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# **FRENCH MULTINATIONALS AND SPANISH HUMAN CAPITAL, C. 1950S-1990S**

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## **ABSTRACT**

*France made a significant contribution to the Spanish economic miracle starting in the late 1950s, not only with capital investment and exports, but also through the transfer of knowledge and skills. The aim of this paper is to explore the influence of French multinationals in the enhancement of Spanish human capital, from specialized assembly-line workers and technicians to engineers, executives and managers. Based on a wide variety of sources, we will focus on three relevant sectors with large spillover effects: the nuclear sector, the defence industry and car manufacturing represented by Renault's subsidiary. These case studies will allow us to gain insight into the internationalization and internalization processes of issuing and host economies.*

## **RESUMÉ**

*La France contribua intensément au miracle économique espagnol dès la fin des années 1950, non seulement par le biais des investissements directs et des exportations, mais aussi par le transfert de connaissances et de compétences. L'objectif de cet article est d'explorer l'influence des multinationales françaises sur la mise en valeur du capital humain espagnol, des ouvriers et techniciens spécialisés dans les chaînes de montage aux ingénieurs, en passant par les cadres et les managers. Grâce à une grande variété de sources, nous nous concentrerons sur trois secteurs importants qui eurent des retombées significatives : le nucléaire, l'industrie de la défense et la construction automobile représentée par la filiale de*

*Renault. Ces études de cas nous permettront de mieux comprendre les processus d'internationalisation et d'internalisation des économies émettrices et d'accueil.*

**Key words:** France, Spain, 20<sup>th</sup> Century, Multinational enterprises, Knowledge and skill transfer, Automotive industry, Nuclear industry, Military Industry.

**Mots-clés:** France, Espagne, xx<sup>e</sup> siècle, Entreprise multinationale, Transfert de connaissances et compétences, Industrie automobile, industrie nucléaire, industrie militaire.

**JEL Classification:** F23, L14, N44, O14, O25

## Introduction<sup>1</sup>

The success that Spain met with the great industrial and technological challenges that it faced in the second half of the 20<sup>th</sup> century largely depended on foreign assistance<sup>2</sup>. As in other developing countries, American and European multinationals were actively involved in the development of human capital in Spain. Their aim was to create an industrial and scientific-technical milieu capable of internalizing, in the short to medium term, the knowledge and capabilities exported together with capital<sup>3</sup>. The State and the firms collaborated in sending Spanish experts to foreign centres (universities, engineering schools, business schools, laboratories, industries), as well as in training in-house workers, technicians and engineers. The interventionist policy of Franco's regime favoured these processes by demanding a minimum degree of domestic content in all the subsidiaries and projects from foreign origin. In this way, the learning generated positive effects for both the sender and receiver: Local firms improved processes and products, while multinationals gained competitive experience that facilitated their worldwide expansion. Furthermore, the investment extended beyond the multinational-

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<sup>2</sup> For an overview, see: Nuria Puig and Rafael Castro, "Patterns of International Investment in Spain, 1850-2005", *Business History Review*, n° 83, 2009, p. 505-537; and Nuria Puig and Adoración Álvaro, "The Long-Term Impact of Foreign Multinational Enterprises in Spain: New Insights into an Old Topic", *Journal of Evolutionary Studies in Business*, n° 1/2, 2016, p. 14-39.

<sup>3</sup> Peter J. Buckley, "Business history and international business", *Business History*, n° 51, vol. 3, 2009, p. 307-333; Geoffrey Jones, *Multinationals and global capitalism from the nineteenth to the twenty-first century*, Oxford, Oxford University Press, 2005; Geoffrey Jones, "Firms and Global Capitalism", in L. Neal and J. G. Williamson (eds.), *The Cambridge History of Capitalism*, vol. 2. *The Spread of Capitalism: from 1848 to the present*, Cambridge, Cambridge University Press, 2014, p. 169-200.

subsidiary framework to reach other companies and sectors, move on to official pedagogical programmes and contribute to industrial and scientific-technical policies<sup>4</sup>.

Beginning with the 1953 Agreements, the United States assumed the leading role in foreign assistance to the Spanish economy. However, diversification was discussed early on, intensifying as Spanish authorities confirmed Spain's excessive dependence on the world leader and the need to approach Western Europe to guarantee its admission to the European Economic Community (EEC). From France's point of view, Spain constituted first and foremost a very important economic partner: a well-known neighbouring country with great potential for development and therefore able to absorb the French products, technologies and capital that needed to overtake the internal market. Spain provided the added advantage of serving as a springboard for exportation to Latin America due to its historical, cultural and economic links with various countries of the region.

French-Spanish relations went through difficult times following World War II. France positioned itself as the standard bearer of the international condemnation of Franco's Spain and unilaterally decreed the closing of the Pyrenees between 1946 and 1948. However, this inflexible position did not last long. It was revoked when French authorities confirmed that, first, the Americans and British, who were more lukewarm in their condemnation of the dictatorship, had broadened their economic positions in Spain; and second, the Cold War had exalted the strategic situation of the Iberia Peninsula and the anti-communism of Franco's regime. So, the French government ended up renewing bilateral (non-political) agreements with Spain. The U.S.-Spanish Pacts and the Spanish economic liberalisation (Stabilization Plan and Development Plans) incentivized French action towards Spain. Meetings between leaders proliferated, as did economic, cultural and scientific-technical exchanges. Those were the years of the French *Trente Glorieuses* and the Spanish economic miracle, which required workers with technical expertise and offered great business opportunities. As a result, the economic and scientific-technical relations eclipsed the political ones. France participated in numerous equipment and infrastructure projects undertaken in Spain, introduced commercial and industrial subsidiaries, signed financial assistance protocols, facilitated Spain's entry into international agencies, and concluded the 1969 Convention on Cultural, Scientific and Technical Cooperation. The years following Franco's death were marked by discrepancies

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<sup>4</sup> Santiago López and Jesús M. Valdaliso, *Historia económica de la empresa*, Barcelona, Crítica, 2007; Nuria Puig and Adoración Álvaro, "The Long-Term Effects of Foreign Investment on Local Human Capital: Four American Companies in Spain, 1920s-1970s", *Business History Review*, vol. 92, 2018, p. 425-452.

around Basque terrorism and Spain's joining the EEC. However, the political disagreements hardly influenced economic relations. France continued to hold a primary position among Spain's commercial and financial partners, after the United States, and alternating positions with West Germany and Great Britain. France also retained its leadership position in the field of technology, receiving 25% of the total technology transfer contracts (licences and technical assistance) concluded between Spanish and foreign firms<sup>5</sup>.

International business scholars have often highlighted the positive long-term effects of multinational enterprises on host economies in terms of technological upgrading and managerial development<sup>6</sup>. The findings, however, have not brought to conclusive evidence yet, as the impacts have largely depending on the institutional characteristics of the host economy, on the industries and firms that cross borders and even on the period in which borders are crossed. The large casuistry has led to a growing need for contextualization, empirical research and case studies<sup>7</sup>.

