Atoms for Industry

The Early Nuclear Activities of Fiat and the Atoms for Peace Program in Italy, 1956–1959

✣ **Barbara Curli**

Fiat and Italian Nuclear Activities in the 1950s

A national referendum held in Italy in 1987 in the aftermath of the Chernobyl accident resulted in a moratorium on nuclear energy production, but well before that, Italy's nuclear programs had already substantially slowed. The programs had been launched in the 1950s but, after running into political difficulties in the 1960s, were only partly and temporarily resumed in the 1970s as a response to the energy crisis. The moratorium in 1987 marked a final reversal of Italy's early position, when it had been one of the first countries to launch a civilian nuclear program after the Second World War that involved private industry, the public sector, the government, and leading physicists. For the peaceful uses of nuclear energy in Italy, personalities were important, as were their overlapping networks and connections in academia, government, and industry.

The Fiat automotive company was one of the key actors in Italian nuclear programs in the 1950s. Founded in 1899 by Giovanni Agnelli and a group of other investors, Fabbrica Italiana Automobili Torino (Fiat), a holding company best known for its automobile manufacturing (it also offered engineering services and manufactured other types of mechanical goods), was a protagonist of the Italian (and European) economic miracle in the 1950s, with more than 70,000 employees in 1954 and almost 150,000 by 1967. Fiat was also the first Italian private company (and among the very first in Europe) to launch a nuclear research program and the first private company in Europe to establish a research center (Saluggia) hosting a nuclear reactor. However, the nuclear activities of Fiat have been largely neglected in the historiography

Journal of Cold War Studies
Vol. 25, No. 3, Summer 2023, pp. 68–88, https://doi.org/10.1162/jcws_a_01159

and are only briefly mentioned (with several inaccuracies) in the major history of the company.[1]

Fiat was soon actively involved in the postwar reconstruction of applied nuclear physics through the establishment of Centro Italiano Studi ed Esperienze (CISE), a research center led by the Milanese physicist Giuseppe Bolla, who gathered a first group of nuclear physicists, engineers, and technicians to develop applied nuclear physics and eventually build a "national reactor." CISE was financed by a group of private companies led by Edison (the country's main electrical company), Fiat, and the Cogne Steel Company, later joined by such businesses as Montecatini, Falck, Pirelli, Adriatica di Elettricità, and Terni.

The involvement of private industry in the financing of early postwar nuclear research had been stimulated by the physicist Edoardo Amaldi, one of the "ragazzi di via Panisperna" ("guys from via Panisperna"—Emilio Segré, Ettore Majorana, Bruno Pontecorvo, and others) who had worked before the war at the Physics Institute of the University of Rome under the leadership of Enrico Fermi. After the war, to move beyond the restrictions the group faced from a dearth of funding, Amaldi took the lead in the reconstruction of Italian physics, which had been severely harmed by the 1938 racial laws and the departure of Fermi and others to the United States (where Fermi joined the Manhattan Project). Amaldi promoted a series of initiatives, both domestically and internationally. In 1946, he sent a memorandum to the chemist Luigi Morandi, the brother of Minister of Industry Rodolfo Morandi, and to Vittorio Valletta, the charismatic and powerful chief executive and president of Fiat, outlining the equipment and personnel needs of Italian physics and calling for a renewed national effort in both fundamental and applied research in the nuclear field. The idea of attracting private business into the nuclear field was meant also as a way of assuring the survival and reconstruction of Italian theoretical physics.[2]

1. Valerio Castronovo, *FIAT, 1899–1999: Un secolo di storia italiana* (Milan: Rizzoli, 1999), pp. 967–969, 1555. On the history of Fiat, see also Valerio Castronovo, *FIAT: Una storia del capitalismo italiano* (Milan: Rizzoli, 2005); Giuseppe Berta et al., *Fiat 1899–1930: Storia e documenti* (Milan: Fabbri, 1991); and Duccio Bigazzi, *La grande fabbrica: Organizzazione industriale e modello americano alla Fiat dal Lingotto a Mirafiori* (Milan: Feltrinelli, 2000).

2. On the reconstruction of Italian physics after the war, see Edoardo Amaldi, "Gli anni della ricostruzione," *Giornale di fisica*, Vol. 20, No. 3 (1979), pp. 185–225. On Amaldi, see Giovanni Battimelli, "Edoardo Amaldi, a cento anni dalla nascita," in Fernando Ferroni, ed., *The Legacy of Edoardo Amaldi in Science and Society* (Bologna: Società Italiana di Fisica, 2009), pp. 259–271; Giovanni Battimelli, "I fisici italiani negli anni della ricostruzione: Dinamiche locali e contesto europeo," in Franco Calascibetta and Luigi Cerruti, eds., *Atti del XII Convegno Nazionale di Storia e Fondamenti della Chimica, Rendiconti della Accademia Nazionale delle Scienze detta dei XL*, V, Vol. 31, II (2007),

In contacting Valletta, Morandi was seeking out a major company with both the economic and the political capacity to survive in the field. However, his communication was also directed to Valletta himself, whose sensitivity to the modernization of Italian industry, to research and development, and to the energy issue was well known. Valletta had been general manager of Fiat since 1928, then chief executive from 1939 to 1945. Reintegrated into the company by the Allied authorities after a short postwar political purge and trial meant to assess his involvement with the fascist regime, Valletta returned as Fiat's chief executive and president from March 1946 to 1966 and led the company during the tumultuous years of postwar reconstruction and the "economic miracle."[3]

The creation of CISE in 1946—its first president was Vittorio De Biasi, chief executive of Edison, and its chief executive was Antonio Cavinato of Fiat (later substituted by Valletta himself)—represented an important episode in Italy's postwar reconstitution and training of qualified personnel in the field of applied nuclear physics. However, the center's activity was constantly affected by the tension between the short-term objectives of financing by industry and the longer-term and uncertain prospects of research, as well as by the differing approaches to general economic policy issues of the companies involved.[4]

Public intervention in the nuclear field materialized in June 1952, when the national nuclear agency—Comitato Nazionale Ricerche Nucleari (CNRN)—was created to centralize supervision, finance, and control of the country's nuclear activities. The initiative came from several key figures—Minister of Industry Pietro Campilli; Edoardo Amaldi, who was then involved in the foundation of the European Organization for Nuclear Research (CERN) in Geneva to ensure representation of Italy in the new international "big science" institutions; and Francesco Giordani, who served as CNRN's first president from 1952 to 1956.[5] A distinguished figure of the Italian

pp. 421–430; Giovanni Paoloni, "Amaldi, Edoardo," in *Dizionario biografico degli Italiani* (2013), available online at https://www.treccani.it/enciclopedia/edoardo-amaldi_(Dizionario-Biografico); Carlo Rubbia, *Edoardo Amaldi: Scientific Stateman* (Geneva: CERN, European Organization for Nuclear Research, 1991); and Lodovica Clavarino, *Scienza e politica nell'era nucleare: La scelta pacifista di Edoardo Amaldi* (Rome: Carocci, 2014).

