ However, he decided to stay in his country and, as the only “survivor” of the original team, worked to safeguard a future for Italian scientific research.¹⁰ Therefore, Amaldi spent the war period in Italy, with few colleagues and a lack of financial resources, while the international communications with his old friends became abruptly impossible because of the outbreak of the conflict.

Choosing to stay in Italy during the war (despite his strong opposition to Fascism), Amaldi did not have the opportunity – as many of his former workmates had – to participate in the Manhattan Project. During the war, Amaldi was almost certain that some of his former colleagues were involved in the American military project to build an atomic bomb (led mainly by the fear of a parallel German effort).¹¹ Nevertheless, his hypothesis was confirmed only at the end of the war, with the resumption of normal communications between Italians and Americans.¹² Some years later, in several interviews and personal recollections, Amaldi wrote that as soon as he learned about Hiroshima over the radio, he became immediately anxious about the long-term effects of this event.¹³

8 In 1935 the group obtained an important patent on artificial radioactivity. Giovanni Battimelli, Giovanni Paoloni, and Michelangelo De Maria, *L'Istituto Nazionale di Fisica Nucleare. Storia di una comunità di ricerca* (Roma: Laterza, 2001).

9 Edoardo Amaldi, “Il caso della fisica”, in *Conseguenze culturali delle leggi razziali*, Conference held at the Accademia nazionale dei Lincei, Roma, 1988 (Roma: Accademia nazionale dei Lincei, 1990), 107-33; Roberto Fieschi, “I fisici italiani e la questione atomica”, in *La cultura della pace dalla Resistenza al Patto Atlantico*, ed. Massimo Pacetti, Massimo Papini, and Marisa Saracinelli (Bologna: Il Lavoro Editoriale, 1988).

10 Edoardo Amaldi, “Gli anni della ricostruzione”, *Giornale di Fisica* 20, no. 3 (1979): 186-225. Amaldi himself used the words “scientifically survive” to describe that period.

11 Rubbia and Angela, *Edoardo Amaldi*, 144, 160-61.

12 Enrico Fermi, Letter to Edoardo Amaldi, August 29, 1945, Archivio Amaldi, Dipartimento di Fisica, Università “La Sapienza”, Roma (hereafter AAm), sezione Eredi (hereafter SE), box 1, folder 1/5.

13 Edoardo Amaldi, “Ricordi di un fisico italiano”, *Giano. Ricerche per la pace* 1 (1989): 87-89; Edoardo Amaldi, “Manuscript on the Atomic Bomb”, n.d., AAm, SE, box 8, folder 7.

The experience of the war period is crucial to understand his attitude, in a time marked by an increasingly complex link between science and politics, due to the beginning of the nuclear age. The explosion of the two atomic bombs in Japan in August 1945 represented a turning point, not only for the war and the international order, but also for the evolution of Amaldi's personality. After the conflict, he stated many times that he felt lucky and relieved not to have been involved in any military nuclear projects.¹⁴ As we can see from some documents, Amaldi's postwar mindset was consistent with his behavior during the conflict. As a matter of fact, in 1941 he intentionally diverted the research being carried out in the Physics Department of the University of Rome from studies that could be exploited for war purposes to different kinds of experiments.¹⁵ According to the primary sources, the 1941 decision seems to have been above all a "political" one, since Amaldi was afraid of being involved in a military program led by the fascist regime or in a scientific partnership with German scientists under the Nazi regime. After hearing about the Allied nuclear bombings of Japan, which he later described as "days of intense dismay",¹⁶ Amaldi began to actively think about the role scientists might have in the new international context shaped by the "nuclear dimension".

