The Competitive State and the Industrial Organization of Nations

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Introduction

Most contemporary observers of politics, governments, and States suggest that the trend towards globalization spells the end of the nation-State. The rise of global markets puts new constraints on public governance, and especially on the power to tax, since capital, labor and firms become much more mobile in an open world market. States being essentially territorial in nature, the decreasing importance of geography is deemed to make them obsolete. Some degree of control over the economy could be regained through the building of larger structures such as continental States, or strenghtening of functional worldwide organizations. In a word, a world market should be balanced and controlled by worldwide political organizations.

I would like to suggest otherwise. The economic analysis of organizations since Coase (1937) shows that there is, in the organization of production, a fundamental trade-off between markets and hierarchies. Firms and markets thus evolve in opposite directions: the very forces leading to a rise of markets also explain the decline of firms' scale.

States, just like firms, are hierarchical organizations and as such face similar constraints and choices. Their evolution parallels that of the firms. The globalization of markets leads overall to a shrinking of their size. One can look at the entire population of States in the world as " the industry of the States", a specific sector of the global economy devoted to the production of public goods, including transfers. In that framework, the downsizing of States (similar to the downsizing of firms) leads not to the disappearance of States but to a changing structure of their industry. From an oligopolistic structure – a few very large States and a larger number of smaller States – to a competitive industry – defined in the field of industrial organization by a large number of small firms, each of which has practically no market power. The forces leading to the globalization of markets explain the atomization of the "industry of States", and the rise of many small, competitive States. We do observe a significant increase of the number of independent States, from about 70 in the 1950s to 200 today. An even a powerful, rich and populated State like the US is affected by the same trend, its size, economic and demographic, is inexorably decreasing relative to that of the whole industry, compared to what it was 30 or 50 years ago.

The transition to a competitive structure is not the end of the nation-State: it signals indeed a tremendous success for this type of organization, exactly as the increase of the number of firms in an industry is a mark of the success of this industry and not of failure or decline. And a competitive State is good news for the citizens of the various countries : it brings about better public services, lighter tax burden, as well as the conditions of a durable peace between nations.

The State as a Firm

States, like firms, are hierarchical institutions which produce services and use scarce resources. They serve the population which makes up a nation, the latter referring both to a human group with a certain cultural homogeneity and to the territory they occupy. Just like other firms, the State's importance is measured by the volume of its production and number of employees. And again like firms, the State can increase its production scale and scope either by selling more services to a given customer base, or by selling a given service to a broader customer base. The first strategy results in internal (or intensive) growth of the State, within the nation and its set borders, when new activities are added to broaden the range of public interventions. This is what is usually referred to by economists as State growth, and has been the prevailing trend throughout the first part of the twentieth century. The State can also chose an external (extensive) growth strategy by offering its services to a larger population via territorial conquest or the control of other nations. This is the nationalistic or imperialistic strategy described by political scientists and historians.

Growth, or as the case may be, decline strategies, are not altogether discretionary. They are subject to a number of constraints. Indeed, the competition between States for territories, as well as the competition between potential leaders for governance of the State within the nation itself, compel the governments to be efficient in the use of the resources they manage. It therefore follows that governments must optimize their use of public resources if they want to survive and achieve their goals, whatever they may be.

The Competitive State, and thus the competitive government, must be particularly careful to choose the most efficient dimension of production, external as well as internal. The internal size of the state, that of its administrative pyramid, is measured by the share of public spending in the economy, while the external dimension is measured by the size of the territory, and thus of populations, it controls.

Depending on the way various States optimize their geographic size and shape, a spatial equilibrium develops between these various "political firms" in what amounts to, on a planetary level, a "system of States" in other words, the "society of nations", since traditionally a State is seen as corresponding to a nation, at least since the 19th century when the right of a people to self-government was recognized. We have continued to use the expression nation-State, though the correspondence does not always fit.

As state hierarchies increase their span of territorial control, they usually overlap at the frontiers which are often sources of dispute and conflicts. In this way, determinants of the external dimension of organizations also explain international political relations, peace or war between States and the spatial structure of the society of nations. In other words, the dimension of organizations explain the nature of the worldwide political system. In the same way, the optimal dimensions of public and private hierarchies within a nation's geographic area determine the nature of internal political and economic systems.

We will first examine the factors which define the optimal size and shape of the nation-State as a geographic area, or the size of the customer base it includes. This size and shape depends on the government's goals, whether it be productive efficiency or more growth. It also depends on production costs for collective goods. When the size of the population served is on the increase, because the optimal bureaucratic size increases, there are limits to the growth of the territory governed by the State in as much as the quality of public goods deteriorates with an increase in the size of the customer base, while the cost of administrative management finally reaches the zone of decreasing returns.

We will then analyse how, as each State seeks its optimum size and shape, a spatial equilibrium emerges between the various States, of different sizes, within the " States' global industry". This industry does not actually strive towards the monopoly of a single Global State, as is often postulated, but has in fact been characterized by atomization and increased competition during the latter half of the twentieth century.

To conclude, we will examine how such a balance may arise, through military action and negotiation or through conquest and secession, as the world industry of States is mostly refashioned by war and revolution. We will also attempt to clarify the overall conditions determining peace or war.

I. The industry of States and the society of nations

Nowadays, the predatory State, which is also a producer, a provider of a whole range of collective goods, has become the universal organizational structure amongst wealthy societies with relatively large (by historical standards) populations. Nation-states have been adopted as the primary platform of the social and political life they govern, both on a national and international level. There is no longer a space on this planet which escapes their control.

They do however appear in different guises, through space and time, ranging from the small City-States of ancient Greece or the Renaissance to ancient and modern empires. Their size often changes over time, with periods of expansion and conquest giving way to their ultimate decline and fall. This process can be seen throughout the 20th century in the development and decline 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 developments which need to be further explained. We therefore need to examine the factors which determine the size of each individual State, and the resultant structure within the population of the different States, or the society of nations.

A State's strategy oriented towards external growth in order to achieve its optimum geographic size and shape is a matter of choice. It is thus an economic problem, since economics is the science of decision and behavior. An effective strategy is partially dependent on the decision-maker's targets, and specifically his preference for a large or small sized firm, as well as the constraints which limit a manager's capacity to get what it wants.

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The State’s objectives

The State is a firm, but the State is not a person, no more so than a firm. In this respect, it makes no decisions, and has no personal preferences. The leaders of the firm, or State, make the decisions in the name of, and under the more or less strict control of their constituents, and they are therefore in a position to more or less pursue their own objectives. In a commercial firm, these leaders are the chairman or CEO and the board of directors, whilst in the State firm, the decision comes back to the Prime Minister or President and the government.

Let us nevertheless continue to use that rather convenient expression, "the State’s objectives", to designate those which result from a compromise fashioned by the relationship between the power and the law, between leaders and their constituencies, and, as it may be, between the government and its citizens or subjects.

Whatever his ultimate motivations, like any other individual, the leader of the State firm requires resources, firstly for his own consumption and secondly to maintain or increase his power over the inhabitants of his territory as well as over his adversaries and outside competitors. He needs to be able to repel his rivals' attacks.