3. The classic biography of Valletta is Piero Bairati, *Vittorio Valletta* (Turin: UTET, 1983). Among the many books on the Italian economic miracle, a useful synthesis is Valerio Castronovo, *L'Italia del miracolo economico* (Rome-Bari: Laterza, 2014).

4. On the history of CISE, see Sergio Zaninelli, ed., *Ricerca, innovazione, impresa: Storia del CISE: 1946–1996* (Rome-Bari: Laterza, 1996).

5. On Italy and CERN, see Lanfranco Belloni, "Sulla genesi del CERN," *Storia contemporanea*, Vol. 17, No. 4 (1986), pp. 615–666; and Giovanni Battimelli, "Edoardo Amaldi e il CERN," in Marco Cattaneo, ed., *Scienziati d'Italia: 150 anni di ricerca e innovazione* (Turin: Codice, 2011), pp. 175–187.

"scientific estate" as a professor of chemistry at the University of Naples, Giordani had been the president of the Istituto per la Ricostruzione Industriale (IRI) before the war and one of the technocrats during the fascist regime in the 1930s. After a brief postwar experience as the Italian representative at the World Bank, where he laid the foundation for the bank's first loan to Italy (in 1957, to finance the establishment of the Cassa per il Mezzogiorno), followed by his four-year presidency of CNRN, he became one of Euratom's three "wise men" who paved the way for the U.S.-Euratom agreement.[6] From 1956 to 1960 the presidency of CNRN was temporarily held by Basilio Focaccia, an electrical engineer and senator from the Christian Democratic Party. In 1960, CNRN was transformed into the Comitato Nazionale Energia Nucleare (CNEN), and its presidency was entrusted to the minister of industry—a sign of the increased political importance attached to the nuclear program.

From the time CNRN/CNEN was set up in 1952 until 1964, it was characterized by the dynamic leadership of its brilliant young general manager, Felice Ippolito, a professor of mining engineering at the University of Naples, who was the real soul of the organization and its representative in international negotiations. Like Giordani, Ippolito was rooted in the tradition of technocratic *meridionalismo* meant to foster industrialization in southern Italy. More generally, his thinking was underpinned by a deep conviction about the fundamental role of the state in promoting the basic infrastructure of growth and easing private initiative. CNRN quickly stood out as an innovative and efficient body, representing a new departure in the Italian politics of science. The Italian nuclear program was intended to promote energy diversification and industrial modernization and was surrounded by an aura of nuclear optimism, consistent with the more general progressive mood of the Italian "economic miracle" of the 1950s.[7]

Among CNRN's early initiatives was a collaboration with the Istituto Nazionale di Fisica Nucleare (INFN), which was created in 1951. This effort produced several innovative developments, like the construction of an electrosynchrotron at the new Laboratori Nazionali in Frascati, near Rome; the construction of the AdA and Adone particle-antiparticle colliders; and the

6. Barbara Curli, "Francesco Giordani e l'autonomia energetica," in *Radici storiche ed esperienza dell'intervento straordinario nel Mezzogiorno* (Rome: Bibliopolis, 1996), pp. 213–225. Cassa per il Mezzogiorno (1950–1984), was the state agency in charge of financing industrialization and the modernization of infrastructure in southern Italy.

7. On the Italian nuclear project of the 1950s and 1960s, see Barbara Curli, *Il progetto nucleare italiano, 1952–1964: Conversazioni con Felice Ippolito* (Soveria Mannelli: Rubbettino, 2000); and Elisabetta Bini and Igor Londero, eds., *Nuclear Italy: An International History of Italian Nuclear Policies during the Cold War* (Trieste: EUT, 2016).

pursuit of research on nuclear fusion under Euratom's sponsorship.[8] These experiences restored Italy's international position (in some cases, even leadership) in fundamental research. However, CNRN's relationship with CISE, to which applied research was entrusted and to which the largest portion of CNRN funds was directed, was always more difficult, affected by reciprocal mistrust reflecting larger political divisions in Italy's ongoing debate over the nationalization of electricity.[9]

More generally, CNRN suffered from an undefined institutional and administrative identity and lack of adequate funding, partly because of the Italian government's reluctance to embark on a nuclear program that would require significant resources and public commitment in a period of bitter public debate over the issue of nationalization of electricity, which had been deeply contentious since 1946. Nationalization was achieved only in 1962 with the creation of Ente Nazionale Energia Elettrica (ENEL), a result of the new political season of "apertura a sinistra" (opening to the left) that led to the first postwar center-left governments.[10]

The issue of nationalization complicated relations among the main protagonists of the Italian nuclear scene. Private electrical companies, led by Edison, were openly against nationalization; CNRN/CNEN, led by Ippolito, was one of the most outspoken supporters, while also arguing for the role of the state in the nuclear field. Separately, Enrico Mattei, the powerful president of Ente Nazionale Idrocarburi (ENI, the Italian national oil company), entered the nuclear sector with the creation of Agip Nucleare as part of a political strategy to become head of the nationalized electrical sector. Each was aiming at a "slice of the nuclear cake" while also seeking to legitimize himself as a leader of the transition toward nationalization, which involved enormous political and economic interests both domestically and internationally.[11]

8. On CNRN's early activity, see Felice Ippolito, "Le ricerche nucleari in Italia e l'attività del CNRN," *Atomo e industria*, Vol. 1, No. 1–2 (1957), reproduced in Felice Ippolito, *L'Euratom e la politica nucleare italiana* (Rome: Opere nuove, 1958), pp. 49–55; and Giovanni Paoloni, ed., *Energia, ambiente, innovazione, dal CNRN al CNEN* (Rome-Bari: Laterza, 1992). On the origins of the Italian fusion program, see Barbara Curli, "Italy, Euratom and Early Research on Controlled Thermonuclear Fusion (1957–1962)," in Bini and Londero, eds., *Nuclear Italy*, pp. 45–65.

9. Divisions within the Italian nuclear sector at the time are highlighted in traditional and polemical accounts written by the protagonists of those events. See Mario Silvestri, *Il costo della menzogna: Italia nucleare 1945–1968* (Turin: Einaudi, 1968); and Felice Ippolito and Folco Simen, *La questione energetica: Dieci anni perduti 1963/1973* (Milan: Feltrinelli, 1974).

