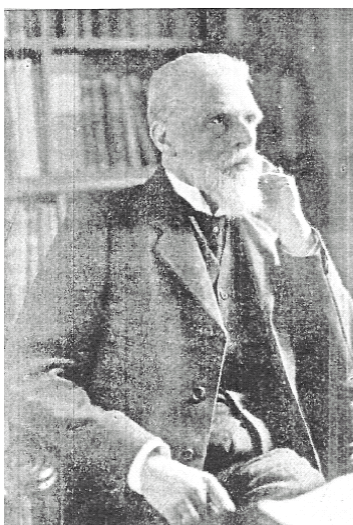


Power in Alexander Supan's *Guidelines to General Political Geography* (1918/1920)

“The value of every soil is in the atmosphere of intelligence, industry and virtue diffused over it by resolute and enduring citizens”.

William B. Weeden (quoted in RATZEL 1923:27)



ALEXANDER SUPAN

INTRODUCTION AND METHODOLOGY

Alexander Georg Supan (1847-1920) was a well-known geographer in his lifetime and the subsequent period, though since 1945 his name has been more or less forgotten. He was born and educated in Austria; his name is of Slovenian origin. From 1884 to 1909 he was professor of geography at the University of Czernowitz, from 1909 to 1916 he was professor of geography at the University of Breslau. Further from 1884 to 1909 he was editor of *Petermann's Geographical Announcements* [*Petermanns Geographische Mitteilungen*], which was one of the leading geographical journals of the time. His main work *Principles of Physical Geography* [*Grundzüge der physischen Erdkunde*] was published for the first time in 1884. Its sixteenth edition appeared in 1938. Nowadays he is most often remembered for his naming of undersea features after his proposal for terminology was adopted in 1904 by an international congress of geographers in Washington, and resulted in the first edition of the General Bathymetric Chart of the Oceans (GEBCO).

In 1918 Supan published the *Guidelines to General Political Geography* [*Leitlinien der allgemeinen politischen Geographie*], a second revised edition of which was then published in 1920 after his death. Friedrich Ratzel (1844-1904) had

been the founder of German geopolitics with his work *Political Geography* [*Politische Geographie*] published in 1897;¹ the term "Geopolitik" was, of course, coined by Rudolf Kjellén (1864-1922) in 1899. The *Journal of Geopolitics* [*Zeitschrift für Geopolitik*] was published from 1924 to 1944, a period which can be regarded as the heyday of German geopolitics. Thus in terms of proper chronology, Supan should be regarded along with Ratzel and Kjellén as one of the main pioneers of German geopolitics. Supan, of course, knew Ratzel's *Political Geography*, so his *Guidelines to General Political Geography* can be understood as constructive criticism of, and supplement to, Ratzel's work, which sought to bring more system into the matter (see SUPAN 1920: III, 7).

The article is structured as follows: A brief introduction to the ubiquitous importance of power in political geography and geopolitics serves to illustrate the relevance of the subject. This is followed by a description of Supan's conception of the state as the principal actor in the exercise of power. There then follows separate discussions of each of the three basic measures that Supan analyzes, namely, *population*, *space*, and *organization*. The difficulty of defining and quantifying the last one is a major concern. I shall then define and analyze national power based on these basic measures and present Supan's pressure quotient, which to some extent adds location as a factor into the calculation of power relations. At each stage the ideas of Ratzel flow in to provide the groundwork on which Supan built his ideas. As for method, 26 variables (that is, six variables for each of the three different measures and eight variables for national power in general) are tested for tentative viability by looking at the Pearson correlation coefficient of the variables in relation to a survey on power conducted by Jean-Yves Caro in 1998 (see CARO 1999, 2000a, 2000b, 2000c).²

THE CONCEPT OF POWER

Power is the most ubiquitous term in politics and international relations. Unsurprisingly, the same applies by extension to geopolitics and political geography.

¹ Ratzel published the second edition of this book in 1903, one year before he died, and Eugen Oberhummer did some minor revisions to publish the third edition in 1923. It is this work that subsequent references apply to.