"IF THE PERIL IS UNDERSTOOD, THERE IS HOPE":¹⁷ THE SCIENTIFIC COMMUNITY CLAIMS A NEW ROLE

Amaldi stated many times that if, during the war, he had found himself in the situation faced by those colleagues who had been forced to emigrate – sometimes even suffering the murder of their own relatives by the Nazi-fascists – he would have probably participated in the Allied nuclear project as well.¹⁸ The idea that in extreme situations even pacifist people could contribute to despicable projects led Amaldi to devote part of his time to the issue of nuclear disarmament. Although he never faced the ethical dilemma of a personal involvement in military research, Amaldi was persuaded that nuclear scientists, because of their technical knowledge and a sort of "common responsibility", had a duty to commit themselves to arms control and disarmament. Shortly after the war, he embraced the "new thinking" emerging from the dramatic experience of the war, well summarized in the pacifist slogan, "One world

14 Amaldi, "Manuscript".

15 Amaldi, *Da via Panisperna all'America*, 89-90.

16 Amaldi, "Manuscript".

17 "The Russell-Einstein Manifesto", July 9, 1955, *Pugwash Conferences on Science and World Affairs*, <http://pugwash.org/1955/07/09/statement-manifesto/#more-1784>, last accessed February 18, 2016.

18 See for example: Amaldi, "Manuscript"; Rubbia and Angela, *Edoardo Amaldi*, 91-92, 161-63; Edoardo Amaldi, *Journal de Physique*, colloque C 8, supplément au n. 12, tome 43 (décembre 1982).

or none”, which highlighted that the dangers of the nuclear era needed a transnational commitment to save humanity from the risk of nuclear destruction.¹⁹

In 1956-1957 he received, as the only Italian addressee, several letters from Bertrand Russell on behalf of the subscribers of the Russell-Einstein Manifesto²⁰ – released to the public the previous year. Russell invited him to join a meeting aimed at exploring the idea of establishing an association of scientists that could strive for nuclear disarmament and overcome Cold War divisions.²¹ Although he was unable to attend the first conference, which took place in Pugwash (Canada) in 1957, Amaldi immediately championed the initiative, being persuaded that the challenges of the nuclear age required a network that went beyond national borders.²² The first Pugwash conference Amaldi was able to attend was the 1958 one, and his involvement in the movement was especially strong from 1962, when he was elected to the prestigious Continuing Committee,²³ up to 1972 when, because of his wife’s illness, he significantly reduced his international activities. Even after this period, he remained actively committed to disarmament and peace issues, and worked to pass these values on to the new generations.

Amaldi believed that a well-informed public opinion should become a key player in modern societies, since one of the dangers of the nuclear age was citizens’ unawareness of the perils of the present times, and their blind support for their governments’ security policies. According to him, in Italy there was a strong need to inform public opinion, in order to counterweight an early widespread indifference about nuclear issues.²⁴ In the postwar period, Italian politics paid “limited” attention to nuclear matters, probably because of what the atomic age implied for the country, namely an Italian subordinate role in the international system, as a “junior” state weakened by the war and submitted to the decisions of its more powerful allies.²⁵

19 Wittner, *The Struggle against the Bomb*, vol. 1, *One World or None*.

20 Sandra Ionno Butcher, *The Origins of the Russell-Einstein Manifesto* (Washington: Pugwash Conferences on Science and World Affairs, 2005), https://pugwashconferences.files.wordpress.com/2014/02/2005_history_origins_of_manifesto3.pdf, last accessed 18 February 2016.

21 Bertrand Russell, Letter to Amaldi, August 29, 1956, AAm, sezione Dipartimento di Fisica (hereafter SADF), box 157 bis, folder 1/18; Russell, Letter to Amaldi, February 8, 1957, AAm, SE, box 11, folder 3.

22 Amaldi, Letter to Russell, November 6, 1956, AAm, SADF, box 157 bis, folder 1/18.

23 From the correspondence between Rotblat and Amaldi, we learn that Amaldi felt very honored for the prestigious assignment, but at the same time he didn’t want to neglect his main interest, namely his teaching activity at the University of Rome. Joseph Rotblat, Letter to Amaldi, September 13, 1962, AAm, SADF, box 263, folder 5; Amaldi, Letter to Rotblat, September 20, 1962, AAm, SADF, box 263, folder 5.

24 About the widespread indifference on nuclear issues in Italy see for example: Enrico Persico, Letter to Bruno Rossi, December 24, 1946, in Amaldi, *Da via Panisperna*, 181-82.