The aim of this paper is to analyse the French training of Spanish human capital, its means, content and scope, in the second half of the 20<sup>th</sup> century. We have chosen three strategic spheres in which the industrial policies and corporate interests of both countries converged: the nuclear sector, the defence industry and the manufacturing of Renault cars. These three spheres mobilized enormous financial and diplomatic resources, involved many and varied actors, and generated multiplying effects over numerous ancillary sectors and industries. The institutional frameworks, corporate decisions of multinationals and labour preconditions differed in many aspects. Nonetheless, in general terms, the Spanish agents demonstrated, in laboratories, in firms, and within public administration, good capacity for absorbing foreign knowledge and

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<sup>5</sup> Esther M. Sánchez, *Rumbo al Sur. Francia y la España del Desarrollo, 1958-1969*, Madrid, CSIC, 2006; Esther M. Sánchez, "Francia y la España del tardofranquismo y la transición. Sinergias económicas en un marco de cambio político, 1970-1986", *Hispania*, vol. 76, n° 254, 2016, p. 847-882; Rafael Castro, *Génesis y transformación de un modelo de inversión internacional: El capital francés en España, c.1850- 2006*, PhD Dissertation, Complutense University of Madrid, 2010; Rafael Castro and Esther M. Sánchez, "How does Knowledge cross borders? The SOFRE group in the Spain of the Planning, 1959- 1976", *Industrial and Corporate Change*, vol. 24, n° 6, 2015, p. 1247-1283.

<sup>6</sup> Theodore H. Moran, Edward M. Graham and Magnus Blomstrom (eds.), *Does Foreign Direct Investment Promote Development?*, Washington D.C., Peterson Institute, 2005; Rajneesh Narula and John H. Dunning, "Multinational Enterprises, Development and Globalization: Some Clarifications and a Research Agenda", *Oxford Development Studies*, n° 38, vol. 3, 2010, p. 263-287; Klaus E. Meyer; Ram Mudambi and Rajneesh Narula, "Multinational Enterprises and Local Contexts: The Opportunities and Challenges of Multiple Embeddedness", *Journal of Management Studies*, n° 48, vol. 2, 2011, p. 235-252; Santiago M. López, José Molero and Francisco Santos-Arteaga, "Poverty traps in a frictionless world: The effects of learning and technology assimilation", *Structural Change and Economic Dynamics*, vol. 22, 2011, p. 106-115; Nuria Puig and Adoración Álvaro, "La huella del capital extranjero en España: un análisis comparado", *Revista de Historia Industrial*, n° 58, 2015, p. 249-285; N. Puig and A. Álvaro, 2018, *op. cit.*

<sup>7</sup> For an overview, see Adoración Álvaro Moya, Susanna Fellman and Nuria Puig, "Business history special issue on foreign investment and the development of entrepreneurial and managerial capabilities in host economies", *Business History*, n° 62, vol. 7, 2020, p. 1063-1078.

extending some competitive advantage. In this way, sufficient human capital was accumulated to undertake, first, the internal process of development and modernization, and second, the exportation of this process to third countries. Despite their significance, these learning processes have barely been studied by researchers working on French-Spanish relationship.

### ***The deployment of the nuclear sector***

From the late 1940s onwards, Spanish authorities opted for developing a nuclear industry in Spain similar to that of the world's great powers, an industry that would palliate energy restrictions while bringing political gain. The size of the projects, together with the technological gap and the limited financial capacity of the Spanish economy, made foreign assistance an indispensable resource. The United States was the nuclear partner *par excellence*: The first Spanish physicists were trained in the great laboratories of Oak Ridge, New York, Detroit, Chicago, Denver, Los Angeles and Columbus; the Export-Import Bank provided the credits; and Westinghouse and General Electric contributed the technology and atomic know-how<sup>8</sup>. Yet, France also participated in these processes from very early on, extending its assistance in all the phases of the fuel cycle, from uranium extraction to the management of radioactive waste.

From its beginnings, the Spanish state agency Nuclear Energy Board (*Junta de Energía Nuclear*, JEN), created in 1951, encouraged the training overseas of its nuclear scientists and experts. Its collaboration with the French Atomic Energy Commission (*Commissariat à l'Énergie Atomique*, CEA) led dozens of Spanish specialists with an interest in the application (civil and military) of atomic energy to undertake in-house training in French laboratories and industries, especially in the fields of mining, chemistry and uranium metallurgy. The success of this collaboration was decisively influenced by the personal friendship between José M<sup>a</sup>

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<sup>8</sup> Joseba De la Torre and Mar Rubio-Varas, *The Economic History of Nuclear Energy in Spain*, Palgrave Macmillan, 2017; Joseba De la Torre and Mar Rubio-Varas, "Electricidad nuclear y procesos de aprendizaje: el papel de Westinghouse y de General Electric en la experiencia española (c. 1955-1973)", *Revista de Historia Industrial*, n° 74, 2018, p. 107-136; Joseba De la Torre and Mar Rubio-Varas, "American Nuclear Training: científicos, ingenieros y empresarios españoles en los Estados Unidos del desarrollo atómico", in L. Camprubí, X. Roqué and F. Sáez de Adana (eds.), *De la guerra Fría al calentamiento global. Estados Unidos y el nuevo orden científico mundial*, Madrid, Catarata, 2018, p. 85-110. About the history of nuclear energy in Spain, see also: Rafael Caro (ed.), *Historia nuclear de España*, Madrid, Sociedad Nuclear Española, 1995; Ana Romero de Pablos y José Manuel Sánchez Ron, *Energía nuclear en España. De la JEN al CIEMAT*, Madrid, CIEMAT, 2001; Albert Presas, "Science on the Periphery. The Spanish Reception of Nuclear Energy: an Attempt at Modernity?", *Minerva*, vol. 43, n° 2, 2005, p. 197-218; Pablo Soler, *El inicio de la ciencia nuclear en España*, Madrid, Sociedad Nuclear Española, 2017; Ana Romero de Pablos, *Las primeras centrales nucleares españolas. Actores, políticas y tecnologías*, Madrid, Sociedad Nuclear Española, 2019.

Otero Navascués, director and then president of the JEN, and Bertrand Goldschmidt, director of International Relations for the CEA. Otero and Goldschmidt met in 1949 and hit it off instantly despite the environment of mistrust that enveloped French-Spanish relations at that time. Both scientists shared great optimism on the prospects of nuclear energy as well as a desire to free their countries from United States control by encouraging the use of natural uranium (produced nationally) instead of enriched uranium (under U.S. monopoly until 1974)<sup>9</sup>. Together, Otero and Goldschmidt organized the first visits of Spanish scientists and engineers to the French facilities in Saclay, Fontenay-aux-Roses and Le Bouchet. Goldschmidt promoted the sending to Spain of research materials (minerals, equipment, manuals and specialized scientific journals such as *L'Âge Nucléaire*) and Spain's entry into international organizations related to the atom, for instance the Nuclear Energy Agency of the Organisation for Economic Co-operation and Development (OECD)<sup>10</sup>.

In 1956, the JEN and the CEA signed an agreement to intensify bilateral nuclear cooperation. This agreement normalized the exchange of information, materials and experts in the wake of the Spanish-U.S. nuclear agreement signed the year before. Spanish physicists, medical doctors, geologists, engineers, technicians and directors of electrical companies regularly crossed over the Pyrenees to visit French nuclear facilities. Most of these facilities were managed by the CEA and the public corporation Electricité de France (EDF): mines, laboratories, industrial uranium treatment plants and nuclear power plants. Spanish experts also attended training and specialization courses organized by universities, engineering schools and the National Research Council (*Centre National de la Recherche Scientifique*, CNRS)<sup>11</sup>. From 1956 to 1965, the *Association pour l'Organisation des Stages de Techniciens Étrangers dans l'Industrie Française* (ASTEF) registered a total of 152 stays in France of Spanish nuclear experts (17% of the total). The majority of them came from the JEN and industrial engineering schools in Barcelona, Madrid and Bilbao<sup>12</sup>.