In recent years, one current in economic literature has attempted to explain the behavior of States in the same terms as that of other organizations subject to economic analyss, that is, private firms. For Auster and Silver , the traditional analysis of the firm goes far to explain the behavior of States fighting each other in monopolistic competition for geographic control. According to them, production of States is measured by the degree of order they bring about in a given territory with a population of a given size.

But all forms of production require resources. The financial needs of modern States engaged in cut-throat competition are considerable and directly affect all their policies. "The history of revenue production by the State is the history of the State itself," writes political scientist Margaret Levi applying Schumpeter's analysis. Starting from the hypothesis that leaders are predators seeking to extract from the population as much income as possible, she emphasizes that these governments' specific objectives in no way affect their behavior. They can use fiscal resources for their personal consumption needs, to increase their power or to finance social policies, or even to satisfy their ideological preferences. They can be altruistic or egocentric, peaceful or aggressive. But no matter what their stance is, they need resources to achieve their goals. And leaders attain their personal and social goals through the State and its revenues. As a result, they seek to maximize the latter, which we can define as a form of predatory behavior.

There are, however, major differences in the behavior of firm managers depending on whether they seek to maximize revenue or maximize profit. A company which seeks to optimize its revenue, or turnover, will probably not maximize its profits. By accepting a decrease in profit, it can lower prices and, depending on elasticity of demand, sell more and achieve a higher total turnover.

The chosen strategy, be it to maximize sales or maximize profit, will depend on the way the firm is controlled. If shareholders have their say, they will prefer profit. If, on the contrary, the leaders are independent of their shareholders, they can choose a growth strategy where they play a more important social role which enables them to support an increase in manpower costs with increased production volumes. It also allows them to increase their own level of remuneration, since leaders of large corporations are generally better paid than the leaders of small firms. Such a conflict of interests known as the "agency problem" in management literature -- affects strategy both in terms of the firm's size and growth.

The State and political production suffer from the same agency conflict. A State can decide to maximize either tax revenues or added value for the service provided to the nation it governs.

Managerial State, patrimonial State

For the State, turnover is measured by tax revenues. Quite clearly, it is in the leaders' interest to increase taxation whenever possible, irrespective of their ultimate personal goals. The equivalent to shareholder profit is added value from the State for services rendered to citizens and residents, net of the public cost of production of such services. The maximum amount of this added value is not generally obtained for the same level of Gup which maximizes the tax revenue that the State can extract from the population, because higher taxation rates may act as a negative incentive on private producers and result in a drop in production of wealth, should tax rates rise too high.

Now, in a sense, citizens are their State's shareholders or financial backers. If the political constitution currently in effect gave them control over the government, their own interests and a profit strategy would definitely win the day. If, on the other hand, the government is not controlled by the citizen and taxpayer, it tends to pursue a strategy of maximum turnover, which implies, among other things, a policy of geographic expansion.

Thus a managerial (dictatorial) State tends to be expansionist. A democratic State does not seek territorial expansion for its own sake, and prefers to limit expenses at a given service level, with priority for value production and a profit strategy.

However, it must not be forgotten that the State could be to a large extent the property of the leader, as was the case in bygone monarchies. The owner-leader, as in commercial firms, prefers a profit strategy to increase his assets rather than a growth strategy that would reduce them. This is the meaning of Olson's distinction between a government with an "encompassing" interest in the company it leads and one with a more limited interest, focused in collecting taxes. The first is a manager-owner, while the second is only a temporary manager whose assets will not suffer the capitalized consequences of his strategies. He is closer to being a "roving bandit" than a sedentary predator.

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

Political leaders always refer to the "public good" as the object of their actions. That is to say, they attempt to deny the existence of a conflict of interest between themselves and the governed. This justification is obviously invoked because it has a more noble and reassuring ring for taxpayers than the pursuit of the ruler's personal interests. It is however partially true to the extent that by pursuing his own advantage, the sovereign cannot help but provide public goods, as a by-product of his quest for tax revenue. When well understood, his own self-interest leads him to care for the interests of his subjects, who are, in a certain sense, his financial backers. History has shown that, when under pressure from an urgent need for resources, often in conjunction with wars against neighbors and rivals, the sovereign will not hesitate to expropriate revenue from 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. It is clear that it could never be part of a permanent financial plan.

Frederic C. Lane, who was probably the first to develop an analysis 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 interest rather than their subjects or citizens. Thus, the State is usually a company which economists would define as pertaining to the "managerial" type, that is, where the leader is not the owner and pursues his own self-interest, even to the detriment of the legitimate owners who have appointed him.

Indeed, a large number of firms offering protection have, over the course of history, been controlled by the upper echelons of the army and police or, in other words, by their managers. Under such conditions, the main objective of the governments was to preserve the existence of their firm, and maximization of its size and shape was more important than optimizing profits. Occasionally members of the rank and file in the army or other administrative departments of these firms were able to take control, or at least to limit the discretionary power of the leaders, using methods which differ from those of modern labor unions. But when the workers gained control, they were in no way interested in minimizing tax revenues to ensure the protection of the population, nor in reducing the costs to the firm for the wages they were earning. They too were eager to expand the size and shape of the State corporation.

A different policy characterized governments controlled by a prince or emperor with a sufficient degree of absolute power to consider himself in a valid way the owner of the firm producing protection. In this case, the owner-leader of the State was well advised to maximize profit rather than turnover, which motivated him, while maintaining the price (taxation) of his services, to try and reduce production costs. Like Henry VII of 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 in order to be in a position to lower their military expenses. By reducing costs or increasing taxation to help maintain a stable territorial monopoly, or combining these two factors, they were able to show a surplus, a sort of monopoly fund .

This analysis is the exact counterpart of that of a firm controlled either by its manager, by its workers or by its owner. The latter can be the leader, as explained by Olson who has shown that in this case, State policies can directly serve the population's interest. However, its interest would be even better served by a State which sought to maximize profit, as defined earlier. Lane explains that in a democratic concept, the firm with a monopoly on violence should lower the fiscal cost of its services to match the level of its production and protection costs. However, for a government to behave in this way, it must be controlled by its customers, the service users. The basic postulate of the theory of representative government is that the leader's control arises from competition between managers for the leadership of the firm, arbitrated by "shareholders" (voters and taxpayers). The government is responsible for its policies before the general assembly of owners during elections.

There is, however, yet another possibility or a complementary possibility: control of leaders can also arise from the mobility of voters who decide to renounce ownership through exile to become citizens of a competing State. In this case, each government subject to competition from other

States will have to provide the best public service at the lowest price to avoid losing an increasingly large percentage of its tax base. External control, comparable to that of shareholders who sell their shares to purchase others, also plays a role in aligning governmental policies with the population's real interests.

Given competition between States, and the more or less democratic nature of the political regime, each government will continue to seek the most favorable geographic size and shape, one that will ensure the highest level of revenue, paying more or less attention to costs incurred, according to the amount of control exercised by the population on its strategies.

Benefits and costs of the external dimension

A pure public good has a decreasing average cost with a limit of zero cost when the number of users increases, with fixed production costs paid off through an increasing number of consumers-taxpayers. National defense is an ideal example of this. But in practice, this is almost never the case. The production costs of States 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 a great many States and the number is always on the increase.

