CHAPTER 8

The Industry of States and the Society of Nations

The state, which is both a predator and producer of collective goods, has imposed itself in the large (by historical standards) and wealthy modern societies as the universal organizational structure. Nation-states are thus an essential component of the social and political life on both a national and international level. There is no space left on this planet that escapes their control.

However, they have appeared in space and time in many forms and sizes, ranging from the small city-states of ancient Greece or the Renaissance to the ancient and modern empires. Their size often changes over time, as periods of expansion and conquest eventually give way to periods of decline and fragmentation. This process was seen throughout the twentieth century with the rise and fall of European empires or more recently of the Soviet Empire.

Far from being some sort of intangible reality, the geography of states and the geopolitical balance are the contingent result of transformations which need to be explained. We must therefore examine the factors which determine the size of each of these states and the resulting structure within the states' population, that is, within the society of nations.

The external growth of a state and its optimum geographical size, is a matter of choice. It is thus an economic problem, since economics is the science of choice. The effective decision will depend not only on the decision maker's goals (more specifically, on his preference for large- or small-sized firms) but also on the constraints which prevent a manager's capacity from getting all he wants.

THE STATE'S GOALS

The state is a firm, it is not a person. In this respect, it makes no decisions and has no personal preferences. The leaders of the firm or the state make the decisions in the name, and under the more or less strict control, of their constituents and they are therefore more or less in a position to pursue their own goals. The decision makers are the CEO or the board of directors in a business firm and the president or the prime minister or its government in the state.

However, we will continue to use that rather convenient expression "the state's objectives" to designate those which result from a compromise fashioned by the relations of power and of the law between the leaders and their constituencies, that is, between the government and its citizens or subjects.

Whatever his deep-seated motives, the leader of the state-firm needs resources, just like any other individual. Firstly, for his own consumption, and secondly to maintain or increase his power over the inhabitants of his territory as well as over his external competitors and rivals. He needs to be able to repel his rivals' attacks.

In the recent years, a whole range of economic theorists have tried to explain the states' behavior just like they would with the other organizations subject to economic analysis, for instance private firms.[1]

1. Frederic C. Lane, "Economic Consequences of Organized Violence," *Journal of Economic History*, December 1958; Douglass C. North and Robert Paul Thomas, *The Rise of the Western World: A New Economic History*, Cambridge University Press, 1973; Douglass C. North, "A Neoclassical Theory of the State" in *Structure and Change in Economic History*, Norton, 1981; Mancur Olson, "Toward a More General Theory of Government Structure," *American Economic Review*, May 1986; Richard D. Auster

For Auster and Silver, the traditional analysis of the firm easily explains the behavior of the states fighting in a monopolistic competition for geographical control.[2] According to them, the production of a state is measured by the degree of order it produces on a given territory for a given population.

But all forms of production require resources. The financial needs of modern states engaged in cut-throat competition are considerable and directly influence all their policies.[3] Applying Schumpeter's analysis, political scientist Margaret Levi stated that "the history of State revenue production is the history of the evolution of the State."[4] Starting from the hypothesis that leaders are predators seeking to extract from the population as much income as possible, she emphasizes that these rulers' goals do not influence their behavior in any way. They can use fiscal resources for their own consumption, to increase their power, to finance social policies or even to follow their ideological preferences. They can be altruistic or egocentric, peaceful or aggressive. But anyway, they will need resources to achieve their goals. And leaders reach their personal and social goals through the state policies and with tax revenues. As a result, they try to maximize the latter, which we consider as a form of predatory behavior.

However, the behavior of firm managers varies greatly depending on whether they seek to maximize sales or profits. A company which tries to optimize its revenue (its sales) will probably not maximize its profits. By accepting a decrease in its profits, it can lower prices and, depending on the elasticity of demand, sell more and achieve higher overall sales.

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and Morris Silver, *The State as a Firm: Economic Forces in Polical Development*, Martinus Nijhoff, 1979; Albert Breton, *The Economic Theory of Representative Government*, Aldine, 1974; and Norman Frohlich, Joe A. Oppenheimer and Oran R. Young, *Political Leadership and Collective Goods*, Princeton University Press, 1971.

2. Richard D. Auster and Morris Silver, op. cit.

3. Gabriel Ardant, *Histoire de l'impôt*, 2 volumes, Fayard, 1971 and 1972; Joseph Schumpeter, *The Crisis of the Tax State*, 1918; and Margaret Levi, *Of Rule and Revenue*, University of California Press, 1988.

4. Margaret Levi, op. cit., p. 1.

The strategy chosen depends on the way the firm is controlled. If shareholders have their say, they will prefer to maximize profits. On the contrary, if the leaders are independent of their shareholders, they can choose a growth strategy where they play a greater social role which enables them to support higher personal expenses because they can be spread on larger production volumes, which allows them to increase their own wages, since the leaders are generally better paid in large corporations than in small firms. And it is on these conflicts of interest (better known as the "agency problem" in the management literature) that the firm's strategy in terms of size and growth depends.

The state and the political production suffer from the same "agency problem." A state can decide to maximize either its tax revenues or the added value of the service it provides to the people it governs.

MANAGERIAL STATE, PATRIMONIAL STATE

The state's turnover is measured by its tax revenues. Quite clearly, it is in the leaders' interest to increase taxation whenever possible, regardless of their own ultimate goals. The equivalent to the shareholders' profits is the state's added value, that is the services provided to the citizens and residents minus their public production cost. Generally, the maximum added value does not correspond to the maximum level of taxation that a state can levy from its population because higher taxation rates may encourage private producers to reduce their output. So that excessively high tax rates result in lower wealth creation.

But in a sense, citizens are the state's shareholders or financial backers. If the existing political constitution gives them some control over the government, their own interests and profit strategy would definitely win over. If, on the contrary, the government is not controlled by the citizens-taxpayers, it tends to pursue a strategy maximizing the turnover, which implies, among other things, geographical expansion.

Thus, a managerial (dictatorial) state tends to be expansionist. A democratic state does not seek territorial growth for its own sake. Instead, it prefers to limit its spending for a given level of services and give priority to wealth creation and profits.[5]

However, it must not be forgotten that the state can be to a large extent the property of the leader, as was the case of bygone monarchies. As in commercial firms, the owner-manager prefers to follow a profit strategy that will increase his assets rather than a growth strategy that will reduce them. This is the meaning of Olson's distinction between a ruler with an "all-encompassing interest" in the company he runs and one whose only narrow interest is to collect taxes. The first

5. This is the managerial conception of international relations. According to international relations specialists and to the practitioners (state rulers), the state's objectives boil down to the quest for power and size. It results from the simple need to survive against the other nations which are more or less rivals. This is the fundamental law of international politics, already expressed in 321–296 BC by Kautilya, minister of the first Indian emperor, Chandragupta, in his political and diplomatic treaty.

He suggests that rulers should follow these principles:

1. Strengthen your own country so that it becomes more powerful than the other states.
2. All the states which are your immediate neighbors are potential enemies. They must be defeated and conquered as often as possible, i.e. when they are weak and lack trustworthy allies.
3. Do everything you can to weaken your potential enemies.
4. Your enemies' neighbors are potential allies for you, if they are not also your neighbors. Try and convince them to help you resist or defeat your (potential) enemies.
5. As soon as your former allies become your neighbors, they turn into potential enemies.

(Peter Bernholz, *The International Game of Power*, Mouton, 1985, pp. 17–18.)

The immediate target of a state or nation is then to preserve its independence and protects its territory or expand it by means of diplomatic alliances or by declaring war, if need be. Each state will try and extend its geographical area as a firm would try to broaden its clientele. In both cases, these strategies are a way to increase the resources available.

is a manager-owner while the second is only a temporary manager whose assets will not suffer from the cumulated consequences of his strategies. He is closer to being a "roving bandit" than to a sedentary predator.