10. Valerio Castronovo, ed., *Storia dell'industria elettrica in Italia*, Vol. 4, *Dal dopoguerra alla nazionalizzazione, 1945–1962* (Rome-Bari: Laterza, 1994).

11. The expression is from Marcello Colitti, *Energia e sviluppo in Italia: La vicenda di Enrico Mattei* (Bari: Di Donato, 1979), p. 220.

Atoms for Italy

U.S. President Dwight D. Eisenhower's speech at the United Nations in 1953 and the launch of the Atoms for Peace program provided an opportunity to accelerate the Italian nuclear program at a time of significant institutional development, debates over the future of electricity in Italy, and uncertainty about how Italy's efforts might mesh with European and U.S. nuclear programs.[12] At the same time, each actor on the Italian nuclear scene managed to use the U.S. initiative and the emerging U.S.-UK rivalry in the international reactor market to pursue specific economic and political objectives.[13]

Both the political implications of the U.S.-UK rivalry and the ideological/geopolitical content of the U.S. program in the Cold War framework emerged during negotiations, led by Giordani, for a first general U.S.-Italy bilateral nuclear agreement, which was signed in June 1955. The widespread esteem Giordani enjoyed in Washington thanks to his experience at the World Bank helped to overcome operational concerns expressed by members of the U.S. program, as acknowledged by John Hall, the director of the Division of International Affairs of the U.S. Atomic Energy Commission (AEC).[14] Under the agreement, the United States was to provide Italian laboratories with a limited amount of enriched uranium-235 and heavy water. In July 1957, an additional "power agreement" (which included the possible purchase of nuclear power reactors) was signed. CNRN bought a CP-5 research reactor from American Machine and Foundry that was to be hosted at the new national research center in Ispra, near Lago Maggiore, in collaboration with Vitro Engineering. The purchase of the reactor, named Ispra 1, was financed by a U.S. loan made under the framework of the Atoms for Peace program. The center was to be operated by CISE, the only national organization then capable of providing trained, expert personnel in the nuclear field. Many CISE

12. On Atoms for Peace, see Richard G. Hewlett and Jack M. Holl, *History of the United States Atomic Energy Commission*, Vol. III*: Atoms for Peace and War, 1953–1961: Eisenhower and the Atomic Energy Commission* (Berkeley: University of California Press, 1989); John Krige, *Sharing Knowledge, Shaping Europe: US Technological Collaboration and Non-Proliferation* (Cambridge, MA: MIT Press, 2016); and Mara Drogan, "The Nuclear Imperative: Atoms for Peace and the Development of U.S. Policy on Exporting Nuclear Power, 1953–1955," *Diplomatic History*, Vol. 40, No. 5 (2016), pp. 948–974.

13. On the reception of Atoms for Peace in Italy, see Elisabetta Bini, "Atoms for Peace (and War): US Forms of Influence on Italy's Civilian Nuclear Programs (1946–1964)," in Bini and Londero, eds., *Nuclear Italy*, pp. 23–40; and Simone Turchetti, "A Most Active Customer: How the US Administration Helped the Italian Atomic Energy Project to 'De-Develop,'" *Historical Studies in the Natural Sciences*, Vol. 44, No. 5 (2014), pp. 470–502.

14. An insider's account of these negotiations from within the Italian embassy in Washington is provided by Egidio Ortona, *Anni d'America, La diplomazia, 1953–1961* (Bologna: il Mulino, 1986), pp. 153ff. Ortona later became Italy's ambassador to the United States.

researchers, however, strongly criticized the decision to buy a U.S. reactor because it marginalized the national reactor project (then at a preliminary and still uncertain stage) and substantially weakened CISE's activity and relevance on the national nuclear scene.

CNRN took the opportunity provided by the establishment of the Ispra research center and the difficult relationship with CISE (already a "wearing collaboration," as Ippolito recalls) to provoke a final showdown, taking upon itself the design and construction of Ispra and hiring CISE personnel to manage the center equipped with the U.S. reactor.[15] On 24 March 1959 the director of the center, Carlo Salvetti, informed the CNRN that Ispra 1 had gone critical. On 13 April 1959, the center was inaugurated by the president of the republic.

Negotiations with the Atoms for Peace program were also started in 1956 for the purchase of an experimental reactor of the swimming-pool type to be located in the Centro per le Applicazioni Militari dell'Energia Nucleare (Center for the Military Applications of Nuclear Energy, CAMEN), created by the Ministry of Defense in 1955 and associated with the Livorno Naval Academy, which was predominantly involved in studies of naval propulsion and radiation effects, including in collaboration with Fiat.[16]

In the meantime, the treaty establishing the European Atomic Energy Community (Euratom) was signed in March 1957 and came into operation in 1958. In accordance with a plan for dividing up European institutional sites agreed to by the member-states, the Italian government—backed by Ippolito and Amaldi—decided to transfer the Ispra center to Euratom so that it could become a new European Joint Research Centre. Italy would benefit from Euratom's massive investment in equipment and personnel and from the prestige of hosting the European center (the model being CERN in Geneva). Domestic nuclear rivalries influenced the decision, which was formalized in July 1959. CNRN simultaneously started construction of a new national research center at La Casaccia, near Rome, symbolizing the centralization of national nuclear activities.[17]

15. Ippolito and Simen, *La questione energetica*, p. 100.

16. On CAMEN, see Curli, *Il progetto nucleare italiano*, pp. 48–50; Leopoldo Nuti, *La sfida nucleare: La politica estera italiana e le armi atomiche, 1945–1991* (Bologna: il Mulino, 2007), pp. 90–92; and Leopoldo Nuti, "Extended Deterrence and National Ambitions: Italy's Nuclear Policy, 1955–1962," *Journal of Strategic Studies*, Vol. 39, No. 4 (2016), pp. 559–579.

17. The Ispra Center was officially transferred to Euratom in March 1961 (although the Ispra 1 reactor continued to be managed by CNEN until 1963). Euratom's crisis in subsequent years substantially reduced the importance of Ispra and the expected returns to Italy in both scientific knowledge and prestige. For the passage of Ispra to Euratom, see Ippolito and Simen, *La questione energetica*,

These developments caused bitter resentment at CISE and provided Edison with the opportunity to renew attacks against Ippolito and his promotion of the "public atom." Ippolito became the "Mattei atomico," an expression coined by the Confindustria (the Italian association of industrialists) newspaper *24 ore* during an aggressive press campaign that saw Ippolito's attitude compared to that of Mattei, the powerful head of ENI, who was carrying out a policy of oil nationalism and penetration of foreign oil markets. In contrast, other industrialists, first and foremost Valletta of Fiat, which had just launched its nuclear program, supported the government's decision to pursue the transfer of Ispra to Euratom. Valletta believed that Italy's increased international nuclear prestige and visibility would facilitate national progress (and thus Fiat's own progress) in the field. The Turin newspaper *La Stampa*, owned by Fiat, was strongly in favor of the decision.[18]

The Ispra transfer was yet another episode in the political clash over nationalization of electricity; it came at a moment when the new nuclear law (no. 906) of 1960 had transformed CNRN into CNEN and strengthened its institutional and legal position. This enabled CNEN to carry out new, more demanding tasks and international obligations, while the first three Italian nuclear plants were being constructed thanks in part to the Atoms for Peace program.

