

French "*Savoir-Faire*" in Selling Arms: A New Way of Doing Business

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For the past few years France has been the third largest arms exporter in the world in total value and first in the ratio of arms sales per inhabitant.[1] With international competition becoming sharper, it is tempting to point out this sector as an example of French competitiveness. These are high-technology products with which France seems to compete successfully against the superpowers, the U.S. and the U.S.S.R. How was such a success achieved?

Here is the answer: there is in France a military-industrial *system*, the function of which is to diminish, or if possible eliminate, any form of competition within the arms sector. The main form of leverage in this system is State intervention.

The system has its own ethos corresponding closely to a national industrial identity, diametrically opposed, for example, to the German or Japanese models. France has excellent engineers, graduates of her *Grandes Ecoles*[2] and a long tradition of technical invention. She also has excellent politicians, also graduates of the *Grandes Ecoles* who are capable of inducing and persuading--if they do not have to be involved too much in sales negotiation. All that was needed was to combine the two: make great products for the shrewd diplomats to boast about. Of course the customer must be receptive to this combination and be ready to buy the goods at a premium price.

TECHNOLOGICAL SPECIALIZATION ELIMINATES COMPETITION AT THE NATIONAL LEVEL

During the past 20 years in France the arms industry has become more and more heavily concentrated. Today the top four firms involved represent approximately 50 percent of the total turnover in the sector. Moreover, if we look at the different segments within the sector rather than the sector as a whole, the concentration is even greater:

- in aeronautics, three firms (Aerospatiale, Dassault-Breguet and SNECMA) employ 60 percent of the total manpower in the sector;
- in electronics, five firms employ 50 percent of the manpower;
- naval shipyards and ground weapons are both dominated by *Arsenaux de l'Etat* (state factories).
- gunpower and explosives are a monopoly of the *Societe Nationale des Poudres et Explosifs*.

Above all, if we analyze more closely the types of equipment produced and the main specialties brought to bear in the conception of this equipment within the advanced technology sector, we find technological monopolies like the examples given in Table 1. The areas in which we chose our examples--aeronautics, electronics and missiles--are those in which the technological specialization of the firms is particularly developed.

Table 1

Technological Specialization

<u>Segments</u>	<u>Technologies/ Types of Equipment</u>	<u>Firms</u>
Aeronautics	Fighter aircraft	Dassault-Breguet
	Helicopters	Aerospatiale
	Airplane engines	SNECMA
	Helicopter turbines	Turbomeca
Missiles	Ground-to-air missiles	Aerospatiale Thomson-CSF
	Anti-tank missiles	Aerospatiale
	Air-to-air missiles	Matra
	Sea-to-sea missiles	Aerospatiale Matra
	Nuclear tactical missiles	Aerospatiale
	Ballistic missiles	Aerospatiale
	Missile propulsion	SEP
	Electronics	Major radars
Underwater acoustics		
Sonars		Thomson-CSF
Transmission, guidance systems		
Aircraft electronics and radars		Dassault Electronics

The role of the State in this carving out of sectors and in the disappearance of competition between French firms for the same type of equipment has been crucial and deliberate. State financing of nearly all research and development in the arms sector, which oriented certain firms towards certain technologies, and the awarding of contracts for major programs to the dominant firms in each sector, directed this evolution.

Thus, for example, contracts go systematically to Aerospatiale for helicopters, ballistic missiles, and nuclear missiles; to Dassault-Breguet for fighter aircraft; and to Thomson-CSF for most detection and guidance equipment.

Today the situation in the arms sector has virtually stabilized. Activities are divided among several large firms each of which has the know-how and technological lead in its area to make it the only possible supplier of a given type of equipment.

Although there are still pockets of competition for the development and manufacture of certain equipment (for example, Aerospatiale competed with Matra for production of the Exocet and Otomat sea-to-sea missiles, and with Thomson-CSF for that of the Roland and Crotale ground-to-air missiles), such competition should disappear rapidly in the process we have described, to the

satisfaction of the *Délégation Générale pour l'Armement* (DGA)[3] as well as that of the industrialists involved.