² The survey was conducted in the first semester of 1998 at the Institute of Higher Studies for National Defense [Institut des hautes études de défense nationale – IHEDN], which is a French public institution for the purpose of training military and civilian public servants in defense matters. 214 students agreed to participate in the survey, 36 of which were in the military, 39 were economists, and another 40 being civilian auditors, the average age of the surveyees being 38.5. In the survey the surveyees were asked to assign scores ranging from 1-15 for the estimated power of 40 selected countries, which were then averaged into an interval scale. Some type of multiple regression analysis was used to weigh diverse factors in order to construct a power formula that best approximates those power perceptions. The complete list of countries along with their respective power perception scores: United States 14.38, China 12.11, Japan 12.00, Germany 11.82, France 11.61, United Kingdom 11.34, Russia 11.32, India 10.24, Israel 9.92, Canada 9.76, Australia 8.65, Spain 8.44, Brazil 8.41, South Africa 8.25, Saudi Arabia 8.12, Iran 7.8, Turkey 7.8, Sweden 7.69, Pakistan 7.38, Argentina 7.18, Indonesia 7.12, Mexico 7.10, Iraq 7.09, Singapore 6.93, Ukraine 6.87, Egypt 6.81, Syria 6.75, Chile 6.23, Poland 5.86, Malaysia 5.78, Morocco 5.76, Nigeria 5.47, Libya 5.37, Algeria 5.27, Colombia 4.76, Uruguay 4.43, Lebanon 4.30, Sudan 3.32, Yemen 3.29, Zambia 2.50 (CARO 2000b: 103-104).

Alexander Dugin emphasized it this way: "Geopolitics – a worldview of power, a science about power and for power" (DUGIN 1997:13).³ The problem is that this short definition broadens geopolitics to include almost everything, a problem that André Cholley in his *Guide of the Geography Student* [*Guide de l'Étudiant en Géographie*] describes as pertaining to political geography:

“What makes the handling of this political geography difficult is that it focuses on value judgments. The idea of power is behind all designs. Its main purpose is to evaluate the power of political bodies created by man. But the power of a political organization depends on some very complex elements, the value of which can vary from one era to another and even from one area of the globe to another. It includes not only the facts of geographical nature (location, demarcation of borders, military organization of the territory), the facts of population (density, distribution and social structure) but also psychological and moral notions (organization of culture, training of the elites or cadres) even religious facts, which are obviously nothing geographic”. (CHOLLEY 1942:76-77).⁴

Supan also put the emphasis on power, so he suggests differentiating between strong and weak countries, rather than big and small ones, stating that "strength and weakness are only expressions for different intensities of power to freely exercise our conscious will" (SUPAN 1920:13).⁵ Further, in the context of territorial policy he formulated the analogy that "power is for the state what freedom is for the individual" (SUPAN 1920:130).⁶ For Supan it is of central importance to analyze how the state grows and what conclusions this throws on the issue of power.

³ Original text: "Геополитика – это мировоззрение власти, наука о власти и для власти." This statement also unintentionally relates to the difference between geopolitics and political geography, so political geography is "about power" in analyzing the relation of power to space, while geopolitics is "for power" in advocating policy prescriptions, which means that geopoliticians are political in the same ideological sense that conservatives or socialists are. This, of course, does not imply that ideology excludes analysis, so political geography is very much a part of geopolitics. For other suggested differences, see HWANG 2008b: 3-5, or 2008c: 101-102.

⁴ Original text: "Ce qui rend difficile le maniement de cette Géographie politique, c'est qu'elle porte avant tout des jugements de valeur. L'idée de puissance est derrière toutes ses conceptions. Elle a essentiellement pour but d'évaluer la puissance des organismes politiques créés par l'homme. Or la puissance d'un organisme politique dépend d'éléments très complexes et dont la valeur peut varier d'une époque à l'autre et même d'une zone de la surface du globe à l'autre. Il y a, entre, non seulement des faits de nature géographique: faits d'étendue (situation géographique, tracé des frontières, organisation militaire du territoire), faits de peuplement (densité, répartition et structure sociale) mais encore des notions psychologiques ou morales (organisation de la culture, formation des élites ou des cadres) même des faits religieux, qui n'ont naturellement rien de géographique."

⁵ Original text: "Stärke und Schwäche sind nur Ausdrücke für verschiedene Intensitätsgrade der Macht, unseren bewußten Willen frei zu betätigen."

⁶ Original text: "Macht ist für den Staat dasselbe, was Freiheit für den einzelnen ist [...]."