Under the framework of the U.S.-Italian "power agreement," two nuclear power reactors were bought from the United States. Edison bought a Westinghouse enriched uranium and pressurized water reactor (PWR), which was located in Trino Vercellese, in the Piedmontese province of Vercelli, and managed by Società ElettroNucleare Nazionale (SENN), a company created and wholly owned by a consortium of public companies (Sme, Ansaldo, Terni, Ilva, Dalmine, Siac, Sip, Finmeccanica, and Finsider). The 134-megawatt plant was financed by a loan agreement with Eximbank signed in 1960. Construction work started in June 1961, the reactor went critical in June 1964, and in October the plant started to produce electricity.

CNRN promoted what came to be known as the "ENSI Project" (Energia Nucleare Sud Italia) in collaboration with the World Bank, which provided a loan to the Cassa per il Mezzogiorno for the construction of a 150-megawatt nuclear power plant to be located on the shore of the Garigliano River (in the

pp. 110–115; Curli, *Il progetto nucleare italiano*, pp. 64ff; and Barbara Curli, "L'esperienza dell'Euratom e l'Italia: Storiografia e prospettive di ricerca," in Piero Craveri and Antonio Varsori, eds., *L'Italia nella costruzione europea: Un bilancio storico (1957–2007)* (Milan: FrancoAngeli, 2009), pp. 211–229.

18. Ippolito and Simen, *La questione energetica*, p. 115.

southern province of Caserta) and entrusted to SENN. The international tender was won by General Electric, which proposed an enriched uranium and boiling water reactor (BWR).[19] The transaction displayed a kind of informal "division of nuclear labor" between GE and Westinghouse in the new Italian nuclear market. Construction started in summer 1960, the reactor went critical in June 1963, and in January 1964 the plant started to produce electricity. Italy's first two nuclear plants thus originated in the Atoms for Peace framework.

The other main actor on the Italian nuclear scene, Mattei—who was quite unpopular in U.S. economic and diplomatic circles for his fight against the oil monopoly of the "seven sisters" and his aggressive outreach policy to the oil markets of the Middle East and the Soviet Union—deliberately exploited the U.S.-UK nuclear rivalry, turning to the British and working outside the Atoms for Peace logic. Agip Nucleare (controlled by ENI) bought a natural uranium/gas and graphite reactor from the British Nuclear Power Plant Company (then Nuclear Power Group) under the framework of the Italian-UK nuclear agreement of December 1957. The construction of the 160-megawatt plant near Latina, just south of Rome, was entrusted to the Società Italiana Meridionale per l'Energia Atomica, which was 75 percent owned by ENI and 25 percent by Finelettrica (the consortium of state-owned electric companies).[20] Construction started in the summer of 1958, the reactor went critical in December 1962, and the plant started to produce electricity in May 1963.

By 1965, Italy was the world's third-largest producer of electronuclear energy, after the United States and the United Kingdom, with France fourth. Atoms for Peace had accelerated the Italian nuclear project, easing technical, financial, and political burdens. However, the results were also the outcome of internal rivalries—a "feud"—among the main actors on the Italian nuclear scene, not the outcome of a rational, forward-looking design for nuclear development.[21] This feature of Italian nuclear policy hindered subsequent developments.

19. The story of the ENSI project is reconstructed in Barbara Curli, "Energia nucleare per il Mezzogiorno: L'Italia e la Banca mondiale, 1955–1959," *Studi storici*, Vol. 37, No. 1 (1996), pp. 317–351.

20. On ENI's involvement in the nuclear sector and on the story of the Latina power plant, see Mauro Elli, *Atomi per l'Italia: La vicenda politica, industriale e tecnologica della centrale nucleare ENI di Latina, 1956–1972* (Milan: Unicopli, 2011). More generally on the UK role, see Mauro Elli, *Politica estera ed ingegneria nucleare: I rapporti del Regno Unito con l'Euratom (1957–1963)* (Milan: Unicopli, 2007).

21. On the "feud," see Silvestri, *Il costo della menzogna*, p. 190.

Atoms for Fiat

Fiat was among the leading participants in the establishment of CISE in 1946. Valletta was convinced of the need to bring both Fiat and Italy into the nuclear era as leverage for national industrial and technological modernization. He was especially sensitive to the issue of education and training of the first generation of personnel in the nuclear field. Fiat sponsored almost all the postwar initiatives at Italian universities devoted to the teaching of nuclear physics and nuclear engineering, beginning in 1951 with the polytechnic schools in Turin and Milan. Fiat helped establish the INFN Turin section that year, and it supported the creation and development of several other public, private, and university research centers, including the International Center for Theoretical Physics in Trieste, within the framework of an agreement between Italy and the International Atomic Energy Agency signed in 1963. In so doing, according to Valletta, "Italy is effectively contributing to the solution of a fundamental problem, that is, its technological and scientific gap with more advanced countries."[22]

When Atoms for Peace was launched, Fiat was thus already actively participating in Italy's early nuclear development. However, Eisenhower's initiative provided Fiat with the opportunity to embark on an ambitious industrial nuclear program and to enter the sector of electronuclear engineering, radiobiology (with a new research center in Saluggia), and other industrial nuclear applications, including, possibly, a nuclear power plant that could meet Fiat's energy needs in Turin.

For Valletta, Fiat's nuclear ambitions and further ties with the United States were the logical continuation of a long and fruitful tradition of collaboration with U.S. industry dating back to the interwar period. During the immediate years of reconstruction after World War II, Valletta had played a "diplomatic" role in the restoration of U.S.-Italian economic and political relations and had established a "special relationship" between Fiat and the United States based on his "ambitious vision of expansion and modernization using U.S. loans and technical knowledge."[23] Valletta's anti-Communist credentials then played a further role in making Fiat an ideal candidate for participation

22. Valletta to Egidio Ortona, 11 March 1967, in Archivio Storico Fiat (ASF), Fondo Delibere 302. (Unless otherwise stated, all translations from the original Italian are mine.) Valletta was replying to Ambassador Ortona, who, on behalf of the Ministry for Foreign Affairs, had thanked Valletta for Fiat's contribution to the establishment of the Trieste Center.