25 Leopoldo Nuti, *La sfida nucleare. La politica estera italiana e le armi atomiche, 1943-1991* (Bologna: il Mulino, 2007), 27.

Things partly changed in later years, mainly due to the nuclearization of the North Atlantic Treaty Organization (NATO) forces deployed in Europe,²⁶ which raised anti-nuclear feelings in most European societies and spurred scientists to become politically active. This course affected Italy as well, especially after the first US nuclear warheads were deployed on its territory in 1957.²⁷ The organization of the first Perugia-Assisi anti-nuclear march in 1961, along with other campaigns, witnessed an increased interest in nuclear matters.²⁸ This marked a shift from a previous indifference and a sort of “removal” of the nuclear question toward the gradual emergence of an “atomic obsession”, due to the fear linked to nuclear testing and proliferation.²⁹

In such a new international context, from the 1960s on, for a large part of the scientific community it was no longer possible to remain aloof from society, in the quiet isolation of an “ivory tower”. Therefore Amaldi considered it natural to be personally involved in the national and international context, in order to help citizens and governments to “understand the perils” of nuclear power (as stated in the Russell-Einstein Manifesto).

ITALIAN PHYSICISTS AS ADVOCATES FOR NUCLEAR DISARMAMENT AND ARMS CONTROL

Although Amaldi’s efforts to foster disarmament and promote a thaw between the superpowers characterized his entire life (from the postwar period to the late 1980s), the NPT represents undoubtedly an interesting lens to investigate the role he played, together with other scientists, in criticizing the viewpoint of leading politicians and diplomats. In the mid-1960s many physicists started to claim a voice in Italy’s security policy. However, it is misleading to merely speak about a “politicization” of scientists, since their background was very heterogeneous and Amaldi himself was not closely related to any Italian political party. He supported the short-lived Partito d’Azione, a center-left party active in Italy from 1942 to 1947, and after the war his ideas were close to those of the Partito Repubblicano Italiano (PRI), led by Ugo La Malfa, although he never became a militant member.³⁰

26 Marc Trachtenberg, *History & Strategy* (Princeton: Princeton University Press, 1991), 153 ff.

27 Nuti, *La sfida nucleare*, 92 ff.

28 Witner, *The Struggle against the Bomb*, vol. 2, *Resisting the Bomb*, 235-38.

29 Massimo De Giuseppe. “Gli Italiani e la questione atomica negli anni Cinquanta”, *Ricerche di storia politica* 1 (2000): 29-51, esp. 31-33.

30 Giovanni Battimelli in Battimelli, Paoloni, De Maria, *L'Istituto Nazionale di Fisica Nucleare*, ix; Lanfranco Belloni, *Da Fermi a Rubbia. Storia e politica di un successo mondiale della scienza italiana* (Milano: Rizzoli, 1988), 46.

Between the late 1960s and the mid-1970s, Amaldi's efforts had a double aim: to increase public opinion's awareness about the dangers of nuclear proliferation, and to organize a lobby that could facilitate Italy's accession to the NPT. Amaldi was convinced of the importance of starting an international negotiation about arms control and disarmament. According to him, only a dialogue between the two blocs could lay the foundations for a stable *détente* and a pacific world. A general and complete disarmament would have to be achieved through gradual but steady diplomatic talks on arms control. Therefore, Amaldi considered the Limited Test Ban Treaty (LTBT) of 1963 a useful first step, although he was convinced of the need to continue working on this path, since proliferation had become the most urgent international issue to be addressed.³¹

In 1965, a Pugwash Conference (the fourteenth) took place for the first time in Italy and that same year the Italian Pugwash Group was formally established. Its relevance was made clear by the foundation in 1966 of the International School on Disarmament and Research on Conflicts (ISODARCO), an NGO that is still active in the field of education on security problems, through the organization of annual residential courses.³² The main pillars of the Italian Pugwash Group included Francesco Calogero, who probably has written more than anybody else about security and arms control, and Carlo Schaerf, who with Amaldi founded ISODARCO, and is still its Director.