The disappearance of competition is more obvious in the case of sophisticated equipment. Some competition remains for light or more standardized weaponry, but it is marginal compared with the general tendency of the sector to create "technological monopolies."

From this point of view the situation in the United States is quite different since the Department of Defense has several potential suppliers for each category of equipment and appears to play on the competition between them.[4]

STATE INTERVENTION ELIMINATES INDUSTRIAL AND FINANCIAL RISKS

Nearly all research and development expenditures for arms programs are made by the State. The State makes 100 percent of the R&D [research and development] expenditures for equipment which is not exportable (ballistic missiles, nuclear submarines, etc.) or not frequently exported (tanks, ships, etc.). For exportable equipment the State's share, while remaining very high, can be less than 100 percent in order to incite industrialists to invest with the prospect of a large export market in view. Thus, for fighter aircraft the State's share is over 90 percent whereas for tactical missiles, which are exported in large numbers, that share is only 50 percent. For helicopters, of which 80 percent of France's production is exported, the share is only about 30 percent.

At the same time as financing the development of such equipment, the State guarantees the domestic market for that equipment. In fact, the industrialist chosen as contractor develops his equipment in response to the needs expressed by the chiefs of staff and defined more specifically by the DGA. Once the equipment has been developed it is out of the question for the French Army not to buy it. Such a situation permits the industrialists to make very precise production programming and guarantees a minimum volume of production even before the equipment has been perfected and industrial development completed.

Moreover, it must be emphasized that the adoption of equipment by the French Army considerably increases its credibility *vis-a-vis* foreign chiefs of staff and thus its export potential. It has been said that the French Army would not have adopted certain equipment were it not for the opening of export markets. Thus, delays in developing the revolutionary RDI radar system (conceived by Thomson-CSF), which was to equip Dassault-Breguet's Mirage 2000, meant that the Air Force had to order some of the planes equipped with the RDM radar, a much less sophisticated system, in order not to compromise the export potential of this simplified Mirage 2000. The military would allegedly have preferred to wait for the perfected Mirage RDI.

The role of the State in arms production therefore is decisive. Through the chiefs of staff, and especially the DGA, it integrates all aspects of the production process, from basic research right to the markets, including applied research, prototypes, development, manufacturing, and even upgrading in the course of use.

Within the research-development-manufacture cycle, the role of the DGA is especially important at the interface between upstream research and downstream research. This link is very difficult to make successfully in other industrial sectors, where the State does not play an integrating role. Too frequently the laboratories are totally out of touch with or unknown to the industrialists, or the latter do not know what to do with technical innovations "not invented here."

In a word, the State assumes the main risks in the arms sector because it is responsible for the approach taken in research and development, the financial resources, and the markets for each program. This is true to such an extent that in the case where the French Government refuses to commit itself to a given program, the industrialist in question will not go ahead with development

without having found financial backing from another State. (Such cases are, however, the exception rather than the rule.) This happened with Thomson-CSF's "Crotale" ground-to-air system, which was developed only after the company had obtained financing and a guaranteed market in South Africa. (Originally the French Army had preferred "Roland," the competitor produced by Aerospatiale.) This also happened with Dassault-Breguet's "Mirage 4000," a twin-engine version of the Mirage 2000 which the French Air Force found too expensive. It will only be developed if another State is willing to undertake the project (word had it that Saudi Arabia was interested at one point).

Industrialists are more than willing to acknowledge the importance of the State's role in the restructuring of the arms sector--after all, this is French independence we are talking about. They feel that elimination of Franco-French competition is an extremely positive step which allows French firms to become larger, more competent and healthier, each in its own domain. Thus they are better prepared to face international competition on the export market.

POLITICAL AND TECHNOLOGICAL CRITERIA COUNT MORE FOR EXPORTS THAN ECONOMIC FACTORS

For industrialists, exports are far more profitable than sales at home. Investment is amortized on production earmarked for the French Army and the going export prices (kept secret) allow for even greater profits than can be earned on the domestic market.