The managerial state is thereby strategically distinct from the two varieties of "patrimonial" state: the dictatorial patrimonial state and the democratic state.

Political rulers always pretend to work for the "public good." In other words, they attempt to deny the existence of a conflict of interest between themselves and the governed. Obviously, such a justification is given because it has a more noble and reassuring ring for the taxpayers than the simple pursuit of the ruler's personal interests. It is however partially true, as, in pursuing his own advantage, the sovereign must provide public goods to maximize his tax revenues. For his own sake, he must care for the interests of his subjects, who are, in a certain sense, his financial backers. History has shown that when the sovereign was in urgent need of resources, often because wars against neighbors and rivals, he did not hesitate from time to time to expropriate wealthy individuals. But he cannot do this too often or too extensively, for fear of discouraging producers and innovators as well as reducing production, and therefore future tax revenues. Expropriation cannot be a permanent financing means.

Frederic C. Lane, who was probably the first to develop an economic analysis of the equilibrium size of the state as a firm specialized in violence and providing protection to a given population, believes that throughout history most states have been managed in the leader's interests rather than their subjects' or citizens'. Thus, the state is usually a company which economists would define as "managerial," that is, where the manager is not the owner and pursues his own self-interest even to the detriment of the legitimate owners who have appointed him.

Indeed, over the course of history, most of the firms offering protection have been controlled by the upper echelons of the army and police, that, is by their managers. In those conditions, the main objective of the rulers was to keep the firm running, and maximizing its size was more important than optimizing profits. Occasionally, members of the lower echelons in the army or in the other administrative departments of these firms were able to take control or at least limit the discretionary power of the rulers by using force. But when the workers gained control, they were absolutely not interested in minimizing the taxes used to ensure the protection of the population or reducing the cost that their wages represented for the firm. They too were eager to make the state-firm bigger, not unlike some modern labor unions.

A different policy characterized the governments controlled by a prince or emperor with a sufficient degree of absolute power to consider himself legitimately the owner of the firm offering protection. In that case, it was in the state's owner-leader's interest to give priority to the profits rather than the turnover and this encouraged him to try and reduce production costs while maintaining the price of his services (taxation) unchanged. Like Henry VII in England or Louis XI in France, they sought to use the least expensive methods to assert their legitimacy, maintain internal order and dissuade neighboring princes from attacking them to be able to lower their own military expenses. By reducing their costs and/or increasing taxation thanks to a stable territorial monopoly, they were able to show a surplus, a sort of monopoly income.[6]

That analysis is exactly the same as for a firm controlled by its manager, its workers or its owner. But the latter can also be the manager. As Olson explained, in that case, state policies can directly serve the population's interests. However, they would be even better served by a state which sought to maximize profits, as underlined earlier. Lane explains that, according to the democratic conception, the firm

6. Frederic C. Lane, "Economic Consequences of Organized Violence," *The Journal of Economic History*, December 1958, p. 406.

with a monopoly of violence should cut the tax cost of its services to the level of its production and protection costs. However, a government will only behave this way if it is controlled by its customers, the service users. That is the basic postulate of the theory of representative government: the control over the leader arises from the competition between would-be managers for the leadership of the firm, which is arbitrated by the "shareholders" (the voters and the taxpayers). The government is responsible for its policies before the general assembly of owners at the time of elections.

There is, however, another alternative or at least a complementary solution: the control over the leaders can also arise from the mobility of voters who decide to renounce ownership and go into exile to become citizens of a competing state. In that case, each government faced with competition from the other states will have to provide the best public service at the lowest price possible to avoid losing an increasingly large percentage of its tax base. External control, which is like shareholders selling their shares to purchase others, also helps to align the government's policy with the population's true interests.

Given the competition between states and the more or less democratic nature of the political regimes, each government will continue to seek the optimal geographical size that will provide the highest revenues, paying more or less attention to the costs incurred depending on the population's control over its strategies.

BENEFITS AND COSTS OF THE EXTERNAL DIMENSION

A pure public good has an average cost that tends to zero when the number of users increases, as the fixed production costs are spread over a growing number of consumers-taxpayers. National defense is the best example of that, but in practice it is almost never the case. States' production costs increase with the volumes produced and the size of the territory. If it were not so, there would only be one state in the world, while in reality there is a multitude of states and the number is currently rising.

This is because, in fact, public goods such as the national defense, the legal system and the development of infrastructures are not "pure": more money per taxpayer must be spent to ensure the protection of a large territory than a small one, and police and legal systems cost even more per inhabitant in large urban concentrations than in small rural towns. The cost of security is all the higher that it is complete. Increased security or additional infrastructures end up costing more and more.

In addition, administrative control declines when the bureaucracies grow. In this respect, states are no different from any other firm. Finally, a heterogeneous population—and the diverse demands for public services that it involves—also contributes to increasing the complexity and production costs of state services. It is harder to amortize the production of a single universal public service when regions are separated by natural, linguistic or cultural barriers.

When a state seeks to extend its area of control to gain additional resources, it compares the costs and benefits of increasing its production even further. It is in the interest of the ruler or possibly of the owner of the state to take as many resources as possible from the territory he controls, and to increase its geographical area as long as additional revenues are larger than additional costs. The population he controls prefers to pay as little as possible for his protection.

Thus, the state's ideal size is determined by the additional revenue coming from an increase in the geographical area of control compared to the cost of that increased dimension. A large state may be tempted not to expand its territory as it may cost it more than it will gain. Thus, imperialism is self-limiting. For each concrete state there exists an optimal size. But all the optimal sizes of all states may not be be compatible. Thus, competitive conflicts may arise for the control of a given territory.

A state's basic geographical calculation consists in comparing the new sources of revenue available and the military and administrative cost of control. This is the calculus of the optimal external dimension.

Several factors contribute to limiting this size. First of all, the rising cost of the public services that are not "pure" but whose quality decreases when the number of users rises, as for instance defense, police, justice or any other collective good which involves the development of an administrative pyramid. Second, the geographical distribution of economic activity and wealth which explains that territorial expansion does not always provide the same amount of revenues. Finally, the type of management of each state and their rulers' goals do not always allow pursuit of the maximization of size.

The geographical equilibrium size will thus depend on the government's precise goals (full taxation or net revenues minus costs), the concentration of the resources and populations within a given geographical area and the rising cost of providing public services, and of the administrative control of territories and populations.

The Geography of Tax Resources

People and wealth are not distributed uniformly in space.

It follows that the frontiers of a state will be defined by the geography of wealth, by the concentration of economic activity in certain regions. A rational predator will prioritarily try to control the wealthiest and most easily exploitable areas and only then acquire the less profitable ones.

Foreign trade has long been states' main source of revenue because it is easier to tax than land or domestic trade. Changes in trade routes and trade flows could therefore be considered as the key to higher revenues.[7]

7. An hypothesis proposed by Brooks Adam, quoted by Gilpin: "Historically, trade taxation has always been a major source of revenue for the State. That is why trade is so important for the distribution of economic surpluses and consequently of power. Unlike the other sources of revenue (e.g., land taxes or foreign trade), inter-

This conception has been more specifically developed by David Friedman.[8] He shows how, in the fourteenth-century Italian city-states, trade taxation led to the inclusion of all the trade routes within a single nation, as it would not have been efficient to levy a multitude of taxes set by independent political authorities on a given route. A contrary example would be the existence of several successive road and river tolls during the Middle Ages, especially on the Rhine, the one and only trade route between the Mediterranean and the North Sea.