In this context, Amaldi became increasingly concerned about the growing number of nuclear states (after the Soviet Union in 1949, the United Kingdom in 1952 and France in 1960, Communist China tested its atomic bomb in 1964), and highlighted the need to start a serious arms control process, in order to prevent other countries from "going nuclear". Together with other members of the Pugwash Continuing Committee, in 1967 he issued a declaration urging governments to sign an international agreement on this matter, which at the time was being debated in Geneva.³³ This issue was a very thorny one, because of the symbolic meaning that participating in the "atomic club" had for every nation, in terms of political status. Furthermore, after Moscow's achievement of a strategic parity with the United States, and the failure of some nuclear-sharing projects debated in NATO during the 1950s and 1960s,³⁴ Italy and other European

31 Edoardo Amaldi, RAI broadcast, January 20, 1964, "Il convegno dei cinque. Quale contributo può dare la scienza alla soluzione dei problemi del disarmo?", in AAm.

32 For more information about the history and activities of ISODARCO: <http://www.isodarco.it/index.html>, last accessed February 18, 2016; Carlo Schaerf, "Amaldi and ISODARCO", *Quaderni di storia della fisica* 7 (2000): 145-48.

33 "Draft of a Statement by the Pugwash Continuing Committee on the NPT", 1967, AAm, sezione Dipartimento (hereafter SD), box 40, folder "Non proliferazione"; Francesco Calogero, "Amaldi and Pugwash", *Quaderni di storia della fisica* 7 (2000): 137-44, esp. 142.

34 Here we refer mainly to the Multilateral Force proposal and the secret 1957 trilateral project among France, the Federal Republic of Germany and Italy.

countries felt increasingly unsure about the reliability of America's nuclear guarantee and strove to gain some control over the Western nuclear arsenal. Moreover Italy, like other potential "threshold-states", apart from criticizing the treaty for its unfair nature (too weak toward the nuclear powers and the "vertical proliferation" issue), was also afraid that the NPT could damage its industrial capacity and hinder the European integration process.³⁵

Despite American pressures, the Italian government, led by Aldo Moro with Amintore Fanfani as Foreign Minister (both from the Democrazia Cristiana), was therefore cautious about assessing the treaty, and looked for a balance between different positions.³⁶ After Italian politicians and diplomats initially supported a non-proliferation agreement and advanced some original proposals – such as the 1965 idea of a moratorium for non-nuclear states in exchange for a real nuclear disarmament from nuclear powers – the domestic debate about the NPT reached an impasse.³⁷ Egidio Ortona – the Italian Ambassador in the United States – in November 1967 wrote in his diary: "We don't know who we must disapprove of most: the Americans who continue forcing us toward this arrangement or the Italians, who constantly oppose reservations".³⁸

For Italy (as for other middle states) the debate on the NPT had to do more with the country's international status and diplomatic power, than with real security concerns; nevertheless, the debate about the treaty became incredibly polarized. In 1967, as soon as a joint NPT draft was proposed in Geneva by the Soviet Union and the United States, Amaldi gathered a group of eighty-six Italian scientists in order to write an appeal aimed at persuading the Italian government to join the treaty.³⁹ In their statement, scientists rejected the most common criticisms about Italy's accession to the treaty and argued that signing the NPT would translate into an increase – and not a reduction - of Italian security, given that the agreement could reverse the dangerous trend of global nuclear proliferation. The subscribers were persuaded that – as scientists – they were in a better position to assess the perils deriving from the dissemination of nuclear weapons. They thus appealed to the Foreign Minister hoping that he would undertake the necessary steps to ratify the treaty.

35 Paolo Cacace, *L'atomica europea. I progetti della guerra fredda, il ruolo dell'Italia, le domande del futuro* (Roma: Fazi, 2004), 116-18.

36 Nuti, *La sfida nucleare*, 287 ff.

37 Emilio Bettini, *Il Trattato contro la proliferazione nucleare* (Bologna: il Mulino, 1968); Luisa Calogero La Malfa and Ennio Ceccarini, ed., *Contro la proliferazione delle armi nucleari. Libro Bianco* (Roma: Edizioni della Voce, 1967).