Moreover, the orders placed by foreign customers involve very large advance payments, thus putting considerable funds at the industrialists' disposal for several years. These funds can be invested or be used for industrial or financial operations not necessarily related to the activities which generated them. (It has been hinted that Matra's takeover of the Hachette publishing group was financed by Saudi Arabia.) As for reimbursing R&D costs which are theoretically due the State in the case of exports, most often they are directly deducted from the budgets for new programs. They are, in fact, an additional source of funds.

Lastly, exports often give rise to very complex financing schemes which are very favorable to the customer. The cost is borne by the French Government. If the customer cannot honor his contract, the French Government takes on the costs of any delay and of the eventual cancellation of the debt.

Do the industrialists then have to launch additional promotion and sales campaigns in order to beat the competition, in return for all the advantages of exports? No, they do not even have to do that.

Indeed, how do the importing countries buy their military equipment? Purchases are made based not so much on price and performance as on diminishing political dependence, and the risks it implies *vis-a-vis* the supplying country. This trend has become clearer over the past few years.

Thus, there is room for other exporting countries alongside the U.S. and the U.S.S.R. rather than in competition with them. The diplomatic reversals (in the game the superpowers are playing with each other) push a growing number of buyer countries to diversify their suppliers in order to avoid being little more than pawns in the game.

There is still competition among the "second-tier" exporters: France, Great Britain, West Germany, and Italy, as well as certain emerging countries (Israel, Brazil, and Argentina). France sidesteps such competition by taking over "politico-technological segments" in which the other exporters cannot compete.

By means of her resolutely independent foreign policy (in relation to the two blocs) and the capacities of her engineers to design highly sophisticated equipment (often comparable or even superior to that offered by the U.S. and the U.S.S.R.), France has become the only possible second supplier for these types of equipment for a large number of countries. Those with direct ties to NATO, and even more so Warsaw Pact countries, obviously do not fit into this scheme. For example, the fact that an American supplier (General Dynamics) won the "contract of the century" (renewal of Benelux's fighter aviation) is much more an indication of the Benelux countries' military dependence *vis-a-vis* NATO than it is of more competitive equipment in terms of performance or cost.

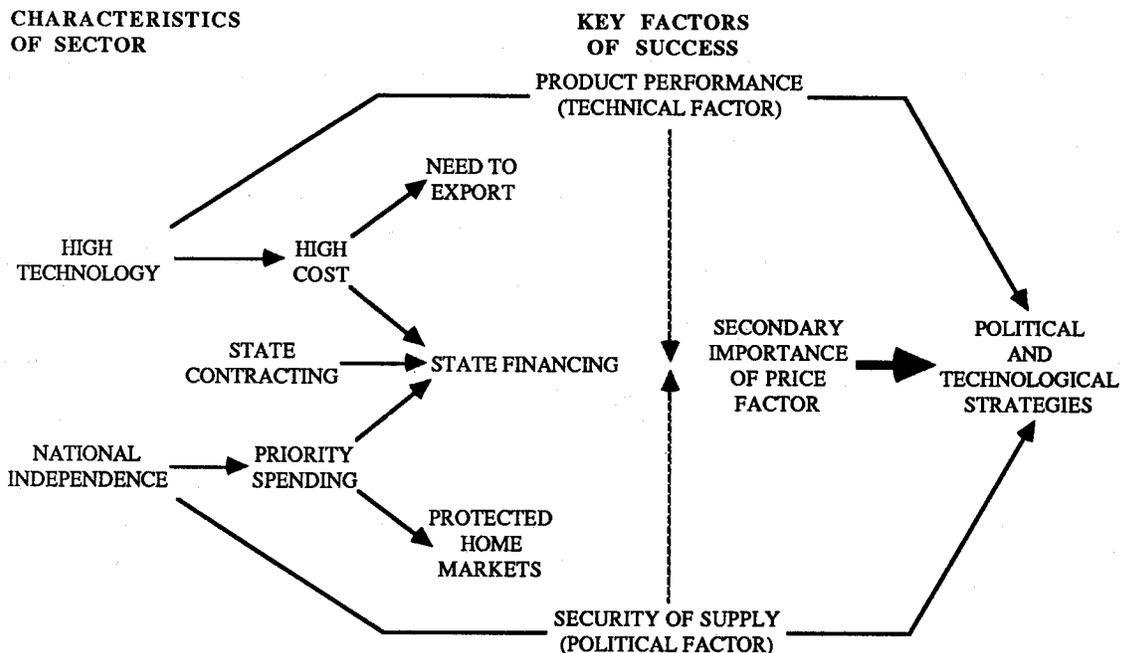
In the French "sphere of influence," contracts are prepared and negotiated at two closely related levels. First, through bilateral contract, the politicians and diplomats do the advance work for an agreement, which is often based on shared views on East-West questions, and at least minimal French neutrality on certain problems facing the customer. This often requires French diplomats to walk a shaky tightrope, but they have distinguished themselves more than once. It is not unusual to find France equipping the armies of potentially belligerent countries: Israel and the Arab countries, Peru and Ecuador, Argentina and Chile, etc.