Generally, a labor tax is harder to levy if the population is mobile. It can only be maximized if the workers cannot emigrate or are immobilized. Language is a factor that limits mobility of its speakers to the areas where it is spoken. As a consequence, when a labor tax represents an important part of a state's revenue, nations will not organize themselves according to the trade routes but will rather try to control the area where the people speak the same language, to reduce as much as possible the external mobility of the population taxed. Friedman thus explains the regular increase in the rate of linguistic homogeneity in the main European nations since the twelfth century.

Various authors have underlined the historical relation between the urbanization rate and the development of the state which also corresponds to the thesis according to which the origins of the state can be found in the higher population density. When the population is dense, it is easier to amortize the fixed costs of public goods and to control individuals than when they are dispersed over vast areas. The decline of the Roman Empire can be explained by de-urbaniza-

national trade is rather easy to control and impose.

. . . And Brooks Adam, in his provocative study, *The Law of Civilization and Decay* (1943), rightly considered shifts in trade routes and their control to be the key to human history" (Robert Gilpin, *War and Change in World Politics*, Cambridge University Press, 1981, p. 113.)

8. "A Theory of the Size and Shape of Nations," *Journal of Political Economy*, 1977, no. 1.

tion, as the trend towards feudalism resulted from a contraction of the Empire's urban and trade tax base. And the same was true of other civilizations. According to Auster and Silver, the barbarian raids that led to the contraction and subsequent depopulation of the Mycenean cities also caused the fragmentation of the Mycenean state into many small states with rural economies. Similarly, it was the changes in the trade routes that led to the extreme rural de-concentration of the industry of states in the Dniepr basin in the twelfth century and in Prussia in the fifteenth century.[9]

In Sumer, urbanization is said to have apparently preceded the emergence of numerous city-states and then facilitated the centralization of the entire region under the authority of the Akkadian military leader, Sargon, in 2340 BC. Despite short-lived pauses because of invasions, the entire southern part of Mesopotamia remained organized after the time of Akkad, in centralized and highly urbanized empires which promoted a policy of forced settling and urbanization of the populations.

In the same way, the rapid urban growth in ancient Greece from 800 BC and in Western Europe during the eleventh and twelfth centuries, also contributed to a re-concentration of political authority. Continued urbanization was accompanied by the rise of national monarchies, as several thousands of small principalities or "states" were gradually replaced by large security firms which, at the beginning of the twentieth century, numbered only 30.[10] The first Russian state was formed when peasants evicted from the steppes by Tartars came together and reached a sufficient degree of demographic density to found a state.

These various historical examples illustrate the influence of the population density, and thus of the concentration of resources, on the profitability of the security firms. Dense resources make taxation easier

9. Auster and Silver, op. cit., p. 33.
10. Ibid., p. 35.

but also reduce the cost of public services for taxpayers, shorten the distances and increase the homogeneity of the population. In their study, Ulrich Blum and Leonard Dudley demonstrate how public services provided to more distant and heterogeneous populations lose their effectiveness, whilst the cost of military control of the territory and population increases with distance and heterogeneity.[11]

The economies of scale that characterize the production of public goods and always encourage states to try and expand their population and territory are offset by the increased administrative costs of large security firms: top-down transmission of information loses efficiency when a certain size is reached and so does the control of the enforcement of management directives when the number of hierarchical grades increases. Beyond a certain geographical size, production costs of public goods inevitably increase, as do the military costs to protect the territory against secessionists, separatists and foreign powers.

Local Public Goods

In real life, public goods are never "pure." When the number of users increases, the quality of the service provided tends to deteriorate. As a consequence, the users are increasingly reluctant to pay taxes when the demographic and geographical size of the state increases because this generally results in a deterioration of public services and an increase in the effective price of the services, for a given quality.

In addition, the taxation process requires an administrative and fiscal organization whose operating costs rise with the geographical size and demographic dispersion. It follows that, beyond a certain point, a state seeking to grow will find it increasingly difficult to extract from the population it wants to control the resources it needs to run. Even without a rival neighbor. This explains why states cannot

11. Ulrich Blum and Leonard Dudley, "A Spatial Approach to Structural Change: The Making of the French Hexagon," *Journal of Economic History*, 1989, and "A Spatial Model of the State," *Journal of Institutional and Theoretical Economics*, 1991.

increase their resources beyond a certain level. At some point, their geographical size reaches its optimum.[12]

There are costs inherent in state expansion: acquisition costs (wars with rival states) but also higher managerial costs (larger administrative structures). The quality of public services also deteriorates as the number of users rises. For example, in the field of law and order. It is harder to provide this service to the very large population of a major metropolis, where delinquents are more difficult to identify than in a village with a population of a few hundreds where everyone knows everybody else and what they do.

Moreover, law and order are more difficult to implement in the distant, peripheral areas of a nation or empire than in its capital city. This implies that this collective service is "impure" or "local": its quantity and quality vary according to the number of users and their geographical remoteness.

It is the same control problem as in a firm where the manager, or the "manager's higher level of information," is a "public good" which loses part of its value when the firm grows, for instance during mergers and acquisitions as we explained in Chapter 4.

In practice, public goods are almost never "pure" in the sense that when the consumption of some people increases, the others' consumption capacity decreases, and it is more or less possible to prevent consumers from gaining access to them. Thus, in the areas of education or justice, the necessarily limited number of schools and courts implies that these services be scarce. Thus, an additional student or trial deteriorates the quality of the service available to everyone else. In the area of security (police and justice), everyone does not have access to exactly the same service. This depends on their place of residence or their knowledge of laws and regulations. Some will be better protected than the others.

12. Leonard Dudley develops these issues in *The Word and the Sword*, Blackwell, 1991.

Another good example is the radio and television broadcasts. In theory, when a program is broadcast, all the users can receive it and the broadcaster will spend the same amount of money to reach 100,000 or 500,000 additional people. However, in practice, if these additional users are dispersed over a vast area, they will receive poor quality broadcasts or nothing at all. The reception quality will decrease or drop to nothing due to the increased distance and the natural obstacles such as mountains and valleys. It follows that a television program, which is a "pure" collective good in a limited geographical area, requires additional investment (for instance relay stations, cables) to reach remote and dispersed populations. The cost of such equipment can be very high depending on the size and geographical dispersion of the additional or marginal populations to be served. If they are too few or dispersed, the fixed costs of the additional equipment will not be covered by a sufficient number of users. The average costs will remain high. It may be too expensive to serve remote populations. The provider of public goods (the state, in this case) can thus determine the economic limits of its geographical expansion.

The national defense may also benefit unequally the most remote areas of the territory that are more exposed than others to rival military attacks. Border regions, for example, are often the first to be sacrificed and invaded in the event of a conflict. They are thus not as well protected as the center of the country.

Beyond a certain size of clientele, public goods begin to resemble private goods in that the quantity offered decreases while users compete to access them. Public goods are often only public on a local level. For instance, the French national defense system cannot protect all the inhabitants in the world. The greater the distance between these populations and France, the less this defense can technically benefit them. In other words, public goods are not "international" but rather national, regional or communal depending on the situation.

Rising Administrative Costs

As all public goods are managed in a centralized way, they require a hierarchy and thus a bureaucracy. The competition of suppliers then arises between hierarchies of different sizes, from an empire to a village. The winning size, the most efficient, will depend on the abundance of information.

In recent years, the internal administrative organization of the firm has become a major topic of industrial economics. The effectiveness of bureaucratic management indeed contributes to determining the firm's optimal size. The larger the firm, the more difficult it becomes to control the entire production process and each employee. Inefficiency tends to increase and the firm's costs tend to rise. While the technology of production of goods and services determines the output volume that minimizes the average cost, it is the cost of the firm's internal management that determines the overall optimal firm size.