This is because, in actual fact, public goods such as national defense, the legal system and infrastructure development are not "pure". More money per taxpayer must be spent to ensure 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 higher the more extensive it is. Additional levels of security or infrastructure equipment end up costing more and more.

In addition, loss of administrative control increases with a rise in the size of bureaucracies. In this respect, States are no different from any other firm. Finally, a heterogeneous population, and thus differentiation in demand for public services, also contributes to increasing complexity and thus creating higher production costs for state services. It is more difficult to depreciate 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 expected from further development of its production. It is in the interests of the leader, or the owner of the State, to withhold as many resources as possible from the territory he controls, and to increase his geographic area. The populations he controls, for their part, prefer to pay as little as possible for the protection offered by the State.

Another determinant of a State's ideal frontier is the equality between the cost of increasing the geographic control zone and the additional tax revenue generated by this extension. A large State may therefore not necessarily be tempted to expand its territory. It may cost more than the potentially available tax revenue. Thus, imperialism is a self-limiting process. Each concrete State has an optimum size. But all these optimal areas may not necessarily be compatible for all the states. Thus, competitive conflicts may arise when control of a given territory is sought.

The basic calculation of the optimal geographic size of a given State involves a comparison of potentially available sources of additional revenue and the military and administrative cost of control. This allows calculation of the optimal external size and shape.

Several factors contribute to limiting this size and shape. First of all, the increasing cost of public services that are not "pure" but whose quality decreases when the number of users rises, whether in the area of defense, police, justice or any other collective good which involves development of an administrative pyramid. Further, geographic distribution of economic activity and wealth does not always allow for sufficiently high levels of revenue production. Finally, the type of management of each State, and their leaders' objectives, do not always allow the maximum size and shape to be achieved.

Equilibrium in the geographic sense also depends on the specific objectives of the State, total tax revenues or net revenue minus costs, concentration of resources and populations in a given geographic area, and the rising cost of providing public services and administrative control of territories and populations.

The geography of potential "deposits" of tax revenue

Populations and their wealth are never distributed in a uniform way in space. It follows that a State's frontiers will be defined by geographic "deposits" of wealth -- concentrations of economic activity in certain regions. A rational predator will attempt to control the wealthiest and most easily exploited areas on a priority basis, and only then acquire less profitable ones.

Thus, over the course of history, foreign trade has been the main source of revenue for States because it is easier to tax than land or internal trade. Changes in trade routes and trade flows can therefore be considered to be a major key in understanding history .

This type of thinking has been more specifically developed by David Friedman. He shows how, in the history of 14th century Italian City-States, trade taxation led to inclusion of all the trade routes within a single nation, as it would not have been efficient to levy a multitude of taxes determined by independent political authorities over a given route. A similar example can be found in the practice of 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 areas.

A labor tax is generally more difficult to extract if the population is mobile. It can only be maximized if labor cannot emigrate or is otherwise immobilized. As language is a factor that limits mobility of its speakers to the areas where it is spoken, it follows that when a labor tax becomes an important part of a State's revenue, nations are no longer able to organize themselves around trade routes, but rather focus on group populations speaking the same language to reduce as much as possible the external mobility of the taxed population. Friedman explains that such concerns are responsible for the regular increase in the index of linguistic homogeneity in the principle European nations from the 12th century to the present.

Various authors have emphasized the historical connection between urbanization and the development of the State, which incidentally also corresponds to the thesis about the origin of the State by the increase of population density. A high population density allows more extensive depreciation of the fixed costs of public goods, it also allows for better control of individuals than when they are dispersed over vast areas. The decline of the Roman Empire can be explained by de-urbanization, with the evolution towards feudalism resulting from contraction of the urban and trade base of the empire's tax revenues. And it would have been the same in other civilizations. According to Auster and Silver, barbarian raids that led to the contraction and then abandonment of Mycenean cities also caused the decline of the Mycenean state which was replaced by a large number of small States based on a rural economy. In the same way, transformations of trade routes led to extreme cases of rural deconcentration of States industry in the Dniepr basin in the 12th century, and in Prussia in the 15th century.

In Sumer, urbanization apparently preceded the emergence of numerous City-States and facilitated centralization of the entire region under the authority of Sargon, at Akkad in 2340 B.C. Despite sporadic interruptions due to 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 growth of urban life in ancient Greece, from 800 BC, as in Western Europe during the 11th and 12th centuries, also contributed to a re-concentration of political authority. Continued urbanization was accompanied by the rise of national monarchies, the several thousand small principalities or "States" gradually being replaced by large protective firms which, at the beginning of the 20th century, numbered only 30. In a similar way, 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 population density and of the concentration of resources on the profitability of the protective firm. Density of resources facilitates the process of levying tax, but also reduces the cost of public services to taxpayers as well as decreasing distances and increasing population homogeneity. In their analysis, Ulrich Blum and Leonard Dudley demonstrate how public services provided to more distant and heterogeneous populations loses its effectiveness, whilst the cost of military control of the territory and populations increases with distance and people’s heterogeneity.

Economies of scale in production, a feature of public goods which always incites States to look for a large population implanted in a large 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 controls on enforcement of directives from the hierarchy become less effective as the number of organizational levels increases. Beyond a certain geographic size, production costs of public goods inevitably increase, as do those of military control of the territory, both from secessionists and groups seeking autonomy as well as from foreign powers.

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Local public goods

In real life, public goods are never "pure". The increase in the number of users tends to deteriorate the quality of the service the individual receives. This means that users are increasingly hesitant to pay tax when the demographic and geographic size of the State increases, because public services deteriorate with larger numbers, and effective service costs must increase to ensure quality.

In addition, the taxation process requires an administrative and fiscal organization whose costs rises proportionally with increasing geographic size and demographic dispersion. It follows that a State which seeks to increase in size will, beyond a certain point, find it increasingly difficult to extract from the population it wants to control the resources it needs to function. Even without a rival neighbor. This explains why States come up against barriers, in seeking to increase resources. Simply, at a certain point, their geographic size and shape reaches an optimal level.

There are costs inherent in the large size of States, acquisition costs, for example -- wars with rival States -- but also higher costs in managing 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 more difficult to ensure this service within a very large population located in a huge metropolis, where delinquents are more difficult to identify than in a town with a population of a few hundreds where everyone knows everybody else and their movements. In the same way, law and order are more difficult to implement in the distant, peripheral areas of a nation or in an empire than in its capital city. This implies that this collective service is "impure" or yet again, "local": its quantity and quality vary according to the number of users and their geographic remoteness.

The same difficulties are encountered in controlling a firm where the manager himself , or yet again the "superior information available to the manager", is a "public good" which loses part of its value when the firm increases in size, as we see in the case of mergers and acquisitions .

In practice, public goods are almost never "pure" in the sense that consumption by some implies a reduction in consumption capacity for others, 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 scarcity of the service. Thus an additional student or trial deteriorates the quality of service available to everyone else. In the area of security -- the police and justice departments -- everyone does not have access to exactly the same service. This depends on their place of residence or knowledge of laws and regulations. Some will be better protected than others.