Supan's Conception of the State

Supan had a favorable understanding and view of the state, so for him "the state is the foundation of all civilization and culture" (SUPAN 1920:1).⁷ The state is a complex manifestation, which for the purpose of political geography he defines as an association of humans within fixed borders. He further defines four geographical categories of the state: shape, size, location, and structure.⁸ States differ in size and shape and logically locations. The type of internal cohesion represents the structure. A state cannot exist in empty *space*. The *population* constitutes the body of the state, while its laws, regulations, and institutions bring *organization* into this human-occupied space.⁹ While Ratzel considers the state as an imperfect organism based on the division of labor (RATZEL 1923:8-9, 14, 75-76), Supan considers the state to have merely the semblance of an organism. So, according to Supan, the organs of an organism grow from within, while the organs of the state are organized from the outside, though he concedes that morality, customs, and law in older, more anarchic times may have developed the "organic" way. Apart from such primitive societies, Supan appears to have seen the construction of the state as a wilful act of reason. In this regard Supan can be considered a liberal. He also rejects Kjellén's definition of the state as a "sensual-reasonable being" ["sinnlich-vernünftiges Wesen"] (SUPAN 1920:3; see KJELLÉN 1917:30).

Supan displays an early cybernetic understanding of the state by looking at its life-line. So he visualized a life-line for the organism that rises and then falls. It can rise more and fall more than once (see the upper line in figure 1: "double line of the organism"), but it must not fall below a certain absolute level (the dotted line), which the cyberneticist Marian Mazur called "idle power" (that is, the minimal power necessary to sustain the organism). Such an occurrence spells the death of the organism (MAZUR 1961:217). Supan sees the life-line of the machine in contrast to the life-line of the organism (see lower line in figure 1: "double life-line of mechanism"). The starting point and the point of optimal performance are identical, that is rather than rising and falling in cycles, the machine performs best in the

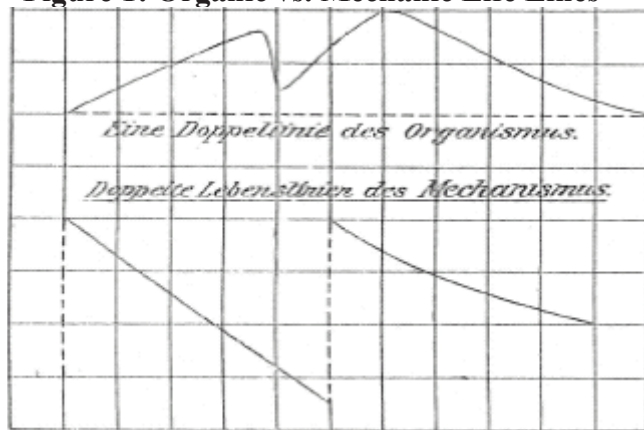
⁷ Original text: "[...] der Staat die Grundlage aller Zivilisation und Kultur ist."

⁸ Structure and location are considered "basic categories" ["Grundkategorien"], while shape and size are considered "derived categories" ["Folgekategorien"] (SUPAN 1920:13). Ratzel thought in three political-geographical categories, that of location, space, and borders, further he was skeptical as to the possibility of expressing political-geographical values in terms of economic exchange values (i.e. a price denominated in some currency), in other words he clearly did not believe that some elements of power can be quantified (see RATZEL 1923: 80-82).

⁹ In fact these three elements are all necessary characteristics of a fully sovereign and independent state: "In order to be a legal person, a state must own certain characteristics. It must, first of all, occupy a fixed *territory* over which it exercises exclusive jurisdiction. Within this territory, there must be *stability* of organization and administration, and the entity must be able to fulfill its international duties and obligations. [...] *Population* represents an obvious second characteristic of a state, for without it no government would be possible. [...] *Operation of a government* is a third characteristic of a state, for without it there could be no assurance of internal stability and the ability to fulfill international obligations," "According to the *Restatement (Third) of Foreign Relation Law of the United States*, § 201 (1987), 'International law generally defines a 'state' as 'an entity that has a defined territory and a permanent population, under the control of its own government, and that engages in, or has the capacity to engage in, formal relations with other such entities'" (GLAHN 1996:51).

beginning, and from then on the performance declines. If the machine is broken, it can be repaired, or it can be regularly set back to optimal performance by maintenance, only to decline once more. The resurrection of Poland from the dead after WWI displayed such a mechanic life-line, which was possible because population and territory remained unified. According to Supan, the life-lines of states can go from the organic to the mechanical and vice versa, so the state is a hybrid, mixing organic as well as mechanical modes, with organization increasing the mechanical relative to the organic, with the state always consisting of the natural (that is, material) body of population-territory and *organization*.¹⁰ Supan regards the state as the synthesis of population and territory. Likewise in Mazur's work the machine consists of energy, matter, and *structure* (MAZUR 1961:214).