These analyses can also be applied to the firms involved in several production processes and thus in different sectors. They are called "conglomeral firms" when they have several, possibly unrelated, production activities, for example cars and televisions. These firms are vertically integrated when they are active in several activities representing successive production stages, for instance the manufacture of clothes and their retail sale via chain stores.

For such firms, it is essentially the degree of efficiency of the internal administration that determines the overall dimension of the various production processes and the total number of employees.

For an optimal level of production (when the average production cost is at a minimum), the managerial cost may be minimal or not. The minimum production costs and the minimum administrative costs do not necessarily coincide.

Thus, if a firm manufacturing cars cannot reach the optimal bureaucratic size that such a production requires, it will have to create a joint venture with another small firm. Both firms will keep their own brand and remain independent but cooperate to produce the same model of car which they will then market separately. Conversely, if the optimal size of a firm's administration is bigger than the optimal size of its production, it can have several sites, for example, in different countries.

The same is true of state-firms. If the size of the administration is larger than the size of the production of public services, the latter will be decentralized as was the case for instance at the time of feudalism. With that system, security was produced locally by the lord of the castle who nevertheless submitted to his overlord who could decide on peace or war in the name of all his vassals. It is the same today with the trend towards decentralization and regional autonomy, where the effective production of public goods such as education or police is relegated to a lower level of authority.

Conversely, when the optimal size of the administration is smaller than the size of the production of public goods and services, there can be military alliances, the payment of a tribute from one nation to another or a participation of independent nation-states in international organizations in specific areas such as the production of a world legal or commercial order.

The cost of the public services provided by the state tend to rise beyond a certain territorial dimension. No army can grow to the point its optimal size is the whole world. Moreover, the state must develop an administrative system to levy taxes in the territories it runs directly. The military system will not be sufficient to accomplish this task: it can seize goods through pillage but not regularly levy taxes on all types of productions as this requires a specialized, permanent and sedentary organization. On the contrary, an army must remain mobile. Here again, costs first decrease but then pick up. Altogether, a state's optimal territorial size is defined by the minimum combined average cost of these two functions. But as for firms, the state's various functions may be dissociated or grouped together under a single authority, depending on the importance of what economists call "economies of scope." For example, a firm manufacturing automobiles can also produce trucks or two-wheeled vehicles if the combined average cost of these different productions managed by a single central department is lower than the average cost of each production carried out separately by two different firms. A state can thus subcontract certain functions to independent organizations and change the range of services it produces by itself. Some small states do not produce their own national defense but place themselves under the protection of larger states. Within a nation, some produce education, while others entrust this task to the private sector. However, these operations destructuring or restructuring the usual range of public services do not necessarily impact on nation-states' geographical size.

When the size of hierarchies increases or decreases, so does the state's optimal size. However, the state hierarchy can change its dimension in two ways: internal growth (it levies more resources from a given population on a given territory) or external growth (it extends its control over larger populations on larger territories).

Both types of optimization can be performed simultaneously. But they can be considered separately for the purposes of analysis, as we have done. Internal growth reaches its limits when the marginal cost of taxation is higher than the marginal revenue it produces, as I indicated in my theory of nationalization and privatization.[13] When tax rates rise, individuals are less willing to produce. Ultimately, production will stagnate, which means that the social cost of taxation, measured by the decrease in wealth creation, rises. The state can then consider abandoning certain activities to reduce its social costs and thus allow the private production to resume and its tax revenues to pick up thanks to a larger production while at the same time reducing

13. "Théorie économique de la nationalisation de la privatisation," *Finance*, December 1988, and "Public Choice Aspects of Privatization Policies: Driving Forces and Obstacles," in Herbert Giersch (ed.), *Privatization at the End of the Century*, Springer, 1997.

its expenses. It will thus regain budget flexibility and be able to reach its chosen objectives. Conversely, when the conditions necessary for the development of a hierarchical pyramid are met, the state absorbs numerous private activities one after the other. This is nationalization and interventionism. But that internal growth will be limited by the rising social cost of the taxes that the state must levy to finance these new activities. So, it comes back to the preceding problem.

There is an alternative for a state that has not reached its maximum capacities of administrative management: external growth. It provides new opportunities for taxation but also requires that the state grows to the detriment of another state and gains a higher capacity to control a given region. Military superiority is useful but not sufficient. It is also necessary to have an administrative and managerial superiority and a complementarity with state activities in its initial dimensions.

Once a hierarchy has reached its optimal size, the neighboring populations find themselves closer to other public production "centers," other nation-states. These individuals will have to choose between the two nation-states which are "equidistant" as far as the cost and quality of their collective services is concerned. Their decision will depend on particular circumstances and technological advances. This is true of border areas often disputed in history, the "threshold" of an empire or realm. Neighboring states compete for these areas to define more precisely the scope of their territorial jurisdiction.

When a group of states all try to reach their optimal geographical size, there can only be peace if the frontiers they respectively chose are compatible with those selected by their neighboring states. This compatibility, this simultaneous definition of acceptable frontiers, is the essence of diplomacy and war. Attaining this balance is the goal of geopolitics. But it ultimately depends on the respective optimal dimensions of the neighboring nations.

GEOPOLITICAL EQUILIBRIUM

In the finite world of the twentieth century, the whole planet consists of contiguous states. There are no more white areas on the world map, no *terra incognita* still to be discovered by explorers and conquerors. So what happens when the geographical optimization decided by some states are incompatible with those of the others? And how will the mosaic of states be structured? Will there be a large number of small states or a few large empires? Will a single world state arise, as the single gigantic firm that Lenin wanted to build to organize the entire Russian production? And will the frontiers coveted by each state be compatible with the other's aspirations? Will the geographical balance of the "industry of states" be stable or unstable, consensual or confrontational?

The balance within a given population of states depends on their individual behavior. Each state and its neighbors, trying to reach their optimal size, make reciprocal adjustments to draw a particular patchwork of the population of states. Depending on the economic conditions that determine the evolution of the organizations' optimal size, a society of nations tends either towards a competitive structure (or, in economic jargon, an "atomistic" structure) consisting of a large number of small individual competitive states, or toward an "oligopolistic" or "monopolistically competitive" structure composed of a few large states.

The concentration rate of the world industry of nations can be explained the same way as in any industrial or service sector. When the average size of firms in a given sector rises and the market's demand is stable, there is only enough space for a smaller number of firms. Thus, the population of firms concentrates. Inversely, if the average size of a firm decreases, the number of firms in the industry increases and the population of firms de-concentrates.

Economic theory shows that the optimal size of a firm, its output volume, depends on its costs. The lower the production costs of a given volume, the more the firm is encouraged to increase its production. But the costs of a given production vary according to the technologies used. Consequently, it is the production technology that determines the optimal size of each firm and thus the organizational structure of the sectors of activity, a standard conclusion in industrial economics.

The same is true of the states. Their optimal size will depend on the production costs of collective services, and especially security services, which means that it depends on their military effectiveness, as well as on the cost of administrative management of the populations and territories.

Given that the size of the states depends, for a given geographical distribution of the population and wealth, and for a given level of military technology, on the relative size of the administrative hierarchies, the states' world concentration will thus directly depend on the factors that determine the optimal size of the hierarchies, and more especially the scarcity or abundance of information in a society. When the hierarchical mechanism is more efficient than the market mechanism, the number of states decreases and their size increases. And conversely when the market mechanism is more efficient than the hierarchical mechanism. This also determines the distribution of the decision-making power between a variable number of nations and consequently between a variable number of state rulers worldwide.[14]

14. As Auster and Silver wrote: "Let's consider the level of concentration in an ordinary sector as the possible result of an effort to reduce the cost of the intermediate service that is decision-making. . . . Generally, we can conceive two polar forms of the decision-making mechanisms: totally centralized planning and totally free markets. In every sector, the decision-making mechanism stands somewhere between these two extremes within the range of possibilities. The more concentrated the sector, the more often the decisions will be taken as part of a centralized planning process and conversely. The comparative statics of concentration levels can be determined the usual way, provided the agents try to reduce their costs, which seems to be the case in real life. In that case, the factors which increase the cost of one of the polar forms of decision-making will reduce its relative weight in the decision-making process which will turn directly affect the level of concentration" (Auster and Silver, op. cit., pp. 41–42).