Meanwhile, leading French personalities presented in Spain, in congresses and exhibitions, the latest global nuclear advances and the advantages of French techniques and industry. For example, the exhibit "*El Átomo y sus Implicaciones Pacíficas* [The Atom and its

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<sup>9</sup> Bertrand Goldschmidt, *Las rivalidades atómicas*, Madrid, Junta de Energía Nuclear, 1969; R. Caro, *op. cit.*; and note from the MAE-F, Direction des Affaires Politiques, Service des Affaires Atomiques, 27 Oct. 1964, *Documents Diplomatiques Français*, 157, 2002.

<sup>10</sup> See letters in the Archives Historiques du Commissariat à l'Énergie Atomique-France (CEA), FAR 2008-22-73, dossiers 1-6.

<sup>11</sup> "L'Enseignement du nucléaire en France", *Revue Générale Nucléaire*, n° 5, 1984.

<sup>12</sup> Stays of a minimum of three months, co-financed (in variable proportion) by the CEA, the JEN and the Ministries of Economy and Foreign Affairs of both countries. ASTEF, *Annuaire des anciens stagiaires*, Paris, 1956-1965, and "Españoles en el CEA", Archivo General de la Administración-Spain (AGA)-Industria, box 71/4054.

Peaceful Implications]” (Madrid, May 1958), the “*Jornadas Nucleares Hispano-francesas* [Spanish-French Nuclear Conferences]” (Madrid, October 1963) and the “*Primera Exposición de la Técnica Francesa* [First Exhibition of French Technique]” (Madrid, October 1964). In parallel, various geo-chemical and geo-physical experts of the CEA were transferred to Spain to collaborate in the exploration and exploitation of uranium deposits in the provinces of Cordoba and Salamanca<sup>13</sup>. Besides, schools of industrial engineers frequently integrated French professors into their staff while dispatching their students to French academic institutes<sup>14</sup>. The latter were *stagiaires* who developed a successful professional career in France in centres of reference such as the *Institut de Physique Nucléaire d’Orsay* and the CNRS. However, the majority of beneficiaries returned to Spain as planned, ending up in universities, research institutes, engineering colleges and civilian and military laboratories, and also participating in the building of reactors and other nuclear infrastructure of the Spanish atomic programme. French training was largely connected with U.S. training, acquired by French scientists and engineers educated on the other side of the Atlantic or through the commercial and scientific-technical treaties between France and the United States<sup>15</sup>.

French-Spanish nuclear collaboration reached its zenith in the agreement to build the Vandellós 1 nuclear power plant in Tarragona (east coast of Spain), using French technology and financing<sup>16</sup>. It was the third commercial reactor installed in Spain, after Zorita in Guadalajara and Santa María de Garoña in Burgos, both of which were sponsored by the United States. With a capacity of 480 MW, the Vandellós 1 power plant would supply industrial and domestic energy primarily to the Tarragona-Barcelona area and secondarily to the southeast regions of France. In 1966, after determining the practical modalities of the operation (location, financing, legislation, coordination), the Spanish government announced a public tender offer

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<sup>13</sup> Armando Durán, “Las relaciones internacionales y la colaboración internacional”, JEN-Primer coloquio de información geológica y minera de los minerales radiactivos, 1959, AGA-Industria, box 71/8816. More details in Esther M. Sánchez and Santiago López, *Historia del uranio en España. De la minería a la fabricación del combustible nuclear*, Madrid, Sociedad Nuclear Española, 2020, p. 89-91.

<sup>14</sup> Francesc X Barca, *Els inicis de l’enginyeria nuclear a Barcelona. La càtedra Ferran Tallada (1955-1962)*, PhD Dissertation, Universitat Politècnica de Catalunya, 2002; Alfons Carpio Rovira, *Ciència i política exterior francesa a l’Espanya de Franco: el cas des físics catalans*, Barcelona, Institut d’Estudis Catalans, 2010.

<sup>15</sup> The United States did not support the development of the French (nuclear) *force de frappe* but received French personnel in its laboratories and companies and agreed that technical and logistical information be sent to the CEA and EDF to guarantee that France remained in NATO. Villain, Jacques, *La force nucléaire française. L’aide des États-Unis*, Paris, Institut de Stratégie Comparée, 2014.

<sup>16</sup> Negotiation process and most outstanding milestones in HIFRENSA, *Vandellós I. Historia de la primera central nuclear catalana*, Barcelona, HIFRENSA, 1997 ; Esther M. Sánchez, “La connexió hispano-francesa: intercanvis d’energia elèctrica i cooperació nuclear, c. 1950-1990”, *Recerques*, n° 61, 2010, p. 101-136; and J. De la Torre and M. Rubio-Varas, 2017, *op. cit.*



for a *turnkey project*<sup>17</sup>. The winner (and only competitor) was the group *Société pour l'Industrie Atomique* (SOCIA), made up of 25 French construction, engineering and capital goods firms<sup>18</sup>. SOCIA provided the main equipment, and then hired 50 more Spanish companies for the civil work, the supply of classical electro-mechanical equipment and the manufacturing of the reactor core. In addition, several dozen local SMEs, simultaneously hired by the Spanish companies, carried out different jobs for the power plant. Some of these SMEs were born in the heat of nuclear business, and others adapted to it, diversifying and modernizing their production. In total, the participation of Spanish industry accounted for 42% of the project<sup>19</sup>.

Given the emergent situation of the French technology, less tested than the American one, the French and Spanish promoters conceived Vandellós 1 as a valuable training exercise, which allowed them to access new products and processes on site, and so correct errors on an on-going basis and test improvements applicable to this and future projects: “the building site is the best school [...] we are all going to learn, train ourselves and, later, train others”<sup>20</sup>. During the 5 years that, as planned, it took to build Vandellós 1<sup>21</sup>, SOCIA, EDF and the CEA organized courses for the power plant's Spanish workers and performed quality checks for the Spanish manufactured parts, often in collaboration with the French nuclear power plant Saint-Laurent-des-Eaux 1, upon which Vandellós 1 was based. The participating Spanish companies gradually internalized the skills needed to build and manage a nuclear power plant: they learned how to use new materials, transport large pieces of equipment and dangerous substances, conduct strict inspections, and comply with international standards of radiological protection and security. In this way, domestic human capital would lead to the construction of future Spanish power plants in which turnkey projects would give way to joint ventures with suppliers (foreign) and beneficiaries (domestic) sharing the design and construction of the plant. These projects would

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<sup>17</sup> In turnkey projects, which were common in the construction of large infrastructures in contemporary (developed or developing) countries, the main contractor assumes all responsibility for the design and construction of the plant, committing to completing the project by a set date and for a fixed price.