38 Egidio Ortona, *Anni d'America*, vol. 3, *La cooperazione, 1967-1975* (Bologna: il Mulino, 1989), 52.

39 "Open Letter to Foreign Minister Amintore Fanfani", February 15, 1967, AAm, SD, box 40, folder "Non proliferazione".

The importance of this appeal should be understood in the context of various initiatives carried out at the same time by the Italian community of physicists. These included several interviews published in Italian newspapers such as *La Stampa* (Amaldi and Calogero, 1967), *L'Espresso* (Amaldi and Adriano Buzzati-Traverso, 1967) and *L'Europeo* (Amaldi again with Calogero, 1974), some press conferences, debates and workshops aimed at publicizing the positive aspects of the NPT, and in 1967 support for an official pronouncement issued by the PRI (at that time one of the ruling coalition parties). As is clear from the sources, the activities of these Italian physicists were conceived in the framework of an international effort to achieve a more secure world, less affected by weapons of mass destruction. As a member of the Pugwash Continuing Committee, Amaldi often informed the Secretary General about the Italian debate on the NPT, considering “a coordinated action in the various countries in support of the treaty highly desirable”.⁴⁰ As we can read in one letter written by a prominent American Pugwash member, the activities led at that time by Italian physicists appeared to be internationally appreciated for their “promptness and intensity”.⁴¹

The most famous document among these is perhaps the interview to Amaldi and Calogero, published on February 24, 1967 on the front page of the Italian newspaper *La Stampa*. Here, Amaldi emphasized two main dangers deriving from nuclear proliferation: the risk that nuclear weapons could be controlled by the “less reliable governments” of the world, and the risk that “atomic accidents” could happen, because of technical or political errors. As Amaldi stated:

Within a few years, many countries will have the bomb, which will be controlled by the less reliable governments too. There will be a propagation chain. Each country with the bomb will induce the neighboring country to equip itself with the same weapons. There will be Hell. Sooner or later these weapons will be involved in local conflicts in the most unstable regions of the world. The risks of atomic accidents due to technical or political errors would be multiplied. Furthermore, it has never happened that the military renounce using any effective weapon. And the atomic bomb is effective, materially and psychologically.⁴²

Although the main political parties and a large part of Italian public opinion were in favor of the NPT, there was a general opposition, which was difficult to overcome.⁴³ In addition to some small nationalistic groups (especially extreme rightists), the fiercest critics of the NPT included some key personalities such as Roberto Ducci and Roberto

40 Amaldi, Letter to Rotblat, March 8, 1967, AAm, box 503, folder 1.

41 Bernard T. Feld, Letter to Carlo Schaerf, March 12, 1967, AAm, box 503, folder 1.

42 Amaldi in Ronchey, “L'ultima occasione”.

43 This point was particularly stressed by Carlo Schaerf; Schaerf, conversation with author.

Gaja, two of the most important Italian diplomats at that time, and Achille Albonetti, Foreign affairs Director of the Comitato Nazionale per l'Energia Nucleare (CNEN).⁴⁴

In order to understand the intensity of the debate it is interesting to quote some words from a letter sent in February 1967 by Calogero to the US Chairman of Pugwash, Bernard Feld (both later became Secretary General). Reporting to Feld about the Italian situation, Calogero described “the hard work of the scientists to counter this sudden twist of the Italian stance on the policy of arms control and disarmament”.⁴⁵ And then he stated:

I have the impression that a large influence is to be traced to rather obscure personal intrigues of a number of high-placed diplomats, plus the ambiguous personality of our Foreign Minister. These maneuvers have been helped by the general and total innocence of our politicians concerning these problems. ... We have intervened to counterbalance the misleading effects of a nasty and well-organized campaign mounted to scare public opinion away from the treaty.⁴⁶

If the words used by physicists against the opponents of the NPT in the interviews, conferences and letters appear undoubtedly strong, it is also true that their “enemies” in this political battle were equally aggressive. The tone of the debate is clear if one looks at Albonetti’s books, which include several harsh remarks on the scientists, described as being “often influenced by the Communist left and the radical environment...who defamed high officials of the Foreign Ministry” and “conducted a sensationalist political and press campaign” supporting “in an insidious and superficial way ... such an absurd and unfair event” as the NPT.⁴⁷