Beyond a certain size of the customer base, 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. Thus the French national defense system cannot hope to serve all the inhabitants of our planet. The greater the distance of the populations from France, the less this defense can technically be to their advantage. It follows that public goods are not "global". They may be national, regional, or communal, for example, depending on each situation.

There is also the concept of a "local", or almost public good, that is, public good considered within a specific geographic environment. In this case, the public good is not "pure" in economists' definition of the word. It is no longer available in exactly the same conditions for all users. The quality of service is not strictly the same for all, independently of the number of consumers. There will be "overcrowding" and rivalry among the users. Some take better advantage of a public good and manage to more or less exclude some others.

Thus the quality of a collective service will specifically vary as a function of geographic remoteness from the place of production or the center. For example, police service will be more efficient near the police station than in remote, little- frequented streets. Equipping the town center with public infrastructures will not be of equal benefit to residents in the center and those on the periphery, whoonly visit the center on an occasional basis. A good example is also provided by radio waves and television broadcasts. In theory, once the program has been broadcast over the air, all users can receive it and the broadcaster will spend the same amount of money to reach 100,000 or 500,000 additional persons. However, in practice, if these additional users are dispersed over a vast area, they will receive poor quality broadcasts, or nothing at all. Reception quality will decrease or drop to nothing due to increased distance and natural obstacles (mountains and valleys). It follows that a television program, which is a "pure" collective good in a limited geographic area, requires additional investment, such as relay or cable stations, to reach remote and dispersed populations. The cost of such equipment can be very high depending on the number and geographic dispersion of 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 overly serve remote populations. Providers of public good (the State in this case) experiences the economic limits of its geographic extension. National defense may also be of unequal benefit to the more remote parts of the territory that are more exposed than others to military action by an adversary. Border regions, for example, are often the first to be sacrificed and invaded in the event of a conflict. They are thus less well protected than the center of the country.

Rising administrative costs

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All public goods are subject to a centralized management system, which implies a hierarchy and thus a bureaucracy. Competition arises between the smallest or largest hierarchy (Empire or commune). It all depends on the degree of scarcity or amount of information.

In a recent development, industrial economics has also studied the internal, administrative organization of the firm. 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. In addition to the technology used to produce goods and services, which determines the costs linked to each production level, and consequently the most advantageous production volume, it is vital to assess the firm’s internal administration costs in order to determine the overall size it can achieve.

This means taking into account the size of firms implicated in several production processes and active in several different sectors. Firms which involve several production activities that may not necessarily be situated at the same level in the process, beginning with raw material and ending with the final user, are known as conglomerate firms. A good example is firms which manufacture televisions and automobiles. Firms are considered to be vertically integrated when several consecutive activities are grouped together within the production process, for example, manufacture of clothing and its sale to the public via a chain of stores.

For these types of firms, the performance of the internal administration is the first determining factor on the overall dimension of the various production processes, such as the total number of employees. The cost of managing this production may or may not be minimal for an optimal production level (when the average production cost is at a minimum). Minimum production costs and minimum administrative costs do not necessarily coincide.

Thus, if the optimal dimension for car production is greater than the firm's optimal bureaucratic dimension, a "joint venture" between two smaller firms will arise, where each firm keeps their own brand and remains independent, but come together to produce the same model which is then marketed separately. On the other hand, if the administrative dimension is greater than the production dimension, a firm will have several different establishments, with, for example, sites implanted in several different countries.

The same holds true for State-firms. If the administrative dimension is greater than the dimension responsible for producing public services, production is decentralized, as was the case for feudalism. In the latter system, security was produced on a local level by the lord of the local castle, who nevertheless recognized his obligations to the empire and to his sovereign who decided on peace or war by engaging his vassals. It is the same today with the trend to decentralization and autonomy, where the effective production of public goods, education and the police is relegated to a lower level of authority

Inversely, when the administrative dimension is smaller than the dimension of production of public goods and services, military alliances may arise. Other situations include payment of tribute from one nation to another, or participation by independent nation-states in international organizations in special areas such as production of a legal order or international trade.

The state provides public services, primarily the monopoly on violence, which have a cost. Beyond a given territorial dimension, costs ultimately rise. No army benefits from such effects of scale even if its optimal production level is worldwide. And in addition, the State must set up an administrative system to levy taxes in the territories it administers directly. The military system will not be sufficient to accomplish this task. It can seize goods through plunder. But to regularly levy taxes on all types of production requires a specialized, permanent, and sedentary organization. An army, however, must remain mobile. Here again, costs initially decrease, but subsequently rise. Altogether, the optimal territorial dimension for the State is defined by the minimum combined average cost for these two functions.

As for firms, the various functions of the State may, however, be dissociated or grouped together under one authority, depending on the importance of what economists call "economics of scope". For example, a firm manufacturing automobiles can also manufacture trucks, or two-wheel vehicles, if the combined average cost of these different productions as managed by single central department is lower than the average cost of each production carried out separately by two different firms. A State can thus sub-contract certain functions to independent organizations, and change the range of services it produces for itself. Some small States do not produce national defense capabilities, but place themselves under the protection of larger States. Within a single nation, some produce education, while others entrust this production to the private sector. However, operations where the usual range of public services is re-organized or modified do not necessarily impact on the geographic dimension of the nation-States.

When the size of hierarchies increases or decreases, the optimal size and scale of States do the same. However, the State hierarchy can change its dimension in two different ways: it can develop by increasing its demands for resources from a given population in a given territory, which constitutes internal growth, but it can also develop by extending its control over larger populations in larger territories, resulting in external growth.

Both types of optimization can be done simultaneously. But they can be considered separately for the purposes of analysis, as we have done. Internal growth reaches its limits when the cost of marginal taxation is superior to the marginal revenue it produces, as I indicated in my theory of nationalization and privatization. When taxation rates are higher, incentives to production for individuals are weakened. Ultimately production will stagnate, which means that the social cost of taxation, measured in terms of loss of earnings through the production of wealth, will increase. The State can then consider eliminating certain activities to reduce social costs and allow private production to resume, gaining tax revenue on increased production while simultaneously reducing expenses. Budgets will be less restrictive and it will be able to attain its chosen objectives once again. Inversely, when the conditions that encourage development of a hierarchical pyramid are extent, the State will absorb an increasingly large share of formerly private activities into its own sphere. This is nationalization and interventionism. But such internal expansion will reach its limits with the increase in the social cost of the resources the State must levy to finance these additional activities, which brings us back to the preceding analysis

But there is a second possibility for a State with the right conditions for hierarchical development : it’s called external growth and it provides new opportunities for taxation. But for this to be possible, the State must grow to the detriment of another State and have a superior capacity to control a given region. Military superiority is often evoked in this case, but it is not sufficient. It also needs to have administrative and management superiority and a complementarity with State activities in its initial stages.

When the threshold size for efficient hierarchies has been reached, the populations concerned may find themselves closer to other production "centers" -- other nation-states. The choice between nation-states which are "equidistant" in terms of cost and quality of collective services is then based on criteria that take into account the particular circumstances and technological change. This is the case for border areas often disputed over the course of history, the "border country" of an empire or realm. Bordering States compete for these areas to define frontiers and the exact scope of their territorial jurisdiction.