23. John L. Harper, *America and the Reconstruction of Italy, 1945–1948* (New York: Cambridge University Press, 1986), p. 69.

in the Atoms for Peace program, although scholars have also highlighted his efforts to offset the ideologically charged attitudes of some U.S. officials toward Italy's political and social situation, especially after the arrival in Rome of Ambassador Claire Booth Luce in 1953.[24]

In addition to Valletta's personal approach and technocratic ambitions, Fiat's entry into the nuclear business was part of the company's general strategy of modernization and technological progress, which implied investment in advanced sectors other than automobile production and the strengthening of ties with U.S. business organizations. These were the main objectives laid out in a report discussed by Fiat's board of directors in the summer of 1955 as guidelines for future action: "Fiat attaches great importance to scientific and technological progress"; and even if "one day we may come to a single European market in a united Europe," the company would still need to "rely on technical and scientific support from the United States." Fiat enjoyed "a more than thirty-year-old relationship with major U.S. business organizations." Moreover, it had always acted according to the principles of "Western democratic solidarity" and "in the interest of the nation's industry."[25]

On 7 June 1955, Valletta wrote to AEC Chairman Lewis Strauss, asking for authorization to start negotiations with Westinghouse, whose good relations with Fiat dated to the prewar era, "within the framework of the program undertaken by Westinghouse for the construction of atomic reactors in friendly Western countries" and "as soon as were made known the procedures approved by the President of the United States to govern this matter."[26] In early August, reporting to the board of directors about a recent trip to the United States, the vice president of Fiat, Giancarlo Camerana, stressed that the company was in a "priority" position with regard to negotiations with Westinghouse on possible industrial applications of nuclear energy.[27]

Also in August, Valletta participated in the first Geneva International Conference on the Peaceful Uses of Atomic Energy as a member of the Italian delegation. The conference was the first of a series held under the aegis of the United Nations that until the early 1970s provided a high-profile arena for scientific and political collaboration in nuclear issues and for the gathering

24. On Valletta's position, see Ortona, *Anni d'America*; and Bairati, *Valletta*, pp. 243ff.

25. Minutes of Board of Directors, Annexe IX, "Politica futura della Fiat," 13 August 1955, in ASF, Fiat, Consiglio di Amministrazione (CdA).

26. Vittorio Valletta to the Chairman of the U.S. Atomic Energy Commission, 7 June 1955, in Archivio Storico (AS) CNEN, F 586, Rapporti e corrispondenza varia con la FIAT, 1958–68; English in original.

27. Minutes of Board of Directors, 13 August 1955.

of scientists, industrialists, technocrats, and politicians involved in nuclear policy from both the East and the West. Ippolito reported the optimistic atmosphere and the collaborative mood of the 1955 conference, noting how the United States seemed already oriented toward biological-medical applications, whereas for the Europeans the energy side of nuclear development was more relevant.[28] Ippolito later also recalled the early signs of industrial rivalry among the main industrial producers:

> For the first time after the war, scientists and technicians representing all participating countries were united in an atmosphere of collaboration; for the first time, several barriers of secrecy were torn down; data and procedures, thus far kept strictly confidential, were disclosed. Moreover, in addition to the possibility of the near-term use of nuclear energy as an energy source, one could already detect the first signs of industrial competition among the main suppliers, especially American and British, of nuclear plants.[29]

In particular, Ippolito emphasized Valletta's nuclear enthusiasm:

> The Italians, too, were euphoric. Professor Valletta, one of the most perceptive Italian industrialists, wanted to participate in several sessions of the conference, attended the grand opening of the exhibition, and made the announcement of the forthcoming entrance of Fiat in the atomic sector.[30]

During the conference, which also marked the beginning of close collaboration and lasting personal esteem between Ippolito and Valletta, the Fiat chief announced his company's decision to construct a nuclear power plant. Fiat's press release indicated that the announcement had an "immediate effect on Fiat's prestige." Valletta had stressed the "national" importance of Fiat's initiative, arguing that the company worked "for the Nation" and that Italy had to speed up its entry into the nuclear era because "only Nations equipped with nuclear reactors are likely to have an industrial future."[31]

The question of prestige also played an important role on the U.S. side. According to the Italian embassy in Washington, Fiat's announcement aroused great interest in the U.S. press, given the U.S. concern "to be the first to conclude an agreement with a big European company." The United States

28. Felice Ippolito, "La Conferenza di Ginevra sull'energia atomica," *La Nuova Antologia*, No. 1860 (December 1955), reprinted in Felice Ippolito, *L'Euratom e la politica nucleare italiana* (Rome: Opere nuove, 1958), pp. 11–19.

29. Ippolito and Simen, *La questione energetica*, p. 99.

30. Ibid.

31. Diario Servizio Stampa e Pubblicità, No. 28, Turin, 30 August 1955, in ASF.

was clearly "worried that other countries such as Great Britain or the Soviet Union could reach similar agreements before American companies." Italian diplomats reported that during the Geneva conference Westinghouse had exaggerated the extent of an agreement with Fiat that was still at only a preliminary stage, with the "evident aim to beat possible competitors," either U.S. or foreign. On the Italian side, one could anticipate that Italy would have to face "technical decisions involving major political implications"—that is, choices between the United States and the United Kingdom or among different U.S. companies (insofar as it was "very unlikely that our industry would resort to the Soviets"). At the same time, the Italian government had a clear incentive, also for reasons of political prestige, to be among the first to reach an agreement with the United States for a power plant to be inserted in the Atoms for Peace framework.[32]

These first steps, however, were seen with some skepticism by both the CNRN and the AEC. Commenting on Valletta's visit to the United States in May 1956 to finalize the purchase of a power reactor, both Hall (the director of the Division of International Affairs of the AEC) and Giordani raised several technical-political difficulties. A power plant would require an amendment to the just signed U.S.-Italian bilateral agreement to allow for a greater quantity of enriched uranium than originally foreseen.[33] A less ambitious experimental reactor could fit more easily within the agreement and, according to Giordani, would also be more consistent with the needs of the Italian nuclear program. He argued that CNRN was entitled to suggest which kind of reactor was more suited to the general needs of Italian research and development in the nuclear field and to advise private industry accordingly.[34] Giordani's suggestion that Fiat should buy an MTR-type reactor for experiments on materials thus had a scientific rationale and would also make the quantity of enriched uranium needed by Fiat compatible with that for the Ispra reactor. Both would easily fall under the existing bilateral agreement, pending the signature of a further subsequent "power agreement" (*accordo di potenza*) for power plants, which would eventually provide for additional

32. Ministry of Foreign Affairs to CNRN, "Energia atomica-Programma italiano," 7 October 1955, in AS CNEN, F 586, Rapporti e corrispondenza varia con la FIAT, 1958–68.