<sup>18</sup> Indatom, SEEN, GAAA, Alsthom, Campenon-Bernard, Alcatel, Ateliers et Forges de la Loire, Compagnie Electro-Mécanique, Babcock & Wilcox, Stein & Roubaix, Compagnie Générale d'Electricité, Compagnie Générale de Télégraphie Sans Fil, Neyrpic, Péchiney, Saint Gobain Techniques Nouvelles, Forges et Ateliers du Creusot, Jeumont-Schneider, Ugine Kuhlmann, Société Industrielle Delattre-Levivier, Compagnie de Constructions Mécaniques Procédés Sulzer, Chantiers de l'Atlantique, Société Hispano-Alsacienne, Société Parisienne pour l'Industrie Électrique and Merlin Gerin Contracts in AGA-Industria, boxes 8588 and 8589.

<sup>19</sup> The ownership of the plant was assigned to Hispano-Francesa de Energía Nuclear S.A. (HIFRENSA), made up of EDF and the Spanish companies FECSA, HECSA and ENHER. See Minutes of the Board of Directors of HIFRENSA, 19 Nov. 1970, Archives d'Electricité de France (AEDF), box 891165. For top Spanish companies taking part in Vandellós 1, see E. Sánchez, 2010, *op. cit.*, p.128.

<sup>20</sup> "Note concernant la conduite de l'affaire Vandellós", 10 Ap. 1967, AEDF, box 890521. Same dynamics observed in Zorita nuclear power plant. J. De la Torre and M. Rubio-Varias, *American Nuclear Training*, 2018, *op cit.*

<sup>21</sup> The evolution of the works, illustrated in numerous photographs, can be followed in the 13 newsletters that HIFRENSA published between 1968 and 1972 and in the Acts of HIFRENSA, AEDF, box 891165.

entail a national participation greater than 80%. Furthermore, the knowledge and capabilities acquired allowed the Spanish companies to cross borders and reproduce the know-how in developing countries. This was the case with the engineering and construction firms Tecnatom, SENER and Abengoa<sup>22</sup>.

Vandellós 1 functioned from 1972 to 1989, the year it stopped operating because of an accident<sup>23</sup>. In 1990, the Spanish Ministry of Industry and Energy revoked the operating licence. The following year, given that the repair required was considered uneconomical<sup>24</sup>, the long and complex process of dismantling the plant commenced. The plant's 300 permanent workers participated in the tasks. Subsequently, they had the option to be relocated to other nuclear facilities or take advantage of leaves and favourable early retirement plans. Some of the construction companies and engineering firms who had erected the power plant were also involved in its dismantling and waste management. Among these were the French members of SOCIA and the Spanish Entrecanales and Távora and INITEC (previously AUXIESA), together with new firms such as Empresarios Agrupados, Nusim and Geocisa. The dismantling of the plant presented an excellent business and learning opportunity both for France, which had only undertaken the closing of the Marcoule and Chinon natural uranium power plants, and for Spain, faced with its first great technological challenge of dismantling a nuclear power plant. Nuclear engineers from both countries identified improvements in the process that went on to form part of their dismantling plans in matters of security, recycling of materials and reuse of facilities<sup>25</sup>.

France never led another nuclear megaproject in Spain, due to the combined effect of the nuclear moratorium decreed in Spain in the 1980s and the competition with the United States and Germany. Nonetheless, bilateral collaboration continued to be present during the entire fuel cycle, as is shown by the successive agreements for natural uranium exploration and extraction

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<sup>22</sup> Tecnatom, SENER and Abengoa, established, respectively, in 1957, 1956 and 1941, now provide services in several European, American and Asian countries. Further information is provided on their corporate websites: <[www.tecnatom.es](http://www.tecnatom.es)>, <[www.ingenieriaconstruccion.sener](http://www.ingenieriaconstruccion.sener)> and <[www.abengoa.es](http://www.abengoa.es)> [last visited Feb. 2019]. For information on the internationalization process of Spanish engineering firms, we refer to Adoración Álvaro, Nuria Puig and Eugenio Torres, "Managing Foreign Knowhow and Local Human Capital: Urquijo Group and the Rise of Spanish Engineering Firms", *Business History*, forthcoming, Doi: 10.1080/00076791.2017.1413093; Adoración Álvaro, "The Globalization of Knowledge-Based Services: Engineering Consulting in Spain, 1953-1975", *Business History Review*, vol. 88, 2014, p. 681-707; and Mauro F. Guillén (2001), *The Rise of Spanish Multinationals: European Business in the Global Economy*, Cambridge, Cambridge University Press.

<sup>23</sup> The accident reached level 3/7 (*major incident*) on the INES scale (International Nuclear Event Scale) of the International Atomic Energy Agency.

<sup>24</sup> The accidents of Three Mile Island (1979) and Chernobyl (1986) had increased demands (costs) in regard to safety, especially for natural uranium reactors.

<sup>25</sup> ENRESA, *Central Nuclear de Vandellós I. Memoria del desmantelamiento, 1998-2003*, Madrid, ENRESA, 2003; CSN, *Desmantelamiento y clausura de centrales nucleares*, Madrid, CSN, 2008.

in Niger, the manufacturing of enriched uranium in the framework of the European consortium Eurodif, and the agreements between French and Spanish corporations (AREVA-ENRESA, EDF-ENUSA, EDF-ENSA, etc.) to build nuclear infrastructures in third countries. The renewal of the 1956 agreement in 1982 was not in vain; it resulted in the ratification of traditional spheres of cooperation and the inclusion of new business opportunities, such as fusion reactors, the handling of radioactive waste and the landscape reclamation of old nuclear facilities. More than 25 years later, the training of qualified personnel continued to be a priority, in addition to having become a much more balanced and bi-directional process<sup>26</sup>.

### *The manufacturing of military equipment*

Since the 1953 Pacts, the United States became Spain's military first reference, but these Pacts also encouraged the participation of French public and private institutions in the process of modernizing the Spanish armed forces<sup>27</sup>. To this end, French authorities collected information regarding the condition of the U.S. materiel supplied to Spain. They concluded that it was mostly second-hand equipment lacking ammunition and replacements, and, most importantly, with no Spanish industrial offsets. Indeed, unlike what took place in other allied countries, such as France itself, the offsets provided to the Spanish defence industry in the military agreements with the United States had been minimal. This was due to the low negotiating capacity of Franco's regime, the absence of businesses in the transactions and the Spanish desire to obtain supplies immediately. Thus, local firms that had managed to survive the American cyclone were, in the best of cases, relegated to a secondary or subsidiary position, that is, to the manufacturing of low-tech parts and maintenance or repair of imported devices<sup>28</sup>. Considering that industrial offsets could become its best bargaining chip, France opted for offering the Spaniards co-manufacturing agreements that would improve the capacity of Spanish labour and contribute to the expansion and modernization of Spain's armament industry, largely integrated in a public holding, the National Industrial Institute (*Instituto Nacional de Industria, INI*). The Spanish partners received this proposal with enthusiasm: In addition to promoting long-desired national industrial growth, it allowed Spain to reduce their dependence upon the United States and move closer to Western Europe. According to different

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<sup>26</sup> "Les relations industrielles franco-espagnoles", note from the Ministère du Redéploiement Industriel et du Commerce Extérieur, 9 Oct. 1984, AMAE-F, Europe, Espagne, 1982-1986, vol. 5148.

<sup>27</sup> Esther M. Sánchez, "French Military Action in Spain from Dictatorship to Democracy: Arms, Technology and Convergence", *Journal of Contemporary History*, vol. 50, n° 2, 2015, p. 376-399.