For a group of States all seeking an optimum geographic size and space, there can only be peace if the choice of frontiers is compatible with the choices made by neighboring States. This compatibility, this simultaneous definition of compatible frontiers, is the central issue of diplomacy and war. Attaining this balance is the objective of geopolitical strategies. But ultimately its achievement depends on the respective optimal dimensions of neighboring nations

II. Geopolitical equilibrium

In the finite world of the twentieth century, the entire planet is occupied by contiguous States. There are no more white areas on the maps, no terra incognito remaining to be discovered by explorers and conquerors. In such a situation, what happens when the geographic optimization for certain States implies mutually incompatible expansion? 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, such as envisaged by Lenin to organize the entire Russian production into a single gigantic firm? And will the frontiers coveted by each State be compatible with the aspirations of others? Will the geographic balance of the "industry of States" be stable or unstable, consensual or the result of conflict?

Balance within a given population of different States results from the behavior of each individual State. With every State trying to attain its optimal size, a particular structure of State populations is defined by reciprocal adjustments with its neighbors. Depending on the economic conditions that determine the progression of the optimal dimension of organizations, a society of nations tends towards a competitive structure, or, in economic jargon, an "atomistic" structure, characterized by a large number of small States, each tending towards what we may call an individual competitive State, or on the other hand, towards a "oligopolistic" or "monopolistically competitive" structure composed of a few large States.

The explanation of the degree of concentration of the world industry of nations is based on the same analysis as that governing the structure of any industrial or service sector. When the average size of firms in a given sector rises, for a given market demand, there is only enough space for a smaller number of firms. Thus a concentration of the population of firms arises. Inversely, if the average size of the firm decreases, the number of firms in the industry increases and the population becomes subject to de-concentration.

Economic theory shows how the optimal size of a firm, its volume of production, is dependent on its cost levels. The lower the production costs for a given volume, the more the firm is encouraged to increase production. The cost level for a given production is related to the technology used. Thus the production technology determines the optimal size of each firm and subsequently the organizational structure of the sectors of activity, a standard conclusion in the field of industrial economy.

The situation is exactly the same for States. Their optimal dimension will depend on the production costs for collective services, and especially security services, that is, military effectiveness, as well as the cost of administrative management of the populations and territories.

Given that the size and shape of States depends, for a given geographic situation in terms of men and wealth, and a given level of military technology, on the relative size of administrative hierarchies, the concentration of States worldwide will thus be in direct relation to the factors that determine the optimal dimension of hierarchies, especially scarcity or abundance of information in a society. When the hierarchical mechanism is seen to be more efficient than the market mechanism, the number of States decreases and their size increases. And the reverse is true where market mechanisms are more efficient than hierarchical mechanisms. Which also determines the distribution of decision-making between a variable number of nations, and consequently between a variable number of State leaders on a global level.

During the "second twentieth century", the population structure of States has undeniably tended towards de-concentration, as shown by the increase in numbers. However, where the optimal dimension of each State remains fixed, it may be that the demographic explosion dating from the beginning of the century could explain this increase. As demand for State services grows due to the rising number of "consumers", new firms must be created to satisfy the needs, if the average dimension of the ideal firm remains unchanged. Thus, the increase in the number of States may correspond to an unchanged optimal dimension, but with a higher number of consumers, which would imply multiplication of the number of firms and de-concentration of the industry of States.

However, several indicators show that, at the current time, there is probably also a decrease in the absolute optimal dimension of a State. Thus, we observe an increase in the number of States even in areas where the population has not risen, as in Europe, for example. Or even the trend to separatism and secession in areas that are stagnant or in demographic decline, such as the USSR or some European nations.

This is an essential point in discussing peace and war between nations, as changes in the structure of the industry of States, the transformation of the structure of the society of nations, is a fundamental cause of the overall situation of peace or war between nations.

Since the end of the 19th century, "nationalistic" conflicts multiplied between expanding States that gradually grew into rival empires. The culminating point was reached at the end of World War II with the planet-wide conflict between the two remaining super-powers, the United Sates 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 multiplicity 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 nation-state system worldwide, the "society of nations", has thus undergone profound structural changes during the last century. All these nation-states taken together make up a world sector of specific activities, a planetary industry of collective services production, or yet again, a collection of State-firms more or less in competition with each other depending on the period via trade, diplomacy, and sometimes, war.

This optimal structure for the sector can change over time, especially with technological development that can determine new optimal dimensions for the State-firms. To establish new frontiers in a finite space, that is, a space completely occupied by neighboring and rival firms, expansion by one necessarily implies the reduction of another.

Wittman's approach has clearly demonstrated that it is the firm which best increases the value of the territory contested that will be the victor, but no violence need be used, only peaceful exchange. However, the latter is hardly probable in an anarchistic society of nations, i.e. without any overriding authority capable of imposing law and order to all. In several cases, exchange of territories and populations has occured without military conflict (Louisiana handed over to the United States, Corsica purchased by France from Genoa). However, in most cases, conflicts centering on reallocation of territories are resolved through war.

An analysis of the ideal geographic dimension of States, which depends on their ability to conquer and manage through their bureaucracies varying sizes of territory, leads to an examination of the conflicts which may occur in the event of competition for territories that are coveted by two or more States, each seeking its optimum dimension. Which implies that the optimum dimension for States constitutes the foundation of a theory of geopolitical balance as well as for the conditions governing the negotiations or wars that determine this equilibrium. We will show that periods of geographic expansion by States, leading to increased concentration of the society of nations, result in the inevitable advent of war.

The question then arises of how to conduct a change in the dimension of the nation-state when the territory involved in the change is disputed, which is particularly obvious when the entire planet is already occupied by contiguous nation-states as has been the case since the end of the nineteenth century (a finite world). A reappraisal of frontiers may result in a mutual agreement, with or without compensation and payment, through the purchase of a given State's territory by another State. Another possibility is the exchange of territory (barter), or, in the case of non-compensated transfer, through the consent of previously independent populations or populations in another State (the Referendum joining the Savoie region to France, or the peaceful separation of the Czech Republic from the Slovak Republic).

However, recourse to force cannot be excluded completely, because the world society of nations is anarchical. There is no higher authority to impose order on the society of nations. There is no monopoly of violence held by a single producer anywhere on the planet. Nor is there any recognized hierarchy that can enforce the domination of one State over all the others, or the domination of an organization other than the State (the UN or other international organizations). In such a case, as in a society composed of individuals, a mutually agreed exchange may be advantageous, but the same may be said for predatory behavior. Preferably in terms of production. It all depends on the comparative superiority of each nation (or each individual) in terms of production and predatory behavior.

Conflict of interest

The rational goal of every state-firm is to attain the optimal geographic size and shape, which, depending on the power of the governing powers and the governed respectively, will either maximize tax revenue net of production cost for public services, or seek to achieve the largest possible territorial dimension compatible with a tax rate acceptable to taxpayers.

Thus, simultaneous optimization of the territory by several States can engender conflict. If each nation is at its optimal dimension, no conflicts should arise if their behavior is based on rational considerations.

But there are other examples, which we may simplify by considering two States. The optimal dimension may be on the wane for both. In this case, there will be secessionist or separatist movements within each State. Or the optimal dimension is growing for one and decreasing for the other. Or yet again, the optimal dimension is growing for both (or, in another variation, one remains constant while the other grows). In the first two cases, no potential conflict exists as each State can re-organize itself independently of the other. But in the third case, we are faced with a conflict of interest.