During the "second twentieth century," the structure of the population of states undeniably tended towards de-concentration and they became increasingly numerous. However, the optimal size of each state may have remained unchanged, as this burgeoning could be due to the demographic boom that started in the early century. As the demand for state services grew because of the rising number of "consumers," new firms (states) had to be created to meet these needs if the average optimal size of such firms remained unchanged. Thus, the increase in the number of states could result from a combined stability of these state-firms' optimal size and a higher number of consumers, which would explain the higher number of state-firms and the de-concentration of the industry of states.

However, there are several signs that the absolute optimal size of a state is diminishing. Thus, we can observe a burgeoning of states even in areas where the population has not risen (for instance, in Europe). Or even separatist and secessionist trends in areas where the population is stagnating or falling (for instance in the USSR or some Eastern European nations). At first sight the evolution of the European Union, from the initial common market institution towards a burgeoning super-bureaucracy in Brussels, with the clear ambition to create a federal Europe, the first step being the creation of the Euro in 1999, totally contradicts the above analysis. But precisely, this enterprise should be forecast to be doomed given the economic and organizational fundamentals delineated in this book.[15] Recent negative political reactions to the project of a "European constitution" in several countries, including the Netherlands and France, a growing disillusionment with the Euro and doubts about its future, as well as continuing economic difficulties and stagnation in the "Old Europe" which basically coincides with the eurozone, all point to the practical impossibility of transforming, today, a free trade area into a single,

15. This is the argument of my 1998 book, *L'erreur européenne*, Grasset, translated as *Euro Error*, Algora, 1999.

even if federal, nation-state. The current trend, at the time of writing,[16] is one of rapidly spreading euro-skepticism and of the return of nationalist policies in France, Germany and Italy, not to mention the always reluctant United Kingdom.

The above remark about this general de-concentration or "institutional atomization" trend is very important to understand peace and war between nations, as the changes in the structure of the industry of states, the transformation of the structure of the society of nations, is the main determinant of the type of inter-state relationships.

Since the end of the nineteenth century, "nationalistic" conflicts have multiplied between expanding states that gradually grew into rival empires. The dispute reached its height at the end of World War II with the worldwide conflict between the two remaining superpowers, the United States and the Soviet Union, who were locked in a cold war for a half-century. At the same time, other large European empires dissolved and were replaced by a multitude of smaller-sized nation-states. Then, with the triumph of the United States and the implosion of the Soviet Union, a plethora of small independent states arose from the ruins of communism.

The global nation-state system, the "society of nations," has thus undergone profound structural changes during that century.[17] Taken together, these nation-states represent a world sector of specific activities, a planetary industry producing collective services, or in other words, a collection of state-firms more or less in competition with

16. This revised version, fall 2005.

17. We might as well use the expression of "industry of the states" to refer to the nations of the planet, as a whole. But it could easily be mistaken with the state industries, the industrial sectors owned by the states, the companies whose economic and trade activities have been integrated in the political sectors through nationalization. The industry of the nations experienced in the first part of the twentieth century a concentration wave that led to the virtual duopoly of the cold war and then an "atomization" of its structure that made it closer to the pure and perfect competition model mentioned in economics textbooks. This is what happens today with the persistent separatist and secessionist movements in all the regions of the globe and, specifically, in Quebec, Kosovo, Scotland, the Basque Country, Corsica or Nigeria.

each other via trade, diplomacy and sometimes war, depending on the period.

The optimal structure of the sector can change over time, especially with technological advances as they can modify the optimal size of state-firms. As the state's new frontiers are established in a finite space (a space completely occupied by neighboring and rival firms), the expansion of any of them will necessarily imply the contraction of another.

So, how can the size of a nation-state change when the territory coveted is disputed, necessarily the case as the entire planet already consists of contiguous nation-states since the end of the nineteenth century.

The frontiers can be redefined by mutual agreement, with or without a compensation and payment. That was the case of a state buying another's territory, for instance when France sold Louisiana or when Corsica was purchased by France from Genoa, or also when states exchange territories. In a second case, an independent population or even a population already a member in another state joins democratically the state of its choice, as was the case of the referendum annexing the Savoie region to France in the nineteenth century or the recent amicable separation of the Czech Republic from the Slovak Republic.

However, the use of force cannot be totally ruled out because the world society of nations is anarchical. There is no higher authority in a position to impose an order on the society of nations. No single producer has the monopoly of violence over the whole planet. Nor is there an accepted hierarchy that can impose the domination of one state over all the others or the domination of an organization other than a state, be it the UN or other international organizations. In such a context, as in a society composed of individuals, a mutually agreed exchange may be advantageous, but it could also be that predation is preferred to production and voluntary exchange. It all depends on the comparative superiority of each nation (or individual) in terms of production and predation.

The Confrontation of Interests

The rational goal of every state-firm is to reach its optimal geographical size, the one that will, depending on the respective power of the rulers and the governed, either maximize the tax revenues net of the production costs of public services or the maximal territorial size at which the taxpayers can still accept the tax rate without rebelling.

Thus, it is from the simultaneous optimization of state's respective territories that conflicts can arise. If each nation is at its optimal dimension and their behavior is rational, no conflicts should occur.

But there are other scenarios that we may simplify by considering two states: (1) if both need to shrink to reach their optimal dimension there must then be secessionist or separatist movements within each of them, (2) if one of them must grow to reach its optimal dimension and the other must shrink, (3) if both must grow or, alternatively, if one must stay unchanged while the other grows. In the first two cases, there is no risk of conflict as each state can restructure independently of the other. But in the third case, there is a conflict of interest.

Indeed, if a given territory can enable both neighboring states to optimize their surface through integration, then the state that will lose it or be unable to control it will be deeply negatively affected. In this case, competition is a "zero-sum-game" situation: what one wins, the other will necessarily lose.

This implies that in a finite world, a universal increase in states' optimal size will necessarily generate widespread border conflicts, as two neighboring nations cannot both extend their territory simultaneously.

If, on the contrary, there is a universal decrease in the optimal size of nation-states, there will be a general proliferation of secessionist and separatist movements and the states will fall apart at the end of internal conflicts, as it was the case in Yugoslavia and in the USSR.

If several regions of a given state want to become independent nations, they can do so by common consent with no conflict of interest, provided they do not seek control of the same territories. The dismantling of the USSR and Czechoslovakia, as opposed to the situation in Yugoslavia, is quite telling. The first two were achieved peacefully while the latter plunged the country into a bloody conflict. This contrast can be explained by the existence or absence of territorial and demographic disputes. In the first two cases, homogeneous populations wanted to constitute new, clearly independent, states. There was no territorial overlap. On the contrary, in Yugoslavia, the inextricable mix of populations obviously made the process controversial and logically resulted in deep conflicts and confusion. It is those overlapping interests of opposed parties that triggered the conflict.

But, in general, a reduction in the optimum size of state-firms will not raise that kind of problem as the populations of a same region have been able to homogenize over their history. In that case, the fragmentation of a large state composed of distinct but separate regions can be achieved peacefully. Conversely, the expansion of two neighboring states necessarily leads to territorial claims—each state wanting the territories that belong to the other—and thus inevitably to a conflict.