Similarly to 1967, in 1974 a group of Italian scientists (this time one hundred and forty-two), addressed a new open letter to the Foreign Minister pushing him to promptly ratify the treaty.⁴⁸ Scientists criticized nuclear powers for not committing themselves enough to disarmament, and urged the Italian government to take a clear stance in favor of the agreement. As we can read in the appeal, they considered the NPT as a useful step towards détente:

⁴⁴ Roberto Gaja, *L'Italia nel mondo bipolare. Per una storia della politica estera italiana, 1943-1991* (Bologna: il Mulino, 1995), 173 ff.; Achille Albonetti, *L'Italia e l'atomica. Il governo, il parlamento, i partiti, i diplomatici, gli scienziati e la stampa* (Faenza: Flli Lega, 1976); Albonetti, *L'atomica. L'Italia e l'Europa*, interview by Leopoldo Nuti (Roma: Albatros, 2014).

⁴⁵ Francesco Calogero, Letter to Bernard T. Feld, February 28, 1967, AAm, box 503, folder 1.

⁴⁶ Calogero, Letter to Feld, February 28, 1967, AAm, box 503, folder 1.

⁴⁷ Albonetti, *L'atomica*, 41, 121-23; Albonetti, *L'Italia*, 171.

⁴⁸ “Open Letter to Foreign Minister Mariano Rumor”, September 26, 1974, AAm, SD, box 34, folder 2.

The Non Proliferation Treaty has been a key element of international détente and it cleared the way for the first steps towards a global arms control agreement. The main responsibility is – of course – that of the two nuclear superpowers USA and USSR Throughout these years, just one country – India – has developed the technology needed for nuclear explosions, carrying out the underground test of May 18, 1974.⁴⁹

Furthermore, highlighting the danger of fall-out that derived from nuclear explosions and the risk of a dual use of nuclear technologies, scientists warned the Italian government and public opinion of the ambiguous advantages that could come from any “pacific nuclear explosions”. They considered the approaching first NPT Review Conference as a chance for Italy to have a voice in the international debate about nuclear proliferation and arms control, and therefore urged the government to complete accession to the treaty (through parliamentary ratification) before the conference, in order to fully participate in it. The 1974 letter ended with a petition to stop what appeared to be an “intentional attempt to delay as much as possible the Italian accession to the NPT”, which was giving rise to speculations about an Italian latent nuclear ambition.⁵⁰

Italy signed the NPT in 1969 but ratified it in 1975, after a six-year stalemate. In fact, although at first glance Italy had no other option than to sign the treaty, due to the strong alliance with Washington, archival documents show a stubborn opposition to the two superpowers’ position on non-proliferation. It is possible, then, that the pressure of the scientific élite helped to some extent dispel the hindrances on the road to the Italian signature.

In the Italian context, Amaldi’s struggle for nuclear disarmament was at times particularly complicated, given that he advocated the employment of atomic energy for peaceful uses.⁵¹ He was persuaded that a middle country like Italy should launch a new industrial policy based on nuclear energy, which – in the long term – could reduce Italy’s dependence on foreign energy sources.⁵² This belief put Amaldi in a peculiar position, given that he was strongly opposed to any military use of nuclear energy, but championed – with a similar obstinacy – the opportunity to exploit nuclear energy for peaceful uses (therefore being often in contrast with that part of the anti-nuclear movement that was against *any possible use* of nuclear energy, both for military and for civilian purposes).

49 “Open Letter to Foreign Minister Mariano Rumor”, September 26, 1974, AAm, SD, box 34, folder 2.

50 “Open Letter to Foreign Minister Mariano Rumor”, September 26, 1974, AAm, SD, box 34, folder 2.

51 Rubbia and Angela, *Edoardo Amaldi*, 89-90, 274-78.

52 Amaldi, “Seminario di studio organizzato dal Comitato italiano per le ricerche sulla pace (CIRP) della SIOI”, su “L’Italia e la prossima conferenza di Ginevra sul Trattato di non proliferazione nucleare”, Roma, 16-17 April 1975, AAm, SE, box 55, folder “1975”, 1-5; Calogero La Malfa and Ceccarini, *Contro la proliferazione*, 252-56.