Thus, if a given territory can enable both neighboring States to optimize their territory, then its loss, or an inability to control the territory, will deteriorate the well being of the State that loses the territory. In this case, competition is a "zero-sum-game" situation: what one wins, the other will necessarily loose.

This implies that in a finite world, a universal increase in optimal size of States will necessarily give rise to generalized 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 secessionist movements and separatist trends, resulting in territorial dissolution following internal conflict, as was the case for Yugoslavia.

If several areas in a given State seek to become independent nations, they can do so by common consent, with no conflict of interest, providing they do not seek control of the same territories. The dissolution of Russia or Czechoslovakia, as opposed to the situation in Yugoslavia, is very revealing. The first two were achieved in a peaceful way, while the latter plunged the country into murderous conflict. An explanation for this contrast lies in the presence or absence of territorial and demographic disputes. In the first two cases, the populations wanted to constitute new, clearly separated States. The territories were clearly separate. However, in Yugoslavia, the inextricable interpenetration of composite populations made the separation process necessarily a controversial one, implying much conflict and confusion. The overlap of areas claimed by opposed parties engendered the conflict.

The geographic optimum for each State, as determined by specific factors, does change over time when the factors themselves evolve. It may follow from a change in political regime following internal transformations (changes in the structure of economic activities or demography), or yet again a displacement of trade routes and geographic localization of certain activities, often as a result of changes in organizational technology and, most importantly, in storage and information transmission techniques.

To be able to predict the direction a given society may take in organizational change, we must ask ourselves how the optimal size and shape of the basic organization is evolving. That is, what populations and what territories can the government or State control in an economic sense? And as a consequence, how many independent governments can exist in the world at a given moment, that is, governments that are not in a hierarchical relationship to other States?

The answer to such questions gives an indication of possible competitive relationships -- trade disputes -- between governments, and what aspect of inter-governmental coordination will be handled by a higher authority… in short, the problem of secession and federalism as analyzed by Donald Wittman.

His analysis seeks to include general factors that influence all States simultaneously. For example, it is highly improbable that, faced with similar tasks, such as production of order, security, and other collective goods, the various States will encounter highly dissimilar conditions of production. In a given sector, there may be firms with extreme variations in size, but the dimensions of all these firms tends to evolve simultaneously in the same direction as production technologies. Thus, all automobile producers will generally seek to increase or decrease their size at the same time, as will all bankers or pharmaceutical firms.

Special determinants may be present that encourage growth in a single firm, leaving the optimal dimensions of all the firms unchanged. But these special factors, by definition, cannot explain general trends observed during a major organizational cycle.

The contractual solution

David Friedman and Donald Wittman both envisage a contractual solution to territorial rivalry between States. The conflict may be resolved through sale or purchase. The territory becomes the property of the nation who places the most value on it, which is the case for goods and services in general. Thus, as in auctions, the purchaser 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, a firm seeking to attract workers from the labor market will be the one where the worker in question is the most useful, the most productive, which will enable that firm to pay a higher salary than its less productive competitors.

In the same way, the nation that successfully wins control of a disputed border area will be the one that considers it the most useful for its economy or military strategy, such as the Golan heights for Israel and Syria, or Alsace-Lorraine for France and Germany.

In a world where anarchy reigns between nations, it is easy to imagine that the most powerful country will necessarily win through force, since it can, if necessary, ultimately annihilate its competitor. But in a world with many nations, such a strategy seems dangerous and hardly plausible. To devote major resources to crushing a competitor in order to win a given piece of territory will weaken even the most powerful country with respect to all its other competitors, because it must consume rare resources to achieve victory. Such an increase in size and shape implies a loss of efficiency in the conquering country. Thus this is a losing strategy in the medium term, unless the value of the coveted territory significantly strengthens the position of the victorious country.

We must thus assume that in a situation of competition between nations, the most powerful nation will not necessarily succeed in increasing its territory, but rather the nation for whom the disputed territory represents the greatest value, which brings us back to the example of economic exchange. In this case, the value also depends on the varying capacity of the competitors to levy taxes from the coveted population, a capacity that in turn depends on an efficient use of violence as well as administrative management. Two predators of varying degrees of efficacy will not attribute the same value to the same territory, and the most efficient predator will thus win the competition for its control.

However, under these conditions, why are all territorial disputes not solved in a peaceful way via compensatory financial transactions, where the country that places the highest value on the disputed region pays a price to the country who renounces its claim? The difference would still allow the purchasing country to reap the benefits of its acquisition, just as a collector can enjoy the painting he has purchased at a higher price than all other potential purchasers.

Under these conditions, war should not exist. We could conceive that war is a way to avoid payment of the compensatory costs to the country that renounces the territory. But in reality, this is not the case, because the costs incurred through war can easily rise to the level of what could have been a peaceful transaction. So what can explain war?

Why war?

For a war to begin, several conditions must be present. First, a conflict of interest must exist; then, the situation must be anarchic, that is, where, in addition to consensual exchange, reliance on force must be part of the strategy; and finally, uncertainty as to the value, net of cost, of each opposing party's stakes. The first two conditions are obvious. If there is no conflict of interest, or if a higher authority can effectively forbid conflicts between subordinate political entities, there will be no war. However, in the world industry of States today, the situation is indeed anarchic. In the absence of a sufficiently powerful State -whose optimal dimension would be the world -- with an ability to monopolize violence throughout the planet, violent competition will be the rule where more than one State exists. As in a society of individuals, anarchy allows both predatory behavior and production as a means to procure resources, depending on the way each player calculates their optimization and relative capacity for these two types of activity. Two approaches are possible: violence or consensual negotiation, and these can be substituted for each other. This is the origin of that old adage that war is only another way of playing politics.

Nevertheless, a situation of anarchy will force all the States to consider the strategy of violence as a possible option. A potential purchaser of a territory may pay money or exchange it for another territory, or yet again agree to military expenses to enable him to annex the territory without either monetary compensation or payment in kind. Faced with such a competitor, the current owner of the territory has no choice, and must also have recourse to violence. To renounce this option implies loss of a competitive weapon. He will always be defeated, as would be true for any country in a military conflict that would refuse to use a certain type of weapon, such as the navy or aviation.

Generally speaking, no pure form of contractual negotiation is possible without resorting to the threat of effective violence between States that seek their geographic optimum. However, the threat of violence does not automatically imply that it will actually be used. The recourse to actual violence remains to be examined in explaining the outbreak of war.

There is thus yet a third condition that will cause a contractual solution to be refused and a war to ensue. If all the relevant factors operating in a competitive situation between two States for a given territory were known -- the value it represents for each State and their available resources -- the solution would be obvious to all and a contractual solution would be found without conflict, and even without negotiation. The optimal division of space would be directly in favor of the State with the greatest need for the territory, given the military or pecuniary costs required to convince the other potential purchaser or current owner to renounce it.