Then--but this step never makes the headlines--the dialogue is taken up by the salesmen--generals with their counterparts from the customer's staff. Among military men the discussion can focus on the performances of the different pieces of equipment offered in relation to the user's needs.

Thus, through these two steps, competition for exports moves from an industrial and commercial basis, where the key factors of success are the capacity to produce and sell, to a political and technological basis. In that way it is possible to offer highly sophisticated equipment for which France is practically the only possible supplier (in political as well as technological terms); the price factor is only of secondary importance in the decision (see Figure 1).

FIGURE 1

Key Factors for Success in Defense Markets



Application in Other Sectors

An interesting lesson can be drawn from observing the arms sector: it presents a most instructive example of coherence with--or contribution to--France's industrial identity. There is without a doubt a French business *savoir-faire* in this area. But can we also find it in other sectors similar to the arms sector?

French industry has been most successful abroad with very high technology goods and services: in aeronautics and space, industrial electronics, the nuclear industry, the petroleum industry, transportation, and telecommunications.

Technological sophistication implies extremely high costs. It is therefore not surprising to learn that the French Government finances most R&D costs in many cases. Neither is it surprising that the government finances the foreign purchasers of French technology to a large extent, by means of preferential loans and guarantees of various kinds. All this financing is coupled with large orders from the French Government, which means that the industrialists can be sure of a minimal domestic market which puts them in a good position *vis-a-vis* export markets. From this point of view the "arms model" applies perfectly, including the decisionmaking process with few actors (the most important of whom represent governments), who choose according to political criteria (or even in their own interest). When Egypt buys a turnkey telephone system, India or China nuclear reactors or helicopters, Mexico a radar network or subway system, or the Arab countries a telecommunications satellite, the Heads of State make the decision. Their technicians are in close contact with their French counterparts in order to guarantee the technological quality of the goods or services furnished. But diplomatic relations are at least as important as technical performance in the final choice.

What about prices? Motives are less clear. If upon opening bids, Siemens, the Germany company, is chosen in preference to France's CIT Alcatel--half the cost *and* better quality--we cannot necessarily conclude that the foreign customer does not give a damn about the price. First of all, it must be emphasized that product-by-product or service-by-service comparisons are extremely difficult to make because of the complex technologies and operations in question. Any idea of reference price or world price is meaningless in such cases. Each industrialist makes his own offer which is difficult to compare with anyone else's offer. Moreover, economic comparisons are further complicated by the financial conditions or the agreements concerning the transfer from the seller to the buyer of a part of the value added in the form of local manufacture. The international reputation and experience of the seller also add a value which is difficult to calculate, as do the compensations to which he has agreed.

Although in the military sector price is not a predominant criterion, it is probably more important in civilian markets. The installed price of each line of a digital switching centre has dropped from ten to one these last few years; the total price (purchase and maintenance) of a French helicopter is lower than that of its American competitor (and it is of superior quality); the launching of a satellite by the rocket called "Ariane" is, on paper, less expensive than a launching by the NASA space shuttle, etc. All of this certainly contributes to the favorable results, or at least that is what the industrialists involved believe.