During the 1970s and 1980s Amaldi found himself unable to extensively travel abroad. Nevertheless, his commitment to disarmament and peace remained strong. For instance, in 1981 wrote an appeal (signed by eight hundred and seventeen people) to the President of the Italian Republic Sandro Pertini concerning the Euromissiles crisis;⁵³ in 1983, he played an important role in the creation of the *Unione Scienziati per il Disarmo* (USPID) and in the establishment of the *Sicurezza Internazionale e Controllo degli Armamenti* (SICA) group in the *Accademia dei Lincei* (a working group shaped on the US Committee on International Security and Arms Control).

CONCLUSION

This chapter has analyzed the feeling of common responsibility clearly visible in the personal experience of a well-known Italian nuclear physicist, highlighting the interaction between scientific and political élites that occurred during the Cold War in the debate on security. I have argued that Amaldi's pragmatic approach, free from any national, ideological or class interests, was representative of a new perspective widespread in a part of the international community of scientists. Since the late 1950s, their ideas merged into the Pugwash movement, whose basic purpose was to safeguard humanity's common interest, namely peace. The "common awareness of a common danger"⁵⁴ was at the heart of nuclear physicists' efforts to participate in the arms control debate from the 1960s onwards, and urged them to promote a broad transnational dialogue about that issue, even during the most critical phases of the Cold War years.

Amaldi's story adds a relevant dimension to the debate that took place during the Cold War in Italy around nuclear issues, and enhances the understanding of Italy's policy concerning arms control and security. The heated debate regarding the country's accession to the NPT – in which scientists fiercely participated, supporting the ratification of the treaty – gives us a sense of the different perceptions existing in Italy around the nuclear proliferation issue. Although Italy – as a middle power firmly allied with the United States – probably had to sign the NPT in any case, in order to avoid an awkward dispute with Washington, nevertheless Italian politicians stubbornly resisted renouncing to a possible "nuclear option". As far as the NPT is concerned, archival sources point out that scientists had an important role in informing the Italian public about the dangers of the nuclear age, as well as in overcoming the most common reservations about the

53 "Appeal to the President of the Italian Republic Sandro Pertini", November 27, 1981, AAm, SE, box 61, folder 3; and "Comunicato Stampa", November 27, 1981, AAm, SE, box 10, folder 2.

54 Eugene Rabinowitch, "The Role of the Scientists in the Community", Paper for the Tenth Pugwash Conference on Science and World Affairs, AAm, SADF, box 263, folder 5, 6.

treaty. Thus, in the NPT case, scientists involved in disarmament issues achieved their two main goals: to make public opinion aware, and to press politicians.

Amaldi's ability to organize people around specific proposals, and his well-known position as professor at the University of Rome from 1937 to 1978 made him a "natural leader" of the Italian community of physicists. Furthermore, Amaldi's activities were pivotal in establishing an Italian network of scientists interested in peace and disarmament issues, who wanted to have a voice in Italy's nuclear policy. Thanks to Amaldi's example and his skill in organizing people, many other Italian scientists joined Pugwash and other parallel initiatives, such as the SICA conferences at the Accademia dei Lincei (then renamed the "Amaldi Conferences") and USPID. Their commitment shaped the following development of Pugwash and remains remarkable even today. It is in fact widely known that Pugwash was awarded the Nobel Peace Prize in 1995, when Francesco Calogero was Secretary General, and that the movement is currently led by another Italian, Paolo Cotta-Ramusino.

While it is difficult to assess to what extent Italian scientists' efforts in favor of détente and arms control succeeded in influencing Italian politics during the Cold War, their strong involvement in shaping their country's security policy is in itself a relevant issue for the history of the Italian nuclear experience. The polarized debate about the NPT highlighted – maybe for the first time with such intensity – the existence of an élite of civil society, normally not involved in foreign and security policies, claiming to have a voice in issues that were the government's prerogative, and this is a noteworthy matter in itself.