And this solution would prevail even in the case of a territorial division that would be to the advantage of one and the disadvantage of the other. Here, the winner could, thanks to increased productivity, compensate, at least partially, the loser whose productivity will decrease. By definition, the winner will be the State that best develops the territory and thus has the ability to compensate the loser for his loss of income while still benefiting from a net gain due to the difference in productivity between the winner and loser.

But this assumes, first of all, that one of the States has a clear managerial advantage over the other and that, in addition, both protagonists are completely aware of the fact. In reality, there is always a degree of incertitude. And in this case, each must prove that he is prepared to better develop the conquered territory than the other. To do this, as in an auction, he must make a high offer, that is, effectively pay the acquisition price to reveal in a credible way the value placed on the coveted object.

In an auction, the bidder promises to pay the bid price if no one makes a higher offer. Thus he truly commits his resources to the competition with no possibility of drawing back. Between States, there is no auctioneer to enforce such commitments. On the other hand, war requires a series of payments at an increasingly high price until one of the belligerent countries finds the cost excessive compared to the value placed on the stakes and decides to cut their losses by proposing an armistice and negotiating peace.

Only the use of force can reveal which competing firm is more efficient, or believes itself so, that is, the firm able to levy maximum taxation from the population and the territory in dispute. War is high-risk spending designed to convince the adversary of one's superior capacity to develop a territory.

If it is in the interest of all nations to simultaneously increase their size and shape, because military or administrative technology has changed, for example, in this case only a military victory will enable the victorious nation to approach its optimal size. The other nation or nations will have to remain in a sub-optimal state, which implies a cost, and loss of well being. Consequently, there is no place for negotiation that could benefit both parties, no consensual transaction. Each party attempts to win through violence. Violence, as Georges Sorel said, but for different reasons, plays a social role, especially in a situation where anarchy is the rule. It reveals who places the highest value on a given resource, who is ready to pay the highest price, or yet again, who makes the most efficient use of available resources.

The industrial organization -- or systemic -- approach to the society of nations thus sees the overall source of wars in an increase in the optimal size and shape of nations. This is indeed the apparently most significant common factor in the history of conflict, as we will see below, although the political regime may also be a determinant whose influence has not yet been demonstrated, as the structural and dimensional aspects analyzed above have not been examined in relation to one another.

It follows that periods of general growth in the size and shapes of States, with a concentration of population among nations, are also periods characterized by wars. And even more so where the State's internal political system is managerial rather than patrimonial. A hypothesis we can now test by looking at historical experience.

The territorial hypothesis vindicated

The traditional approach to war seeks explanatory factors in the behavior of one or several States, especially those linked by treaties and alliances. It is true that a single State may be responsible for war -- a "warmongering" State. War may also involved only two States in a local confrontation while other States remain at peace with one another. But in these cases, the causes of war are specific, particular, and the conflict does not become general. In the same way, each company has a unique strategy. Nevertheless, there are important factors that will affect all the individual strategies for a given industry. Balance in a given sector indeed depends on a plethora of individual decisions, but nevertheless, the latter are all affected, to varying degrees, by factors common to them all.

Taking into account the factors that apply to all conflicts between nation-states is even more important when we recall that such conflicts arise from territorial disputes, while in the modern world it has no longer been possible to "freely" expand frontiers since the end of the 19th century. Finally, all state pyramids of authority are simultaneously affected, in terms of optimum dimensions, by the impact of transformations in information technologies.

All the above arguments support the "systemic" analysis of the causes of war recommended by a number of authors such as Mansfield and Gilpin , as opposed to the anecdotal approach.

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Centuries of experience

Our vision of war has been strongly marked by the history of the construction of European nations since the 15th century -- the history of an ongoing pursuit of territorial expansion, especially for France. Throughout this period, the optimum size and shape of nations increased. This doubtless explains the current theory that claims that the largest, most powerful country must, barring major errors on the part of its leaders, a lack of courage and resolution, or internal dissent, invariably win the war. Thus Kautilya's precepts (footnote)… on the State's international strategy. And the result: an obsession with size and shape, the quest for large size, the fears of certain large countries that serve to polarize the geopolitical debate as a whole.

According to Jared Diamond, who takes an historical look at agricultural societies, war has always been a tool to concentrate political entities, as proven by archeological findings and history. And where war is absent, the threat of war determines the mergers and acquisitions of States.

Similarly to certain authors cited above, he suggests that population density explains the concentration of States (Carneiro's theory). In a low-density space, conquered populations can flee elsewhere (nomads). In a moderately populated space, they cannot flee, but are of no use to the conqueror, and everyone is exterminated with the exception of the women. In a densely-populated space, the conquered cannot flee but are used as slaves or taxpayers (as explained by the history of slavery as an alternative to extermination).

More systematic studies have been conducted by specialists in international relations to explain under what circumstances wars occur. According to Geller and Singer, there are a considerable number of publications on the subject, all relatively recent, beginning in the 1930s. However, they are primarily empirical, and the conclusions remain relatively unconvincing and somewhat limited.

These studies are based on ad hoc intuitive factors, such as proximity of belligerent forces, the political regime, the balance of "power", and the psychology or pathology of 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 factors determining the outbreak of wars, and especially studies by authors who participated in the "Correlates of War" project sponsored by the University of Michigan in 1963-1964. It is clear that social scientists feel the need to amass a vast amount of information on the factors associated with war before attempting to explain the causes.

They have looked at over 600 articles published since the end of the 1960s, all of which use data obtained from observing wars and their associated variables. In addition to these studies, all published in the field's five major journals, they also examine two dozen books devoted to a rigorous and systematic analysis of international political problems in general and armed conflict in particular.

Their main conclusions are as follows.

They observe that the status of a major power is a decisive factor. By definition, great powers are usually of larger size, and thus benefit from a special initial advantage in seeking to grow.

For the overall population of States, they conclude that the factors influencing the probability and gravity of conflicts are the number of frontiers separating the nations, a polarization of State systems, and the instability of the inter-State hierarchy. A multiplicity of frontiers obviously increases the probability of friction between States for reasons of control, which we present as the first cause of war. However, polarization of State systems, and the asymmetrical relationships between them, implies the concept of a concentration of resources between States, which necessarily involves a geographic aspect. Extreme polarization results in domination by a super-State grown to a very large size. But less extreme degrees of polarization result from increased concentration in the industry of States, which logically leads to friction along the borders and greater opportunity for conflict. For this reason, incomplete polarization that is nevertheless pursued (explained by the instability of the hierarchy of States according to Geller and Singer) must result in increased competition for areas under control and a more frequent use of war to allocate disputed territories and resources.

It follows that contemporary studies on wars between nations tend to confirm the idea that the general and ultimate cause of war in the world society of nations will be an increase in the average dimension of nations. However, the latter depends partly on the nature of the political regimes, as managerial (dictatorial) regimes tend to pursue growth in and of itself, as opposed to patrimonial regimes (monarchic or democratic). Which strongly supports the negative relationship between war and democracy or war and trade often observed in many econometric studies, but not yet truly explained. Indeed, democracy develops in areas where organizational is not yet too extreme, and consequently where managerial political regimes are weaker. In addition, all things being equal, democracy requires leaders to provide public services and depends on an economy of means that forbids the pursuit of growth and discretionary empire building.