<sup>28</sup> "Réflexions sur l'Espagne", 17 Nov. 1953, Service Historique de la Défense-France (SHD), box 10T 308.

testimonies, some Spanish officials were also seduced by the possibility of gathering information regarding the French atomic weapon programme<sup>29</sup>.

Military cooperation between Spain and France was reignited at the end of the 1950s, spurred by the alliance in Morocco and the return to power in France of Général Charles De Gaulle. The reciprocal visits of high-ranking military officers, joint exercises, training visits to schools and bases, and the exchange of technical information and logistical facilities proliferated<sup>30</sup>. Spanish military personnel became familiar with French equipment, which, as in the case of *Daphné* submarines, *AMX* combat cars, and *Mirage* airplanes, would later form part of the Spanish land, sea and air units. Except for a few occasions, as in the Ifni and Algerian Wars, France conferred upon the military collaboration with Spain a commercial non-strategic dimension.

The contacts and negotiations established throughout the 1960s culminated in the general agreement of June 22, 1970, applicable to all arms purchase-sale operations between Spain and France. Particular conditions of technical assistance and instructional plans were regulated in specific protocols that were signed for each transaction. In all of the texts, the French government committed to interceding to outsource all of the work possible to Spanish industry, including the high-tech phases. For its part, the Spanish government promised to facilitate customs proceedings for the entry of goods and ensure that local firms reached minimal conditions of quality, price and delivery times.

The first military equipment co-manufacturing agreement dates back to 1965, the year the contract for construction in Spain, with a French licence, of four conventional *Daphné* submarines (Delfín S-61, Tonina S-62, Marsopa S-63 and Narval S-64, in Spanish terminology) was approved. The manufacturing of the *Daphné* class submarines was carried out in the shipyards run by the *Empresa Nacional Bazán de Construcciones Navales Militares* in Cartagena (Murcia) with technical assistance from the French naval shipbuilder *Direction des Constructions Navales* (DCN), belonging to the Ministry of Defence. To guarantee the operation's success, the Cartagena shipyards expanded and modernized their facilities, including the communication infrastructure and the navigations systems. In parallel, the engineers, technicians, master builders and operators in charge of the assembling, handling and maintenance of the submarines received various training courses in France. Between 1977 and

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<sup>29</sup> "Recherche de la bombe atomique perdue", 3 Mar. 1966, SHD, box 12 S 110.

<sup>30</sup> These activities were registered in the annual reports of military attachés, available in the Archivo Histórico del Ejército del Aire-Spain (AHEA), boxes 10940 to 10952 and 10961. They can also be accessed in SHD, boxes 10T302, 14S54 and 14S55, and the journal *Ejército*.

1984, a new bilateral project undertook the construction of four *Agosta* (Galerna S-70, Siroco S-71, Mistral S-73 and Tramontana S-74) submarines, in conditions similar to those of the construction of *Daphné* submarines<sup>31</sup>. During the last decade of the 20<sup>th</sup> century, Bazán and the DCN concluded a series of agreements for the joint construction of submarines in Chile, Malaysia and India. By the 21<sup>st</sup> century, Bazán's successor, Navantia, embarked alone on the manufacturing and marketing of S-80 submarines using its own technologically advanced design. The technological level achieved by the Spanish corporation was due in great part to the technical assistance and training received from France which, as far as the manufacturing of submarines is concerned, only refused to facilitate nuclear propulsion<sup>32</sup>.

The Spanish Ground Forces, considered “the most backward because of its organization, equipment and thinking”<sup>33</sup>, experienced a similar process, when, in 1970, the French Ministry of Defence gave it 19 *AMX 30* combat tanks (with ammunition and replacements) and agreed to manufacture 180 more tanks in the Seville workshops of the *Empresa Nacional Santa Bárbara de Industrias Militares S.A.*<sup>34</sup>. In the framework of this operation, various agreements for granting licences and for technical assistance were signed, experts were trained in the equipment proper operation and maintenance, and the joint selling of tanks to third countries, particularly Venezuela and Egypt, was arranged. The road was not obstacle free. Bazán was slow in resolving problems related to cost and quality that affected components such as the transmission and clutch. As a result, the importation of French parts took longer than expected. Furthermore, the German *Leopard* tank, manufactured by the Krauss Maffei Corporation, was found to be a dangerous competitor. Germany presented financing and industrial offers that made the Spanish government reconsider the possibility of terminating the *AMX* contract, which, in the end, did not take place<sup>35</sup>. *Santa Bárbara Sistemas* (Santa Barbara Systems), integrated into the U.S. multinational General Dynamics from 2001, currently occupies a leading position in the design and manufacture of these armoured vehicles.

The co-manufacturing of aeronautic materials also took off in 1970. Between 1970 and 1972, 30 *Mirage III E* airplanes arrived at the Manises (Valencia) airbase, and between 1975 and 1982, 73 *Mirage F1* and an *F1* flight simulator were parked in Los Llanos (Albacete).

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<sup>31</sup> Camil Busquets *et al.*, *Los submarinos españoles*, Madrid, Agualarga, 2002.

<sup>32</sup> Note to the French Minister of Foreign Affairs, 20 Oct. 1975, AMAE-F, Europe, Espagne, 1971-1976, vol. 421.

<sup>33</sup> "Refléxions sur l'Espagne", 17 Nov. 1953, SHD, box 10T 308.

<sup>34</sup> "Protocolo de cooperación técnica e industrial en materia de co-fabricación de carros de combate", 4 Jun. 1970, AMAE-F, Europe, Espagne, 1961-1970, vol. 356. Technical features of the *AMX-30* tanks in Ministerio del Ejército, *Manual del carro de combate AMX-30*, Madrid, Ministerio del Ejército, 1977.

<sup>35</sup> "Les relations industrielles franco-espagnoles", note from the Ministère du Redéploiement Industriel et du Commerce Extérieur, 9 Oct. 1984, AMAE-F, Europe, Espagne, 1982-1986, vol. 5148.

Additionally, the French construction company *Avions Marcel Dassault-Bréguet Aviation* (AMDBA) granted the Spanish *Construcciones Aeronáuticas S.A. (CASA)* the licences to manufacture 58 units in its Seville and Getafe facilities. In March 1970, a select group of pilots from the Manises 101 Escuadrón received initial training at the French Dijon-Longvic airbase, where they learnt the operation of the Mirage IIIE and its systems<sup>36</sup>. Throughout the following years, dozens of Spanish pilots followed initial and supplementary training courses in various regions of France. Most notable were the trainings in air control, simulation, interception and in-flight refuelling received at the Dijon, Luxeuil and Nancy bases, as well as specialization courses organized by the construction corporation AMDBA (radio-electronic, switchboards, mechanics, photography, hydraulics, electricity, armament, servo-drives and equipment) and by its traditional providers: SNECMA (motors and technical instruction), Thomsom-CSF (radar, maintenance and instruction) and Matra (missiles)<sup>37</sup>. Several dozen professional mechanics were also trained in France<sup>38</sup>. In this way, Spain could count on a detachment of experts capable of carrying out the periodic revision of devices (entire or parts) and the repair of ordinary malfunctions without mediation by French personnel. The arrival of the Mirage to Spain entailed a complete reorganization of the Manises and Los Llanos bases. Among other work, it was necessary to improve the control and fuelling systems; create a maintenance unit; condition workshops, warehouses, runways and hangars; and expand the housing stock. CASA was the main recipient of industrial compensations linked to the Mirage. AMDBA bought various models of planes from CASA and ceded to it the manufacturing of fuselages, radars and other parts intended for use in French manufactured airplanes and helicopters. Furthermore, AMDBA helped CASA promote and sell its devices in Latin America, the Middle East and the French-speaking territories of Africa, and also facilitated its access to European projects such as the consortium Airbus Industrie (currently Airbus group)<sup>39</sup>.