However, the geographical optimum of each state changes over time as its determining factors evolve. For example, a change in the political regime following internal transformations in the economic or demographic structure, or a modification of the trade routes or of the location of some activities, or also as a result of transformations in organizational technologies and, more especially, in storage and information transmission techniques.

To predict how the global society's overall organization will develop, we must ask ourselves how the optimal size of the most basic organization will evolve. That is, what populations and what territories can a government or a state control economically? And as a consequence, how many independent governments (governments that do not share a hierarchical relation with others) can coexist in the world at a given moment?

The answers to these questions give an indication of the competition, trade rivalry, that will exist between these governments, and to what extent the inter-governmental coordination will be handled by a higher authority. It is in short, the problem of secessionism and federalism analyzed by Donald Wittman.[18]

His analysis takes into account all the general factors that simultaneously influence all states. It is highly probable that, faced with similar tasks, such as the production of order, security, and other collective goods, the various states will share very similar conditions of production. In a given sector, firms can be of very varied sizes but nevertheless all of them tend to evolve simultaneously in the same direction when the production technologies improve. Thus, all car makers will try almost simultaneously to grow or shrink, as will all bankers and pharmaceutical firms.

As we saw in Part 1, these general trends developed both in private companies and state-firms during the twentieth century. There can also be special factors that result in the isolated growth of a firm while the optimal size of all the others remains unchanged. But, by definition, these exceptions cannot explain the general trends observed during the great organizational cycle.

The Contractual Solution

Like Donald Wittman, David Friedman suggests a contractual solution to territorial rivalry between states: the conflict could be resolved through sale or purchase.[19] The territory becomes the property of the

18. Donald Wittman, "Nations and States: Mergers and Acquisitions, Dissolution and Divorce," *American Economic Review*, May 1991.

19. David Friedman, "A Theory of the Size and Shape of Nations," *Journal of Political Economy*, 1977, n. 1.

state that considers it the most valuable, as for goods and services in general. In an auction, the buyer of a painting is not always the richest bidder but rather the collector who places the highest subjective value on the piece. In the case of full employment, the firm that will attract the best workers will be the one in which the worker will be the most useful, the most productive. It will indeed be able to pay him a higher salary than its less productive competitors.

Similarly, one can assume that the nation that successfully wins control over a disputed border area will be the one that considers it the most useful for its economy or military strategy, as for instance the Golan heights for Israel and Syria, or Alsace-Lorraine for France and Germany.

In a world where anarchy reigns between nations, one could believe that the most powerful country would necessarily win through force, since it can destroy its competitor in the last resort if necessary. But in a world with many nations, such a strategy seems dangerous and hardly plausible. Indeed, if the most powerful state devotes a lot of its resources to crushing a competitor to win a given territory, it will weaken against all its other competitors because it must consume rare resources to be victorious. Moreover, by increasing its size, the conqueror will become less efficient. Thus, it is a losing strategy in the medium term, unless the value of the coveted territory significantly strengthens the competitive potential of the victorious country.

We can thus assume that when nations compete it is not necessarily the most powerful that manages to expand its territory, but rather the nation for whom the disputed territory is the most valuable, which brings us back to the case of market transactions. The value also depends on the competitors capacity to levy taxes from the population coveted, a capacity that in turn depends on the efficient use of violence as well as administrative management. Two predators with different degrees of efficacy will not give the same value to the same territory, and the most efficient predator should win the competition for its control.

However, in these conditions, why can all territorial disputes not be solved peacefully or with a financial compensation, the country that considers the disputed region as the most valuable paying the other country to renounce its claim? Despite that additional cost, the purchasing country would still be able to reap the benefits of its acquisition, just as a collector can enjoy the painting he has purchased at a higher price than any other potential purchaser.

It thus seems that war should not exist. Admittedly, we could believe that war is a way to avoid to pay a compensation to the country that renounces the territory. But, in fact, this is not the case given a war will be at least as costly as a peaceful transaction. So how can we explain war?

Why War?

Several conditions are required for a war to begin. First, there must be a conflict of interest. Second, the situation must be anarchic in that the use of force is viewed as a possible strategy, instead of consensual exchange. Third, there must be doubts about the value of each opposing party's stakes, net of costs.

The first two conditions are obvious. If there is no conflict of interest or if a higher authority can effectively forbid the use of violence between subordinate political entities, there will be no war. But anarchy prevails in today's world industry of states. In the absence of a sufficiently powerful state whose optimal size would be the whole world and with the ability to monopolize violence worldwide, violent competition will prevail between some states. As in a society of individuals, anarchy allows both predation and production to collect resources, depending on the optimization of each player's calculations and relative capacity to handle both types of activity. Both means (violence or consensual negotiation) are substitutes, and this is why many believe that war is only the continuation of politics in another form.

Nevertheless, a situation of anarchy will force all the states to consider the strategy of violence as a possibility. The potential purchaser of a territory may pay a compensation for it, or exchange it for another territory, or even agree to military expenses that will enable him to annex the territory without giving a financial compensation or any other kind of payment. Against such a competitor, the current owner of the territory has no other choice than to use violence. If he did not, he would lose a competitive weapon. He would surely be defeated, as would any country that in a war would refuse to use a certain type of weapon, such as the navy or air force.

Thus, in general, there will be no purely contractual negotiation without the use of violence (or at least the threat of) between the states that each seek their geographical optimum.

However, the threat of violence does not automatically imply that it will be used. To explain war, we must understand how a state decides to switch to effective violence.

It is thus the third condition which determines why a contractual solution can be ruled out, leading to war.

If each state competing for a same territory knew everything about the other (how valuable it considers that land and its available resources), a peaceful solution would automatically be found without negotiation. The optimal division of space would necessarily favor the state with the greatest need for the territory given the military or financial costs required to convince the other potential purchaser or current owner to renounce it.

And this solution would prevail even if the territorial division favored only one of the two as the winner could use its increased productivity to compensate at least partially the loser whose productivity would decrease. By definition, the winner will be the state that considers the land the most valuable and thus has the ability to compensate the loser for his income loss and still benefit from a net gain.

This assumes, first of all, that one of the states has a clear managerial advantage over the other and that both protagonists are also completely aware of that. But in fact, there is always a degree of incertitude. And in this case, each must prove that he is prepared to better develop the conquered land than the other. To do so, he must make the highest bid as in an auction, that means that he has effectively to pay the purchase price to really show how valuable he considers the coveted territory.

During an auction, the bidder promises to pay the bid price if no one makes a higher offer. Thus, he truly devotes his resources to the competition with no possibility of backing out. Between states, there is no auctioneer to force them to meet their commitments. But on the contrary, war requires to pay progressively an increasingly high price until one of the belligerents finds the cost excessive compared to the value at stake and decides to cut their losses by proposing an armistice and negotiating peace.

In a situation of anarchy, only the use of force can reveal which of the competing firms is (or believes it is) the most efficient, that is, which firm is able to levy the most taxes from the population and the disputed territory. War is a high-risk spending designed to convince the adversary of one's higher capacity to develop a territory.

If it is in the interest of all nations to simultaneously increase their size (for example, because military or administrative technologies have evolved), only a military victory will enable the victorious nation to approach its new optimal size. The other nation(s) will have to retain their sub-optimal size, which implies a higher operating cost and a loss of well-being. Consequently, there can be no mutually advantageous negotiation, no purely consensual transaction. Each party tries to win through violence. As Georges Sorel said (although for different reasons), violence plays a useful social role especially when anarchy prevails. It reveals who places the highest value on a given resource, who is ready to pay the highest price or even who makes the most of the available resources.

The industrial organization—or systemic—economic approach to the society of nations explains that wars result from an increase in the nations' optimal size. This is apparently the most significant common factor of all the past conflicts, as we will see below. But the political regime may also be a determinant whose influence has not yet been properly demonstrated, because the observers did not take into account both the structural and dimensional aspects analyzed above.