War and the world concentration of nations

Two other historical analyses on nations support the territorial explanation of the origin of war: Bergesen and Schoenberg's analysis on waves of expansion, and Mansfield's study, which is more precise and concerns relations between the major national powers during a shorter period, from 1820 to 1965 .

Bergesen and Schoenberg begin by noting the importance of colonial expansion in the modern world system. Since its beginnings during the 16th century and until the 1960s it included, at one time or another, most of the surface of the globe. In 1800, about 35% of the planet was, or had been, controlled by Europeans. In 1878, this figure rose to 67% to reach 84% in 1914.

The authors established historical series of the number of colonies created by European nations over these centuries. The series revealed two periods of intensive colonization, the 16th century, and the end of the 19th and beginning of the 20th centuries. On the other hand, the 18th century (the Age of Enlightenment) and the end of the 20th represent periods of intensive de-colonization, that is, decentralization of the world system of nation-states. In passing, it is particularly interesting to note that periods of colonization are also periods of mercantilist trade policies and the decline of free international exchange, while, inversely, periods of de-colonization are characterized by liberalization of world trade, first between 1820 and 1879, and later, with the GATT agreement in the 1950s.

However, the most interesting observation with regard to the question at hand is the overlap between periods of strong colonization and periods characterized by major wars between European powers -- at the end of the 17th century, and later during the 20th. Periods of geographic expansion controlled by European nations thus corresponded to an intensification of wars between those nations. In particular, a higher frequency of war occurs during periods of empire-building. That is, periods during which the optimal size and shape of all the European nations was growing strongly. Which supports our analysis of war as a result of border conflicts between nations and expansionistic state hierarchies.

Yet another study by Edward Mansfield has resulted in a similar type of observation. In a systematic and statistical analysis of the period between 1820 and 1965, he seeks to determine factors governing declarations of war between major powers. But he asks a slightly different question than ours: to what degree distribution of forces, or powers, between nations can exert an influence on the structure of international trade and account for wars between nations.

To accomplish this, he begins by measuring the concentration of the "capacities" of the five major world States, taken from among the twelve largest, at different points during the period from 1820 and 1965. These capacities were measured in terms of the economic, demographic and military dimensions of the nations concerned. The identity of some of these nations changes over time, as the identity of the five most powerful nations changed during the 19th and 20th centuries. But what is interesting is that this measurement of the "capacities" of major powers has a direct relation of our concept of concentration of the resources of nations and thus their optimal economic, demographic, and geographic size. A nation with rich economic, demographic and military resources is necessarily a "great" nation in geographic terms as well.

Mansfield then examined the relation between this indicator of concentration of national dimensions and the degree of hegemony exercised by the most powerful nation of that time on the number of conflicts between States and the importance of international trade.

He thus demonstrates that a concentration in the size and shape of major nations has a negative effect on the amount of international commerce, but, on the other hand, increases the frequency of conflicts between nation in a statistically significant way. What is even more interesting is that an increase in concentration of nations, which we interpret as a general increase in the size of nations, contributes equally, and in a very significant way as well, to an increase in the probability of war between these nations. Which corresponds exactly to our analysis of the probability of military conflict between nations pursuing a policy of expansion that will have to confront each other in border conflicts in territories coveted by both.

Going back to historical description, Mansfield notes that periods of low concentration of the "capacities" of nations (read, "of their dimensions") were periods of cooperation between European nations, in the early 19th century, for example, while concentration reached its maximum level in 1946 at the beginning of the cold war between the two empires, or cartels of world nations.

Conclusion

The system of nation-states evolves as a function of decisions taken by each State on the optimal size and shape of its geographic area of control. When the optimal dimension of the state bureaucratic pyramid grows, States have recourse to external as well as internal growth. The world population of nation-states also become more concentrated.

This concentration results in rivalry for control of territorial, demographic and economic resources. Given uncertainty on the value each protagonist places on coveted resources, and without a higher authority able 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 additional resources. It follows that war will occur more frequently during periods 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 atomization and dissolution of major hierarchies and States, is thus a period where the probability of war is low. While this technologically-based trend towards a decrease in the size of hierarchies and expansion of markets continues, we will experience a relatively peaceful period where conflicts will be limited to internal wars: civil wars, and wars of secession.

We are also moving away from periods of hegemony during which a large country imposes its will on smaller States. The concept of the central role of hierarchical dimensions also explains differences in organization observed between small and large States. If the absolute size of the hierarchy is large, but for a variety of reasons the country cannot reach a large geographic size and shape -- for example, due to the physical characteristics of the environment, such as mountains, the sea or oceans along its borders -- it will tend to seek in internal growth the optimization of its capacity for organization that cannot be sought externally.

The smallest States, all things being equal, will thus be characterized by a heavier taxation burden with respect to the national product than for larger ones. This explains the observation of Alberto Alesina whereby States with the greatest openness to international trade are also those where public expenses are highest. Alesina explains this observation by the higher risk of instability in economies that are more open to the outside. But there is no obvious relationship between the public expenses in question and the risk of economic instability. Our explanation relies on the fact that small States are necessarily more open to international trade than larger States. This has long been a well-known fact.

The observed relationship between external trade and the importance of a State in the economy corresponds to the relation between the optimal size and shape of a State defined in an absolute sense by the number of subordinates in the hierarchy, and the size of the economy, by definition small for the smallest countries. During periods where the size of hierarchies is growing, the States of smaller countries, more than others, find new activities to invest in the economy. Which explains the strongly interventionist and socialist traditions in Nordic countries.

Finally, periods of concentration of hierarchical structures explain the change of tone in relations between nations and the intensity of conflicts between societies. The size of organizations determines the number of organizations that can survive within a given sector or society. 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 duopoly. And the perspective of an evolution of the latter towards a monopoly will determine the overall confrontation 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 others. Decentralization is the norm. Each consumer or user can choose his supplier. In a monopoly, a single individual decides everything. He imposes his choices on all others within the firm and outside the firm. Order is unique, centralized and imposed on all -- resulting in intensive conflict for control of the monopoly which decides everyone's fate.

<u>The reasons for the major cycle: the rise and decline of monopoly</u>

The chaos and extreme confrontations of this totalitarian century are simply the expression of the rise of a monopolistic structure in the system of nations and in their internal systems. The first part of the twentieth century was marked by a transition from competition between nations to an oligopoly, then a duopoly, or, more specifically, a double cartel. In internal terms, it was marked by the shift from economic and political decentralization to a concentration of large firms, large parties and mass unions, followed by a transition towards totalitarianism and the single party system, with a single party line.

This transition leads to instability and increasingly radical confrontations, with an all or nothing approach. Whereas in atomistic competition each producer can live and let other producers live, in the rise to monopoly only one may survive, with the motto that to survive, all other competitors must die. A total confrontation scenario.

The vision it conjures up is interestingly not in phase with current developments. The second half of the twentieth century is not, contrary to what may be feared by those who still have the first half in mind, a time of hegemonic domination by a single power, a single organization, achieved through elimination of the main rival. It is no longer a time for globalization of a single empire, as was still possible during the times of Napoleon, Hitler or Stalin. On the contrary. It is a time of return to diversity, atomistic competition, decentralization. To a live and let live philosophy.

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