In short, in the military sphere, beginning in the 1970s, France and Spain signed a series of bilateral agreements that envisaged broad participation of the local industry and labour

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<sup>36</sup> Salvador Mafé, *El Mirage III en España*, Madrid, Instituto de Historia y Cultura Aeronáutica, 1991, p. 26.

<sup>37</sup> See a listing (not systematic) of courses and trainees in AHEA, boxes N2534-2, A10951 and A11141. Evidence forged from personal records in Ignacio Bengoechea, "El Mirage III y el espíritu de la caza", *Revista de Aeronáutica y Astronáutica*, n° 873, 2018, p. 342-349.

<sup>38</sup> "Relations militaires franco-espagnoles", report from État-Major des Armées, 11 Jun. 1979, SHD, box 12 S 436.

<sup>39</sup> "Application de l'accord de coopération militaire", report from the Ambassador Guillet, 1975, AMAE-F, Europe, Espagne, 1971-1976, vol. 408. More details in José M. Román, *CASA: los primeros 75 años, 1923-1998*, Madrid, CASA, 1998; Carmen Erro, *El empresario fotógrafo. José Ortiz Echagüe*, Madrid, EADS CASA, 2012; and José Sanmillán, "Del Breguet XIX al Eurofighter. CASA cumple 75 años", *Revista de Aeronáutica y Astronáutica*, n° 672, 1998, p.316-326.

reaching at least 25% and often more than 80%<sup>40</sup>. At first, the Spanish defence industry lacked the capabilities needed to assimilate French equipment. For this reason, considerable effort in prior training was indispensable. With time, Spanish human capital gained access to high-tech activities and participated in the design of its own products, such as S-80 submarines, CASA transport aircrafts and diverse components for armoured vehicles. The co-manufacturing agreements also benefitted the domestic auxiliary industry that was allocated hundreds of contracts derived from the construction and maintenance of main equipment<sup>41</sup>. In this manner, France contributed to mitigate the technological and educational gap of the Spanish armed forces. Using the co-manufacturing agreements, France managed to have military relations with Spain that were more balanced than were Spanish-U.S. relations. So, France advanced positions in a field (the military) that at first appeared to be the reserve of the great American power. Currently, the Spanish armament industry holds a prominent position in the national and international industrial fabric, having a high investment in innovation and numerous externalities derived for the auxiliary industry and the civil sector (civil aviation, engineering and construction, electronics, informatics, telecommunications, chemistry, etc.).

### ***The automobile and the FASA-Renault company***

Founded in 1898, French automobile company Renault installed in Spain its first sales subsidiary in 1908 and its first manufacturing subsidiary in 1951. In the latter year, just 637 automobiles were built in Spain, compared to 360,000 in France and 8 million in the United States<sup>42</sup>. *Fabricación de Automóviles S.A.* (FASA) was the firm in charge of managing Renault's industrial processes in Spain, using French technology and Spanish capital. FASA's headquarters were established in Madrid, but its first assembly plant was built in Valladolid, a nucleus in the Castilla-León region, that had abundant and relatively qualified labour in the metallurgy sector<sup>43</sup>, in addition to rail links with the rest of Spain and with France, available

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<sup>40</sup> Esther M. Sánchez, "Francia, las Fuerzas Armadas españolas y el suministro de aviones Mirage", *Ayer*, vol. 116, 2019, p. 77-104; and E. Sánchez, 2015, *op. cit.*

<sup>41</sup> See José M. García Alonso, *La base industrial de la Defensa en España*, Madrid, Ministerio de Defensa, 2010; Viçent Fisas, *Las armas de la democracia: Exportaciones españolas de armamento*, Barcelona, Crítica, 1991; and the corporate websites of Navantia, Santa Bárbara Sistemas and EADS CASA: <[www.navantia.es](http://www.navantia.es), [www.gdels.com](http://www.gdels.com) and [www.airbus.com](http://www.airbus.com)> [last visited February 2019].

<sup>42</sup> Esther M. Sánchez and Cebrián, Mar, "Venta, ensamblaje e innovación: el largo siglo de Renault en España", in C. Barciela and G. L. Fontana (dir.), and R. Vallejo and M. Vilar (eds.), *La industria del automóvil de España e Italia en perspectiva histórica*, Alicante, Universidad de Alicante, 2018, p. 230.

<sup>43</sup> Since the beginning of the century, workshops dedicated to manufacturing and repairing metallic products, electrical elements and transport materials had concentrated in Valladolid. Before the civil war, the company Carburador IRZ was known for assembling carburettors for the Hispano-Suiza company. During the conflict,

electrical energy, and various local personalities and institutions who were interested in the initiative<sup>44</sup>. The first vehicle assembled in Valladolid was the 4 CV, a utilitarian vehicle in the lower-to-medium price range that was very popular in France and already known in Spain as a result of imports in the previous decade. FASA's official 1951 authorization of operating in Spain established that the value of materials and elements manufactured nationally should reach a minimum of 25% of the vehicle cost price, a percentage that would progressively increase to 100% by 1957. The directors of Renault in France were sceptical. They did not believe that the parts and assemblies manufactured in Spain could reach, even in the medium term, sufficient conditions of quality and price. The only exception was the supplies by the Spanish subsidiaries of French multinationals: Michelin (tires, air chambers, and covers) and Saint Gobain (mirror base gaskets and mirrors)<sup>45</sup>.

The evolution of national manufacturing was positive but, in fact, slow and limited. Some Spanish businesses participated in the construction of the assembly line designed and supervised by Renault. Among these were Talleres Vulcano and Hermenegildo Mozo of Valladolid, which supplied part of the electrical, iron and steel materials. Other national firms located outside of the region joined afterwards, participating in the manufacturing process of parts and components for the 4 CV<sup>46</sup>. The majority were from Catalonia (35.6%), the Basque Country (25.7%) and Madrid (20.7%), with those from Castilla-León representing a mere 8% of the total<sup>47</sup>. During the first years of FASA, quality problems were at the top of the agenda. The chief supply chain officer, Moisés Miguel Gandarillas, reveals that many local businesses were limited to "directly and manually copying foreign parts"<sup>48</sup>, thus creating non-standardized products that met few of the technical harmonization requirements demanded by Renault.

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Carburadores IRZ and Talleres Gabilondo were dedicated to the production of motors and other components for vehicles and aeroplanes of Franco's army. Subsequently, the society Talleres de RENFE was formed, specializing in the repair of railway materials. Pablo Alonso, Montserrat Álvarez and Pedro P Ortúñez, "Formación y desarrollo de un distrito metalúrgico en Valladolid (c. 1842-1951)", *Investigaciones de Historia Económica*, vol. 15, 2019, p. 177-189.

<sup>44</sup> Tomàs Fernández de Sevilla, *El desarrollo de la industria del automóvil en España: el caso de FASA-Renault, 1951-1985*, PhD Dissertation, Universitat de Barcelona, 2013.