It follows that the periods of general expansion of the size of states, implying a concentration in the population of states, are also periods of war. And even more so when the state's internal political system is managerial rather than patrimonial. A hypothesis we can now test by looking at the past.

THE TERRITORIAL HYPOTHESIS VINDICATED

The traditional approach to war seeks responsibilities in the behavior of one or several states, especially those connected by treaties and alliances. It is true that a single state may happen to be a warmonger responsible for war. War may also occur as a local conflict circumscribed to only two states while other states remain at peace. But in these cases, the causes of war are specific, particular, and there is no general trend toward conflicts.

In the same way, although each firm's strategy is unique, there are key factors which affect all the individual strategies in a given industry at the same time. The equilibrium of the sector indeed depends on a multitude of individual decisions, but they are all affected, to varying degrees, by these common factors.

It is all the more important to take into account these universal factors in the case of twentieth-century conflicts between nation-states shown earlier, that such conflicts arise from territorial disputes and, precisely, it is no longer possible for a state to "freely" expand its frontiers since the end of the nineteenth century.[20] Finally, the decisive

20. See William H. McNeill, *The Global Condition, Conquerors, Catastrophes & Community*, Princeton University Press, 1992, and more especially the first part entitled "The Great Frontier: Freedom and Hierarchy in Modern Times."

importance of these common factors is attested by the fact that the optimal sizes of all the state pyramids have decreased simultaneously with the advent of new information technologies.

All these arguments support a “systemic” rather than anecdotal approach to the origins of war as recommended by many authors such as Mansfield and Gilpin.[21]

Centennial Experience

Our vision of war has been deeply influenced by the European nation building since the fifteenth century, a period of constant conflicts for territorial expansion, especially in the case of France. Throughout this period, nations’ optimal size increased. This doubtless explains the widespread belief according to which the largest and most powerful country must win the war, barring major management mistakes, a lack of courage and resolve or internal dissent. Hence, the obsession that size matters and that bigger is better, the fear of big countries that haunts the whole geopolitical debate.

According to Jared Diamond, history and archeology prove that through the centuries war has been a means to an ever-increasing concentration of nations. And where it is not war itself, it is the threat of war that determines the mergers and acquisitions of states.[22]

21. Edward D. Mansfield, *Power, Trade, and War*, Princeton University Press, 1994, and Robert Gilpin, *War and Change in World Politics*, Cambridge University Press, 1981.

22. “The amalgamation of smaller units into larger ones has often been documented historically or archaeologically. Contrary to Rousseau, such amalgamations never occur by a process of unthreatened little societies freely deciding to merge, in order to promote the happiness of their citizens. Leaders of little societies, as of big ones, are jealous of their independence and prerogatives. Amalgamation occurs instead in either of two ways: by merger under the threat of external force, or by actual conquest. Innumerable examples are available to illustrate each mode of amalgamation” (Jared Diamond, p. 289).

“All these examples illustrate that wars, or threats of war, have played a key role in most, if not all, amalgamations of societies. But wars, even between mere bands, have been a constant fact of human history. Why is it, then, that they evidently began causing amalgamations of societies only within the past 13,000 years?” (ibid., p. 291).

Like Carneiro, he suggests that population density explains the concentration of states. In a low-density geographical space, conquered populations can flee elsewhere. In a moderately populated space, they cannot flee but are of no use to the conqueror and everyone is exterminated except the women. In a densely-populated area, the conquered cannot flee but are used as slaves or taxpayers. This happened in history as a big step toward the use of slavery as an alternative to extermination.[23]

More systematic studies have been conducted by specialists in international relations to explain under what circumstances wars occur. Many studies on that subject have been published since the 1930s.[24] However, most of this literature is empirical and the conclusions remain rather unconvincing and somewhat incomplete.

These studies are based on *ad hoc* intuitive factors, such as the proximity of belligerents, the political regime, the balance of powers and the psychology or pathology of the leaders. Under such conditions, these attempts at empirical verification often give contradictory results and are difficult to interpret.

Geller and Singer review the main studies seeking to identify the determining factors of wars, and especially those written by authors who participated in the "Correlates of War" project sponsored by the University of Michigan in 1963–1964. It is clear for social scientists that we need to amass a vast amount of information on the factors associated with war before attempting to explain its causes.

Accordingly they surveyed more than 600 articles published since the end of the 1960s, all of which use data collected about wars and their associated variables. In addition to these studies, all published

23. "Thus, food production, and competition and diffusion between societies, led as ultimate causes, via chains of causation that differed in detail but that all involved large dense populations and sedentary living, to the proximate agents of conquest: germs, writing, technology, and centralized political organization" (ibid., p. 292).

24. Daniel S. Geller and J. David Singer, *Nations at War*, Cambridge University Press, 1998.

in the five major journals in that field, they also examined two dozen books providing a rigorous and systematic analysis of the international political problems and more especially armed conflicts.

Their main conclusions are as follows. They observe that the status of "major power" is a decisive factor and as, by definition, great powers are usually large-sized, we can assume that they benefited from the start of some specific advantage in looking for growth.

For the whole population of states, they conclude that the factors determining the probability and gravity of a conflict are the number of frontiers separating the nations, the polarization of the system of states and the instability of the inter-state hierarchy. Obviously, the more common frontiers there are between these states, the more likely they are to seek control of the same territory, a factor that we present as the first cause of war. The polarization of the system of states, the asymmetry between them, illustrates the concentration of resources between states, which necessarily has a geographical dimension, and thus logically increases the risk of border conflicts. For this reason, incomplete but continuing polarization (that Geller and Singer call the "instability of the hierarchy of states") must result in increased competition for control areas and a more frequent use of war to allocate the disputed territories and their resources.

It follows that the most contemporary studies on wars between nations tend to confirm that the general and ultimate cause of war in the world society of nations is the increase in nations' average size. However, the latter depends partly on the nature of the political regimes, as managerial (dictatorial) regimes tend to pursue growth for itself as opposed to patrimonial regimes (monarchic or democratic). This strongly supports the mostly negative relationship between war and democracy, or war and trade, that was observed in many econometric studies but remains only partially explained. Indeed, democracy particularly develops in areas where organizations are not too centralized and consequently where managerial political regimes are weaker. Moreover, all things being equal, democracy requires leaders to provide public services and to limit tax increases, which is incompatible with the pursuit of growth and the discretionary building of empires.

War and the World Concentration of Nations

Two other analyses of different nations and periods support the territorial explanation of the origins of war: Bergesen and Schoenberg's analysis of waves of expansion and contraction of colonial empires,[25] and Mansfield's study, which is more precise as it only concerns the relations between the major powers during a shorter period, from 1820 to 1965.[26]

Bergesen and Schoenberg start by noting the importance of colonialism in the modern world system. From its beginning in the sixteenth century to the 1960s, it concerned at one time or another, most of the surface of the globe. In 1800, about 35 percent of the planet was or had been controlled by Europeans. In 1878, this figure rose to 67 percent to reach 84 percent in 1914.

The authors collected a historical series of the number of colonies created by the European nations over these centuries. It revealed two periods of intensive colonization: first, the sixteenth century, and second, from the end of the nineteenth century to the beginning of the twentieth. But it also shows two periods of intensive de-colonization (which is a decentralization of the world system of nation-states): the eighteenth century, the Age of Enlightenment, and the end of the twentieth.

It is particularly interesting to note that the periods of colonization are also periods of mercantilist trade policies and decline in free international trade and that, conversely, the periods of de-colonization

25. Albert Bergesen and Ronald Schoenberg, "Long Waves of Colonial Expansion and Contraction, 1415–1969," Chapter 10 of Bergesen, ed., *Studies of the Modern World-System*, Academic Press, 1980.