33. Ministry of Foreign Affairs to CNRN and to the Ministry of Industry and Commerce, "Progetto di acquisto di un reattore sperimentale da parte della Fiat," 28 May 1956, in AS CNEN, F 586, Rapporti e corrispondenza varia con la FIAT, 1958–68.

34. Giordani to the Ministry of Foreign Affairs and to the Ministry of Industry and Commerce, "Progetto di acquisto di un reattore sperimentale da parte della Fiat," 4 June 1956, in AS CNEN, F 586, Rapporti e corrispondenza varia con la FIAT, 1958–68.

quantities of uranium-235.[35] The additional agreement was also needed because Fiat and CNRN were no longer the only Italian clients on the U.S. nuclear market: Edison had approached U.S. authorities with the intent to buy a power reactor for the Trino Vercellese plant that would involve the purchase of enriched uranium.[36] Valletta looked favorably on Giordani's suggestion and sent Giulio Cesoni, head of Fiat's new Sezione Energia Nucleare (Nuclear Energy Section, SEN) on a mission to the United States to pursue this new venture.[37]

To improve bureaucratic procedures required in the increasingly crowded Atoms for Peace market, the Italian Ministry of Foreign Affairs chose the Delegazione Tecnica Italiana (Deltec) in Washington to be a liaison with the AEC for purchases of nuclear equipment and material.[38] Created in 1945 to help centralize Italian government purchases from the United States (and then expanded to manage U.S. aid to Italy through the United Nations Relief and Rehabilitation Administration, through the Marshall Plan, and through other economic and military cooperation agreements), Deltec had been put under the administration of the Italian Ministry of Foreign Trade. It received instructions from the Italian embassy in Washington, on behalf of which it served as a technical consultant.[39] Deltec's important role in the immediate postwar period has received significant scholarly attention, but its subsequent activities have been less thoroughly investigated. In particular, its role in the nuclear negotiations of the mid-1950s is in need of more detailed study. In a letter to Valletta, Oscar Cox, a former U.S. Treasury Department official and wartime administrator of the U.S. Lend-Lease program and a long-time consultant for

35. On Valletta's visit to the United States, see Ministry of Foreign Affairs to CNRN and to the Ministry of Industry and Commerce, 28 May 1956; and Ministry of Foreign Affairs to CNRN and to the Ministry of Industry and Commerce, "Acquisto di reattori sperimentali da parte della Fiat," 19 June 1956, in AS CNEN, F 586, Rapporti e corrispondenza varia con la FIAT, 1958–68. A detailed discussion of these negotiations from the U.S. perspective is in Turchetti, "A Most Active Customer."

36. Ministry of Foreign Affairs to CNRN and to the Ministry of Industry and Commerce, "Missione negli Stati Uniti dell'ing. Cuojani della Elettronucleare," 22 June 1956, in AS CNEN, F 586, Rapporti e corrispondenza varia con la FIAT, 1958–68.

37. Valletta to Giordani, 11 June 1956, in AS CNEN, F 586, Rapporti e corrispondenza varia con la FIAT, 1958–68.

38. Felice Ippolito to Arnoldo Fogagnolo (Head of Fiat's Divisione Mare), 5 April 1956, in AS CNEN, F 586, Rapporti e corrispondenza varia con la FIAT, 1958–68; and Felice Ippolito to Egidio Ortona (of the Italian Embassy in Washington and Deltec), 5 April 1956, in AS CNEN, F 586, Rapporti e corrispondenza varia con la FIAT, 1958–68.

39. Isabella Napoli, "La Deltec e la ricostruzione italiana, 1944–53," *Studi storici*, Vol. 46, No. 1 (2005), pp. 187–217; and Adriana Castagnoli, *La guerra fredda economica: Italia e Stati Uniti (1947–1989)* (Rome-Bari: Laterza, 2015).

Deltec, congratulated Valletta for being "a pioneer in the industrial uses of atomic energy."[40]

Documents on these early stages of negotiations show the friendly and effective collaboration that soon developed between Fiat and CNRN, which was not affected by the ongoing dispute over "public" versus "private" nuclear activities. Personal relations and reciprocal esteem between Valletta and Ippolito certainly played a role. More importantly, though, Fiat's position as a major consumer and "self-producer" of electric energy (a condition Valletta envisaged increasing thanks to nuclear energy) made Fiat lean toward nationalization of the electric industry, thus breaking Confindustria's solidarity against the nationalizers.[41]

President Eisenhower sent a personal letter to Valletta in June 1956 that sealed the long-lasting friendship between Fiat and the United States and officially launched the new nuclear collaboration. The letter came just after Valletta visited Washington to conclude the purchase of the reactor.[42] In the letter, published on the front page of *La Stampa*, Eisenhower emphasized the great importance of Fiat as the first private company to benefit from the Atoms for Peace program. He expressed his "high esteem and sympathy for the dynamic and wise big European industrialist."[43]

Fiat's Internal Reorganization and the Creation of SORIN

In 1956, Fiat sought to meet its growing national and international ambitions on the nuclear scene by carrying out a major internal reorganization of offices and services devoted to the nuclear sector and preparing for the construction of a nuclear research center. A Nuclear Energy Section (SEN) was established, under the Divisione Mare and the direction of Arnoldo Fogagnolo, to

40. Oscar Cox to Valletta, forwarded by Valletta to Giordani, 9 September 1955, in AS CNEN, b.586, Rapporti e corrispondenza varia con la FIAT, 1958–68.

41. Confindustria was the national association of industrialists. On this important political issue, see Curli, *Il progetto nucleare italiano*, pp. 229–231. On the private/public dispute over national nuclear policy, see Giuseppe M. Longoni, "Libertà d'iniziativa e 'politica nucleare': Tecnici ed imprenditori pubblici e privati italiani di fronte alla costituzione di Euratom," in Ennio Di Nolfo, Romein H. Rainero, and Brunello Vigezzi, eds., *L'Italia e la politica di potenza in Europa (1950–60*) (Milan: Marzorati, 1992), pp. 481–504.