<sup>45</sup> "Nécessité de prendre les dispositions voulues pour faire passer la majorité des actions de la FASA entre les mains d'éléments qui nous soient favorables", unsigned, 8 Dec. 1952, Archives Historiques Renault-France (AHR), Secrétariat du PDG, box 75.

<sup>46</sup> Principally, Fabricación de Carrocerías SA-FACSA (automotive body components), Fabricaciones Mecánicas SA-FAMESA (motors and mechanical parts for steering and suspension), Industrias Subsidiarias de Aviación SA-ISA (transmissions), Fábrica Española de Magnetos SA-FEMSA (electrical devices), Nueva Montaña Quijano SA-NMQ (motors and mechanical components), COINTRA (sheet metal), Rahemo SL (radiators), Elesio Gatón SA (metallic batteries and tongue splash guard), Industrias derivadas del Aluminio-INDAL (aluminium plates), Talleres Miguel de Prado (fittings) and Defensa Anti Gas S.A.-DAGSA (rubber sheets and stumps).

<sup>47</sup> Data for 1962, *La Vanguardia*, 9 Dec. 1962.

<sup>48</sup> Moisés M. Gandarillas, *La fabricación de automóviles Renault en España. El 4CV*, Valladolid, M.M. Gandarillas, 2003, p. 52.



Furthermore, they tended to miss deadlines and exceed anticipated costs due to the technological gap, difficulties with sourcing raw materials and financial and organizational problems. The major pitfalls were concentrated in the motor-propulsion assembly, especially in the transmission and the motor<sup>49</sup>. Spanish authorities did not give way in their effort to demand high percentages of local manufacturing. However, the reality was that during the 1950s and 1960s, these percentages barely reached 15-20% of the total. This circumstance did not go unnoticed by the habitants of Valladolid, who commented that the city's only contribution to the FASA automobiles was “the air in the tires”<sup>50</sup>.

In 1964, Renault acquired 49.9% of FASA's social capital, that is, the maximum amount authorized by the standing Spanish law. That same year, Valladolid was prioritized in the first Spanish Development Plan, a regional policy closely based upon French indicative planning. Renault's increased participation in FASA translated into important commercial and industrial investments<sup>51</sup>. The complete automation of assembly lines acquired special relevance due to the introduction of *machines transfer*, capable of reaching 1,500 units daily and exceeding the threshold of mass production<sup>52</sup>. FASA's main suppliers FACSA and FAMESA also took advantage of the incentives of regional policy to install infrastructure and automate processes in order to meet the growing demand. Renault achieved average percentages of 25-30% of the total Spanish automobile production, generating an important spillover effect on the closest geographic areas and productive sectors and becoming a valuable exporting platform for French multinationals<sup>53</sup>.

How did they resolve the quality problems presented by locally manufactured parts and assemblies? Like other multinationals, Renault provided technical assistance through its technology licencing contracts between parent company and subsidiary. This assistance entailed regularly sending French experts to Spain. At the same time, the corporation organized courses and in-house additional and specialization training in its headquarters and French

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<sup>49</sup> "Nécessité de prendre les dispositions voulues...", AHR, Secrétariat du PDG, box 75.

<sup>50</sup> "Medio siglo de Fasa-Renault", *El País*, 31 Aug. 2003.

<sup>51</sup> As an illustration, from 1953 to 1973, production increased from 707 to 181,674 units, the turnover from 35 to 2,073 million pesetas, and manpower from less than 300 to 26,101 persons. FASA-Renault (various years).

<sup>52</sup> Threshold set at 10,000 units annually. Jordi Catalan, "La creación de la ventaja comparativa en la industria automovilística española, 1898-1996", *Revista de Historia Industrial*, n° 18, 2000, p. 123.

<sup>53</sup> Mar Cebrián, "¿Industrializar Castilla? El caso del Polo de Desarrollo de Valladolid 1964-1975", in J. De la Torre and M. García-Zúñiga (eds.), *Estado y mercado: los Planes de Desarrollo durante el franquismo*, Pamplona Universidad Pública de Navarra, 2009, p. 178 and 287; Josefa Fernández and Rosario Pedrosa, "El impacto de FASA-Renault en la economía de Castilla-León", in A. Vázquez, P. Garofolli and J. P. Gilly (eds.), *Gran empresa y desarrollo económico*, Madrid, Síntesis, 1997, p. 215-235.

branches<sup>54</sup>. In general, the assembly line workers were instructed in Valladolid according to the methods of rationalization and scientific organization of work used by all automobile manufacturers<sup>55</sup>, whereas the engineers, technicians and directors received several months of training in France. In these trainings, they learned industrial organization routines, financial policy, human resource management, accounting, informatics, marketing and promotion, corporate culture and company global strategies<sup>56</sup>. These were key components of the business school programmes devised in the U.S. that, in previous years, had been introduced in France and Spain<sup>57</sup>.

The reports preserved in the Renault Historical Archives show that the Spanish *stagiaires* were well considered by their hosts due to their willingness to work, camaraderie, discipline and ability to adapt. Negative, or less favourable, aspects were an insufficient grasp of the French language, an excessively theoretical training and their lack of familiarity with more modern techniques<sup>58</sup>. In a few years, FASA and its auxiliary industries' human capital managed to internalize the knowledge and capabilities of French multinationals. As a result, the models that followed the 4 CV could incorporate high percentages of autochthonous manufacturing: 91.8% for the Gordini, 91.7% for the R-4S, 88.6% for the R-8, 87.4% for the R-10 and 100% for the Alpine<sup>59</sup>. FASA (since 1965 FASA-Renault) became the first assembly plant of Renault automobiles outside of France and was often presented as an example of both the successful internalization of the Régie Renault and the excellent relations between Spain and France.

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<sup>54</sup> From 1919, Renault had a professional training school in its central branch of Billancourt, near Paris. Almost every type of corporate personnel passed through its doors, from manual labourers to engineers and cadres. Nonetheless, the language and nationality requirements made access difficult for foreigners. For this reason, FASA's human capital, as well as that of other foreign subsidiaries, was instructed in its own factories. Emmanuel Quenson, *L'école d'apprentissage Renault, 1919-1989*, Paris, CNRS, 2001.

<sup>55</sup> Alain Touraine, *L'évolution du travail ouvrier aux usines Renault*, Paris, CNRS, 1955; Mauro F. Guillén, *Models of Management: Work, Authority, and Organization in a Comparative Perspective*, Chicago, University of Chicago Press, 1994, chapter 4.

<sup>56</sup> The Alliance Française organization promoted language assistance. « RNUR: Les usines de montage automobiles comme facteur d'expansion industrielle des pays en voie de développement: l'exemple de Renault », 1967, Archives Nationales de France-Centre des Archives Contemporaines, Industrie, box 19900583/6.

<sup>57</sup> Hubert Bonin, "American Business Spreading Modernity into France", in H. Bonin and F. de Goey (eds.), *American Firms in Europe (1880-1980): Strategy, Identity, Perfection and Performance*, Geneva, Droz, 2009, p. 503-648; Nuria Puig, "Educating Spanish Managers: The United States, Modernising Networks, and Business Schools in Spain, 1950-1975", in R.P. Amdam, R. Kvålshaugen and E. Larsen (eds.), *Inside the Business Schools: The Content of European Business Education*, Oslo, Copenhagen Business School Press, 2003, p. 58-86.