26. *Power, Trade, and War*, Princeton University Press, 1994.

are characterized by a liberalization of world trade, first between 1820 and 1879, and later on with the GATT agreement in the 1950s.

However, the most interesting observation about the origins of war is the overlap between periods of strong colonization and major wars between European powers at the end of the seventeenth century and then during the twentieth.[27] The periods of geographical expansion of the European nations thus coincided with an intensification of the wars between those nations. More precisely, wars were more frequent when the states tried to build empires, that is when the optimal size of all the European nations was growing quickly. This supports our view that war results from border conflicts between expansionist nations and expanding state hierarchies.

In the other study, Edward Mansfield reached similar conclusions. In a systematic and statistical analysis of the 1820 to 1965 period, he tried to determine the factors governing the declarations of war between major powers. But the question he asked himself was slightly different from ours: how can the distribution of forces or powers between nations influence the structure of international trade and explain the wars between them?

For that, he first measured the concentration of the "capacities" of the five major world states among the twelve largest, at different dates during the 1820–1965 period. These capacities were measured by the economic, demographic and military dimensions of the nations concerned. The identity of some of these nations changes over time, as it was not always the same five nations that were the most powerful during the nineteenth and twentieth centuries. But what is interesting is that this measurement of the concentration of the "capacities" of the major powers is a direct equivalent to our conception of the optimal economic, demographic, and thus geographical concentration of nations. Because a nation with many economic, demographic and military resources is also necessarily a "great" nation geographically-speaking.

27. See chart 105 in Bergesen and Schoenberg.

Mansfield then examined the relation between his indicator of the concentration of nation's size and the degree of hegemony exercised by the then most powerful nation together with the number of conflicts between states and the importance of international trade.

He thus observes[28] that a size conentration of major nations reduces the volume of international trade but also increases the frequency of conflicts between nations in a statistically very significant way.[29] What is even more interesting is that an increase in the concentration of nations, which we interpret as a general increase in the size of nations, also contributes very significantly to an increase in the probability of war between these nations. This corresponds exactly to our analysis of the probability of military conflicts between nations pursuing an expansionist policy and that confront each other in border conflicts about territories coveted by both.

Going back to the historical description, Mansfield notes that the periods of low concentration of the nations' "capacities" (which means for us, "of their sizes") were the very periods of cooperation between the European nations in the early nineteenth century, while concentration reached its maximum level in 1946 at the beginning of the cold war between the two remaining empires, the two world cartels of nations.

This cycle of state concentration and de-concentration during the twentieth century also appears in the more cursory indicator of the concentration of domestic products.

The proportion of the highest domestic product in the world product rose from 6 percent in 1820 to 11 percent in 1900, then 29 percent in 1950 before falling back to 22 percent in 1992.

The proportion of the five highest domestic products in the world

28. Mansfield, op. cit., p. 187, table 5.4.

29. Mansfield thus explains 50 percent of the conflicts that occurred between the great nations during the 1820–1965 period, which is—in the field of social sciences in general and in the knowledge of geopolitical in its infancy in particular—an extremely high score.

product surged from 19 percent in 1820 to 41 percent in 1900, 47 percent in 1950 and then came back to 41 percent in 1992.

For the fifteen highest domestic products, the figures are 22 percent, 57 percent, 60 percent and 51 percent at the same dates.

Thus, at the end of the century, the structure of the world industry of states almost returned to what it looked like in 1900, after a phase of maximum concentration in the middle of the period.

THE REASONS FOR THE GREAT CYCLE: MONOPOLIZATION AND DEMONOPOLIZATION

The chaos and extreme clashes of this totalitarian century are simply the expression of a growing concentration of power within the system of nations and in the nations' internal systems. The first twentieth century was marked by a transition from state competition to an oligopoly and then a duopoly or, more precisely, a bipolar cartel. Within the states, it was first marked by a shift from economic and political decentralization to the concentration of large firms, large parties and mass unions, and then by a transition towards totalitarianism and the single party system with a single party line.

This transition led to instability and increasingly radical confrontations based on the all-or-nothing approach. Whereas atomistic competition means that each producer can live and let the other producers live, with the rise of monopoly there can only be one and all the other competitors must die. That is full-blown war.

Globally, the system of nation-states evolves according to the decisions made by each state on the optimal size of its geographical area of control. When the optimal size of the state pyramids grows, states use both external and internal growth. The world population of nation-states becomes more concentrated. This concentration results in rivalry for the control of territorial, demographic and economic resources. Given the uncertainty about the value each protagonist places on the coveted resources and in the absence of a higher authority likely to impose by force a peacefully negotiated solution on the competitors, war is the only way to reveal which competitor will be the most efficient in using these additional resources. It follows that wars occur more frequently at times when the average size of hierarchies, and thus of states, is on the rise.

The size of the hierarchical organization is thus the key factor determining the structure of the society of nations and the conditions of war and peace between them. The current period, characterized by the atomization and dismantling of the major hierarchies and states, is thus a period where the probability of war is low. As long as this technologically-based trend towards a decrease in the size of hierarchies and an expansion of markets continues, we will experience a relatively peaceful period where conflicts will be limited to internal wars: civil wars and secession wars.

We are also moving away from the periods of hegemony where a large country imposed its will on smaller states.

The major impact of the size of the hierarchies on the organization of the society of nations also explains the differences of organization between small and large states. If the absolute size of the hierarchy is big but that, for several reasons, the country cannot increase its geographical size (for example, because of the natural characteristics of the environment along its borders, such as mountains, seas or oceans), the state will view internal growth as a better way to optimize its organizational capacity than external growth.

The smallest states, all things being equal, will thus be characterized by a higher taxes-to-GNP ratio than the larger ones. This explains Alberto Alesina's observation whereby the states the most open to international trade are also those with the highest public spending. Alesina explains this by the higher risk of instability in the most open economies. But there is no obvious relation between actual public spending (mostly on health insurance and pensions) and the risk of economic instability due to international trade.

We would rather base our explanation on the fact that small states are necessarily more open to international trade than larger states. The observed relation between external trade and the state's influence on the economy thus merely reflects the relation between the optimal size of a state, defined in the absolute by the number of subordinates in the hierarchy, and the size of the economy, which is small in small countries by definition. When the size of the hierarchies grows, the states of the smallest countries find, more than any others, new activities to invest in in their economies. This may explain the strong tradition of interventionism and socialism in Nordic countries.

Finally, the periods of hierarchical concentration explain the change of tone in the relations between nations and the intensity of the conflicts between societies. The number of organizations that can survive within a given sector or society depends on their size. And the number of organizations within a given sector or society defines the type of relations that will arise among them. Atomistic competition does not imply the same relationships between firms as an oligopoly or a duopoly. And the perspective of an evolution of the latter towards a monopoly will determine the full-blown conflict between the last two producers in a given sector, the survival of one implying the disappearance of the other.

In atomistic competition, each producer decides individually and develops his own business independently of the others. The decision-making process is decentralized. Each consumer or user can choose his supplier. In a monopoly, a single individual decides. He imposes his choices on all others within the firm and outside the firm. There is only one centralized source of orders, imposed on all. Hence, the intense conflicts for the control of the organization which decides everyone's fate.

This gives us a very different vision of the ongoing developments. The second twentieth century is not, contrary to what is feared by those who still have in mind the first part of the century, a time of hegemonic domination by a single power, a single organization, thanks to the elimination of its main rivals. It is no longer time for the globalization of a single empire that Napoleon, Hitler and Stalin sought. On the contrary, it is time for renewed diversity, atomistic competition and decentralization. To a live and let live philosophy.

Thus, good understanding of the past sheds new light on the present and near future.