As to the elimination of Franco-French competition, it is not always the case. It exists in the nuclear industry and in aeronautics but is less obvious in urban transportation or industrial electronics, for example. There are several French producers of satellites. We must, however, bring out two essential points. First of all, there is a definite trend towards diminishing Franco-French competition since the State finances the R&D: government finances are too limited to be spread around among many companies even if certain governmental agencies wish to maintain competition among their suppliers. (In this case it might be better to allow them to put a single

French supplier in competition with foreigners.) Second, Franco-French competition tends to disappear completely in exporting, as the State allocates the markets among the French industrialists when this is necessary.

That leaves foreign competition. The fact that the buyers are very sensitive to the political aspects of their orders does not mean that the French are always chosen in preference by those who do not want to buy from the U.S. or the U.S.S.R. It is only true if the other powers--especially in Europe and Japan--do not have as high-quality technology as the French. The political advantage must be combined with a technological advantage; when the latter is near to being a monopoly then the French are the most successful.

Cost-Technology Dynamics

All the good models of strategic analysis tell us that industrial success is based on exploiting a competitive advantage which is none other than a better price/performance ratio than the competitors. The same models show that the first competitor in the market gains an important competitive advantage due to an "experience curve" which allows him to lower costs and so to sell at lower prices than those of the competition.

As we have just emphasized, the highly successful French technology exports are those which are often the only ones available on the world market, either because the other countries which produce the same technologies refuse to export them or because the other potential exporters do not have command of such high-quality technologies. Have the industrialists transformed their early appearance on the market into a sustained competitive advantage as the models suggest? Given the progressive standardization of the technologies in question--that is to say, when competition has less and less to do with the technology itself and more to do with other factors of success such as price, conditions of sale, brand name, or commercial network--how does the competitive position of French enterprises evolve?

A first analysis indicates that the enterprises we have studied in the sectors we took into consideration do not derive much benefit from their initial competitive advantage. They descend the cost curve with difficulty and less rapidly than foreign competitors who entered the market later on. Thus CIT Alcatel--which has twice the number of digital switching lines installed as its two closest competitors put together--offers, for similar technologies, prices equivalent to those of its competitors, whereas it ought to be able to be a great deal less expensive and therefore dominate the market. In like manner SOFRETU, which had a near *de facto* monopoly on the world market for urban transportation systems for a long time, is today in greater and greater competition with foreign enterprises with comparable technologies and equivalent or even lower prices.

Faced with the erosion of their technological advance, the French enterprises studied seem to react by depending even more heavily on technology rather than by exploiting a cost advantage. Rather than competing through costs and prices, the French enterprises very naturally try to outdistance any competition by re-creating a technological advance which will once again protect them against competition--at least for the time being. Thus, the helicopter division of Aerospatiale first introduced turbines in its aircraft; when they become standard and were adopted by all the competitors, Aerospatiale turned to rotor hubs made of compound materials. Each time, these technological breakthroughs allowed the company to keep competition at bay by proposing more expensive but better quality products. Any comparison was difficult to make. As for SOFRETU mentioned above, its main competitor today was its first big customer, the Montreal subway system. The very "success" of this initial transfer of technology makes it essential for them to innovate or else be left behind. Thus SOFRETU proposes services which are increasingly comprehensive, with a growing role for electronics and automation.

Where does all this lead French high-technology firms? They will tend to depend more and more heavily on state subsidiaries for R&D and will not be able to take full advantage of their first breakthrough on the market. There is, however, another possibility for those which are best managed: while still relying on state support--as their American or Japanese counterparts do anyway--they might learn how to become really multinational. By setting up manufacturing facilities in their most important foreign markets and/or associating with local partners and transferring their know-how to them, they could learn how to transform their technological lead into a defensible and more permanent position on the market, based on a better control over their total package of product services.

ENDNOTES

1. According to estimates made by the Stockholm International Peace Research Institute (SIPRI) for the 1979-1982 period.
2. Colleges of university level specializing in professional training (Harrap's New Standard French and English Dictionary).
3. The industrial branch of the Defence Ministry, responsible for developing the specifications for and ordering military equipment, and maintaining contacts with industrialists.
4. J.S. Gansler, *The Defense Industry*, MIT Press, Cambridge, MA (1980).

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