<sup>58</sup> Renault Directorate's meeting, 25 Ap. 1961, AHR, fonds Vernier-Palliez, box 34.

<sup>59</sup> FASA-Renault (several years). Except for some luxury and sporty versions, of all the models that followed the 4 CV, the R-16 was the only model not manufactured in Valladolid.

During the 1970s and 1980s, FASA-Renault was affected by the double oil crisis that sparked labour conflict<sup>60</sup>. The stalemate was resolved relatively quickly owing to the increase in domestic sales and, specifically, foreign sales led by the R-5 model<sup>61</sup>. The FASA-Renault *Memorias* assert that the training of Spanish sales representatives in sales techniques and promotion was crucial for confronting these years of crisis<sup>62</sup>. The Spanish subsidiary also benefitted from the plans for restructuring the French parent company which, to fix its financial structure and guarantee its international competitiveness, proceeded to generalize *Toyotism* and the “just in time” system, previous agreements of technical assistance and in-house training of its personnel in Japan. Thus, at the beginning of the 1980s, FASA-Renault had become the first Spanish producer of passenger cars and derivatives (and also the first Renault factory in a foreign country). FASA-Renault did not carry out massive layoffs in the years of the Spanish industrial conversion, even though it had to yield social capital to the parent company (71.1% in 1980), slow the pace of incorporating manpower, and transfer part of Valladolid’s manpower to Palencia. The option of modernization (robotization, computerization, energy saving) was taken up again in the 1990s. These changes involved new contributions of technical assistance, advice and training, which translated into a significant increase in the number of semi-skilled personnel and of the presence of Spaniards in management positions.

Currently, with four factories (two in Valladolid, one in Palencia and one in Seville), Renault-España is one of the largest, most dynamic and most competitive corporations of the Spanish corporative fabric. Owing to French assistance, two fundamental qualitative leaps influenced its trajectory: first, the assembly in Spain of parts and sets manufactured in France, to the detriment of the importation of complete vehicles; and second, the substitution of French imports with Spanish manufactured parts. In recent decades, the Spanish subsidiary has managed to synchronize its production times with those of Renault-France and remain on the cutting edge of industrial innovation in all phases of the production process (assembling, stamping, chassis, welding, plating, painting). From its R&D facilities, organized as small-scale replicas of those of the headquarters, it has participated in the design of new automobile models, exclusively manufacturing some of them such as the R-7 in 1974 and the Captur (Valladolid),

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<sup>60</sup> The strikes of the 1970s were highly politicized, mixing labour demands with anti-Franco resistance. FASA-Renault (several years). Elsie Charron, "FASA-Renault: un cas d'hybridation", *Actes du GERPISA*, n° 11, 1994, p. 116-143.

<sup>61</sup> Tomàs Fernández de Sevilla, "Renault in Spain: From assembly to manufacture, 1961-1972", *Business History*, vol. 52, n° 3, 2010, p. 484-486.

<sup>62</sup> From 1973 to 1983, the number of Renault points of sale in Spain grew from 661 to 1,600, commercial manpower from 26,101 to 38,989, and the number of annual training courses in sales and post-sales techniques from 40 to 200, approximately. FASA-Renault (several years).

the Twizy (Valladolid) and the high-end Megane (Palencia) in the 2000s. Its national external suppliers, the majority of whom are today located in Valladolid, have also been involved in this process of growth and modernization, though they have specialized in more low-tech phases and products (plastics, steel, textiles, paint, electrical equipment, etc.) and maintained a considerable dependency on Renault and other French and foreign multinationals<sup>63</sup>.

## Conclusions

Spanish modernization relied heavily on foreign investment and technology. Thanks to this foreign assistance, Spanish human capital gained access to professional training and specialization opportunities that would have been difficult to acquire domestically, at least in the short term and at a low cost. Foreign multinationals soon observed that to ensure the success of their investments in Spain, it was necessary to create an industrial, corporate and scientific-technical environment capable of absorbing the knowledge and experiences exported together with the capital. Moreover, if they wanted to remain in Spain, they had to accept Francoist industrial legislation, that is, ensure that local professionals and products replaced the foreign ones as soon as possible, which made the training of personnel necessary. Far from being passive recipients, the Spaniards proved to be proactive in regard to foreign teachings, aware of their usefulness for ensuring economic growth and gaining an international presence. They demanded these teachings, internalized them, and adapted them, first to the particularities of the internal market and later to those of external markets. In this way, the learning promoted by foreign assistance allowed for the accumulation of a human capital suitable for carrying out large industrial and scientific-technical projects in an increasingly autonomous and competitive way. More recent information was accessed, new products arrived, modern industrial processes were applied, corporate management was professionalized, and negotiation and work in international contexts became normal practices. The obtained experience drove the expansion of a national industry that was competitive in technology and quality and capable of carving out a niche for itself in international markets. That said, the advancements achieved were sectorial and therefore limited. Decades of delayed development, together with the instability and dispersion of domestic investment efforts, prevented Spain from reaching the average level of R&D&I of the OECD. This delay continues to mark Spanish industry.

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<sup>63</sup> See a list of the main companies in the automotive sector in Castilla-León at present in Josefa Fernández and Olga Ogando, *La economía de la provincia de Valladolid*, Almería, Fundación Cajamar, 2011, p. 535-537.

In this study, we have focused on France's role in three of the most relevant sectors of the Spanish economy in the second half of the 20<sup>th</sup> century: nuclear, military and automotive. The French case leads us to draw certain main conclusions. First, the French way of investing in Spanish human capital involved multiple approaches, the following being particularly noteworthy: the training of Spanish personnel in France; the dispatching of experts, materials and information to Spain; and technical assistance tied to technology transfer agreements. A large number and variety of actors participated and interacted in these activities: CEOs, engineers, technicians, scientists, ministers, diplomats, military personnel, and many more. We highlight the idea that the teaching-learning process reached all levels of the scientific-technical field and industrial production, from the most renowned researchers and scientists to recent graduates, and from technical and management senior leadership to the assembly line. With time, many of the Spanish firms that emerged in the nuclear, armament and automotive sectors owing to French (and foreign) assistance became fundamental actors, even at the global level. Besides, foreigners were progressively replaced by nationals in responsibility posts and medium-high-tech tasks. The sectors analysed in this paper reveal that the training programmes endorsed by France ran a multilateral course among the corporations, educational centres and administrations of both countries. Favoured for a wide network of ties (both formal and informal, individual and institutional), knowledge was spread beyond the subsidiaries and joint ventures, reaching other companies and educational and scientific institutions as well. In this way, a flexible and multifaceted scheme was created that had many indirect and multiplying effects and that benefitted both senders and receivers.

The French authorities often branded their economic activity in Spain as modest and disappointing. They considered that, due to the geographic proximity, the antiquity of their relationship, and the ambition of the development programmes in both countries, these activities should have had more satisfactory results. It is true that the externalities derived from the great projects of French industry in Spain were hardly perceptible in the short term. However, in the medium to long term, they played a fundamental role in the advancement of Spain's industrial and technological modernization. The long-term multi-sectoral approach provides a fruitful base to analyse the effects of multinational enterprises on host economies in terms of technological upgrading and managerial development. This paper has tried to shed light on a topic that, despite the spectacular growth of international business scholarship in recent decades, remain relatively unexplored and misunderstood.

## SHORT BIOS

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