42. On Valletta's visit to the United States, see Minutes of Board of Directors, 31 July 1956, in ASF, Fiat, CdA.

43. Letter from President Dwight D. Eisenhower to Vittorio Valletta, 12 June 1956, in *La Stampa* (Turin), 14 June 1956, p. 1.

supervise all of Fiat's nuclear activities and coordinate research in the company's various laboratories that dealt with nuclear programs. SEN's tasks included "activities in support of nuclear reactors planning (for ship propulsion and for electric power plants, in collaboration with Westinghouse), and design and development of components and control equipment."[44] From 1959 to 1961 Fiat also embarked on several marine nuclear propulsion initiatives, which were carried out in the 1960s, including a collaborative venture with CAMEN and a joint research effort with Ansaldo and CNEN.[45] A nuclear library was created for all the company's branches, with publications including "all the American reports dealing with nuclear matters by companies, universities and research centers."[46] Fiat also focused on training. In 1955 the company sponsored the launch of the first complete course in nuclear engineering, named after Giovanni Agnelli, at the Polytechnic University of Turin, and in 1956 it introduced an internal ten-week training course in nuclear energy for the company's employees.

The main Fiat-led initiative, however, was the creation in July 1956 of the Società Ricerche Impianti Nucleari (SORIN), a joint-venture with Montecatini for the establishment of a nuclear research center that would host the experimental reactor, whose purchase was then being negotiated.[47] The aim was to develop biomedical nuclear research. Montecatini, founded in 1888 as a mining company, had begun to diversify in the 1910s, including into the chemical sector, where it specialized in phosphate and nitrogen fertilizers for agriculture and electrochemistry. Further developed during the fascist period in the 1930s, it diversified production again after the war toward refining, synthetic rubber, petrochemicals, and plastics, under the leadership of Chief Executive Piero Giustiniani and President Carlo Faina. By mid-century it was one of the world's leading chemical companies, known internationally for its long sponsorship of the Institute of Industrial Chemistry at the Polytechnic University of Milan, where Giulio Natta first produced the polypropylene molecule that earned him the Nobel Prize in Chemistry in 1963. In 1966, after Italy nationalized its electricity industry, Montecatini merged with Edison (which was investing its large earnings from nationalization) giving birth

44. Minutes of Board of Directors, 31 October 1956, in ASF, Fiat, CdA.

45. Marinella Neri Gualdesi, "La rincorsa italiana verso le tecnologie nucleari: Il progetto di un sottomarino e di una nave a propulsione nucleare," in Antonio Varsori and Federico Romero, eds., *Nazione, interdipendenza, integrazione: Le relazioni internazionali dell'Italia (1917–1989)*, Vol. 2 (Rome: Carocci, 2007), pp. 105–125.

46. Fiat, Sezione energia nucleare, "Impianti realizzati negli anni 1956–1963," n.d., in ASF, Fondo Stabilimenti e Impianti.

47. Minutes of Board of Directors, 31 January 1957, in ASF, Fiat, CdA.

to Montedison.[48] Thus, both already present in CISE, Fiat and Montecatini found common ground for collaboration in their shared interest in the development of the energy sector and in the prospect of nuclear research for biomedical use and radioisotope production, a promising industry not yet developed in Italy.[49] In 1973 SORIN was transformed into SORIN Biomedica.

The minutes of SORIN's board of directors meetings, together with documents from the Fiat and CNEN archives, paint a clearer picture of the origins of the company's activities in Atoms for Peace.[50] Fiat's plans in the nuclear field started with highly ambitious goals and pursued a twofold objective. On the one hand, SORIN would acquire competence and know-how thanks to an experimental reactor devoted to the production of radioisotopes and research, in connection with Fiat's newly created SEN (itself part of a trend to diversify Fiat's business strategy toward electronuclear manufacturing). On the other hand, the power plant was also envisaged as a way of meeting Fiat's and Turin's growing demand for energy. Preliminary studies were carried out to identify prospective sites for the plant, and two locations were chosen: Saluggia, near Vercelli, would host SORIN, with a focus on the biomedical business; and Boffalora, on the Ticino River at the border between Piedmont and Lombardy, was the candidate site for a nuclear power plant.[51]

For the Saluggia site, an American Machine and Foundry pool-type reactor was selected in November 1956.[52] The contract was signed in June 1957, and the reactor was named Avogadro 1, after the late-eighteenth-century scientist and professor at Turin University, Amedeo Avogadro, known for his work on gas particles and volumes. Enriched uranium was to be provided by the AEC under the U.S.-Italy bilateral agreement of July 1957 that also included uranium for the Ispra reactor. General Electric was supposed to provide the fuel elements. To prevent the improper use and proliferation of fissile

48. Again, as in the case of Fiat, Montecatini's involvement in the nuclear sector has been omitted in relevant historiography. See Franco Amatori and Bruno Bezza, eds., *Montecatini 1888–1966: Capitoli di storia di una grande impresa* (Bologna: il Mulino, 1990), which does not mention SORIN. On the interwar years, see Mario Perugini, *Il farsi di una grande impresa: La Montecatini fra le due guerre mondiali* (Milan: Franco Angeli, 2014).

49. On the history of this sector, see Angela N. H. Creager, *Life Atomic: A History of Radioisotopes in Science and Medicine* (Chicago: University of Chicago Press, 2013).

50. SORIN's board comprised Valletta (Fiat), president; Castellani (Montecatini), vice president; Agnelli (Fiat), member; Fogagnolo (Fiat), member; Faina (Montecatini), member; and Giustiniani (Montecatini), member. Giulio Cesoni (Fiat) and Luciano Orsoni (Montecatini) were the general managers.

51. Minutes of Board of Directors, 31 January 1957.

52. Valletta to Focaccia, 14 November 1956, in AS CNEN, F 586, Rapporti e corrispondenza varia con la FIAT, 1958–68.

materials, SORIN was required to sign a "submission act" establishing a series of non-proliferation safeguards.[53]

However, after Euratom was formed, the supply of U.S. enriched uranium for both Avogadro and Ispra was continually delayed. The content of all bilateral agreements between the United States and Euratom countries had to be renegotiated under the new general U.S.-Euratom Agreement.[54] A kind of friendly competition soon developed between CNRN and SORIN to see which of them would go critical first. Valletta and Giustiniani understood Ippolito's hope that the success of CNRN would vividly demonstrate the benefits of peaceful nuclear activities.[55]

Discussions regarding Fiat's second (power) reactor unfolded in 1956–1957. By then, however, the enthusiasm of 1955 had already been scaled back in consideration of the uncertain costs of electronuclear energy. As Ippolito later recalled:

> At the time [of the first Geneva conference] everybody seemed to be caught in a kind of nuclear excitement, everybody wanted to buy a nuclear reactor, as if every industrialist should have his own reactor. This enthusiasm, however, was rather short-lived because the development of nuclear energy soon turned out to be much more complicated and difficult than expected, both from a political-economic and from an industrial point of view. The atmosphere of the second Geneva conference, held in 1958, was already different, that is, much more cautious, and talks dealt mainly with very practical issues, initiatives that were under way or planned, facts and figures, economic and financial forecast.[56]

By March 1957 Valletta was acknowledging that nuclear energy production was "still uncertain and in continuous evolution." Fiat's nuclear research and development proceeded in the SEN and through SORIN, but he said they would take a "cautious wait-and-see attitude" with regard to reactor developments in the United States and United Kingdom. For technical and political reasons, Fiat and SORIN would continue to keep good relations with both U.S. and British nuclear firms, in particular with Westinghouse for a PWR reactor and with the UK Atomic Energy Authority (UKAEA) in collaboration

53. See correspondence between Ippolito and SORIN in AS CNEN, F 586, Rapporti e corrispondenza varia con la FIAT, 1958–68.

54. On the U.S.-Euratom Agreement, see Gunnar Skogmar, *The United States and the Nuclear Dimension of European Integration* (New York: Palgrave Macmillan, 2004).

55. Giustiniani to Ippolito, 13 December 1958, in AS CNEN, F 586.

56. Curli, *Il progetto nucleare italiano*, pp. 153–154.

with Mattei's ENI.[57] In November 1956 SORIN's two directors and Montecatini Vice President Claudio Castellani visited Calder Hall in the UK and some Norwegian and Swedish plants. In April 1957 Sir John Cockroft was invited to give a lecture at the University of Turin on the Calder Hall experience.[58]

Celebrating European Atoms for Peace

Work on the construction of the Saluggia Center started in October 1957. The UKAEA, which had previously contributed to the site feasibility studies, was asked for advice about the establishment of the research laboratory and was considered a possible partner for subsequent collaboration. However, because the laboratory's activity would be oriented toward radioisotope production, the UKAEA soon pulled back, unwilling to share information in an emerging sector in which the British were competitive. A lasting collaboration agreement was signed instead with the French Commissariat à l'Energie Atomique (CEA)—including provisions for the exchange of personnel between Saluggia and Grenoble. SORIN was also offered a place in Eurochemic, a European consortium founded in 1957 to pursue reprocessing of fuel, and several research contracts with Euratom and CNRN were soon signed.

According to Valletta, SORIN's strategy was "convincing and serious." It was consistent with both market prospects in the biomedical business and with the necessity to proceed with applied nuclear research. But the situation with power reactors for the production of energy was still "fluid and uncertain."[59] SORIN's vice president, Castelli, further emphasized the importance for SORIN of acquiring a position and name as a leading research company in the emerging nuclear market, whereas the electronuclear energy business was "not convenient."[60]

The race between Avogadro and Ispra, which Ippolito saw as politically significant in demonstrating CNRN's primacy in Italy's nuclear development,

57. SORIN Board Minutes, 25 March 1957, in ASF, Società Ricerche Impianti Nucleari "SORIN" Società per Azioni, Libro Verbali Consiglio; and Fiat, Minutes of Board of Directors, 30 March 1957, in ASF.

58. *Illustrato Fiat*, April 1957.

59. SORIN Board Minutes, 3 May 1958, in ASF, Società Ricerche Impianti Nucleari "SORIN" Società per Azioni, Libro Verbali Consiglio.

60. SORIN Board Minutes, 20 April 1959, in ASF, Società Ricerche Impianti Nucleari "SORIN" Società per Azioni, Libro Verbali Consiglio. As a result, Fiat did not buy the second reactor, a decision that was also influenced by the impending energy nationalization and Edison's decision to build the Trino Vercellese plant near Turin. Mattei had to move ahead alone with the British for the Latina plant.

was eventually resolved, with Giustiniani'a and Valletta's compliance, by an informal "political chain-reaction" agreement allowing Avogadro to go critical just a few months after Ispra in November 1959 in the presence of Euratom president, Étienne Hirsch.

The inauguration ceremony of the first private nuclear research center in Europe celebrated Fiat's and Italy's entry into modernity. Represented at the ceremony were figures from the government, from the nuclear establishment and Italian industry, and from Euratom. Valletta, who gave the opening speech, noted the "pride" Fiat and Montecatini felt for their success while also crediting the fundamental support provided by national authorities (CNRN) and the important role of international cooperation, in particular with Euratom and the European Economic Community (the treaties establishing both international bodies were signed on 25 March 1957). In Valletta's words, Avogadro was "an Italian—and a European—great achievement." Hirsch was particularly keen to stress how SORIN demonstrated that industrial applications of nuclear research were not limited to electricity production but opened new industrial and scientific prospects for the well-being of humanity. Endeavors like Avogadro also had political significance, contributing to "faire l'Europe." In blessing the reactor, Monsignor Francesco Imberti, the archbishop of Vercelli, went even further. The achievement of SORIN's scientists and technicians celebrated God, and God's blessing would "fall down on Fiat and Montecatini"—all the more so given that Avogadro was a reactor "for peaceful uses," thus serving "the peaceful well-being of this troubled mankind."[61]

Conclusion: Driving Italy and the Atom into the Twentieth Century

Atoms for Peace accelerated the Italian national nuclear program, which had been launched in the early 1950s before Eisenhower's initiative. The U.S. policy gave an additional opportunity to companies like Fiat and Montecatini to develop and diversify know-how in the new nuclear business and in new industrial applications like radioisotopes for medical use. In addition to Valletta's personal approach and technocratic ambitions, Fiat's entry into the nuclear business was the outcome of the company's more general strategy of modernization and technological progress. The SORIN project was meant as a business strategy to insert Fiat into the promising field of nuclear

61. The press review of the inauguration is in ASF, Sezione Energia Nucleare (SEN), F 244.

biomedical production, a sector presented at the first Geneva conference of 1955 as one in which the United States already enjoyed a substantial advantage over European industry.

Politically, Atoms for Peace was used by actors on the Italian nuclear scene to pursue multiple political goals. At the same time, it oriented the development of the Italian nuclear market according to U.S. strategic and political priorities. This was evident during negotiations for the supply of enriched uranium to Avogadro. By signing the "submission act," the plant's owners committed themselves to a set of rules and limitations intended to prevent the improper use and proliferation of fissile material. SORIN's subsequent industrial performance, which is still to be written, was negatively affected by national and international events (above all, the crisis of the CNRN in the mid-1960s after nationalization and the "Ippolito case"; ENEL's industrial and energy choices; and the crisis of Euratom), eventually leading to its transformation into SORIN Biomedica in 1973.

Acknowledgments

My thanks to Pierpaolo Righero of the Fiat Historical Archives in Turin and Fabrizio Pisacane of the CNEN Historical Archives held in the ENEA Casaccia Research Center near Rome.