Figure 1: Organic vs. Mechanic Life Lines



Source: Supan 1920: 4

SPACE AS A POWER INDICATOR

Though Supan agrees with Ratzel that "nations do not hover over the ground but are connected to the hard soil" (SUPAN 1920:130),¹¹ he criticizes Ratzel for too

¹⁰ Marian Mazur showed that organization is not "unnatural", that is biological organisms and machines display an identical steering logic (see MAZUR 1963), which removes the last barrier to a holistic understanding of biological and mechanical processes, though this in itself does not render the depicted difference in life line patterns obsolete, nor the different notions of internally conditioned, spontaneous self-organization vis-à-vis externally imposed, planned organization.

¹¹ Original text: "Die Völker schweben nicht frei in der Luft, sondern sind an den harten Boden gebunden." A need for geopolitics and political geography arose precisely because an excessively theoretical political science more often than not treated the state as an abstract entity. Supan adopted this image of standard political science treating nations as hovering over ground probably from Ratzel, who had pointed out in the introduction to his work that "for some political scientists and sociologists the state stands in the air, as does for many historians, and the soil is just a larger type of real estate" (RATZEL 1923:1); original text: "Für manche Staatswissenschaftler und Soziologen steht der Staat geradeso in der Luft wie für viele Historiker, und der Boden des Staates ist ihnen nur eine größere Art Grundbesitz." Likewise Kjellén criticized the reduction of the state to the status of a juristic person, hence reducing the study of the state to one of law, in contrast to that he supported a more empirical

much focus on space (SUPAN 1920:7, 46), which is formally right and still a bit unfair, as Ratzel freely acknowledges that population figures are better at explaining great power status. Indeed he stresses that space and population are political-geographic constants of equal standing, to which all the other political quantities must relate (RATZEL 1923:302-303). Yet overall Ratzel leans towards space (see RATZEL 1923:23). While thinking in economic terms of supply and demand, he notes that the amount of space on this planet is fixed, while population is increasing, hence the value of land has to increase (RATZEL 1923:17-18).¹² He thinks that a large space with a small population might in the long run develop into a great power, considering the value of empty land as equaling its potential capacity to feed people (RATZEL 1923:305, 311).¹³ Moreover, he asserts that space itself is a political force and not only the carrier of political force, thinking of space not only in terms of economic utilization but also strategic dimensions such as freedom of movement (RATZEL 1923:261-262).¹⁴ In economic as well as strategic terms Ratzel places as much emphasis on the organization of space through the existence of an adequate transportation infrastructure (railroads, road, canals) as Supan places on the state, so the transportation infrastructure connects and integrates the parts of the state from within, enabling and supporting cultural and scientific development, further he observes that areas with much traffic tend to be wealthy and areas with little traffic tend to be poor, and importantly that the transportation infrastructure affects the military mobility, especially of larger states (RATZEL 1923:16, 43, 90,

approach, as such political geography can be considered a reaction to political science having not done its job properly (see KJELLEN 1917: 1-6, 12-13, 22-23).

¹² One may observe that the prominence of territory in the measurement of national power has receded a bit. However, one explanation is that data for many other variables has become available over time. Indeed, when it comes to the importance attached to space in practice, one can observe that in the past it had been quite common to trade land. The most famous examples are obviously the purchase of Louisiana, and later Alaska, by the United States; the most recent example of such trade is the United States purchasing the Danish West Indies in 1917 for 25 million dollars. Given that Japan is so rich and Russia so poor, one can imagine how easily the Kurile Islands dispute might have been resolved just a hundred years ago. Nowadays such deals appear unthinkable, though leasing still seems acceptable, one example being Singapore's leasing sites for military use and training in Indonesia and Thailand.

¹³ This is the basic idea of living space, nowadays called carrying capacity (that is, how many people the territory of a country can support in terms of potential food production, which entails basically an assessment of soil quality in line with climatic factors given the present state of agricultural technology). German geopolitics was to the highest degree concerned with population density and carrying capacity on the basis of the Malthusian paradigm (not enough space to feed everybody), so the British blockade had already caused hunger and starvation in Germany during WWI. And Germany's defeat in WWI also meant a permanent loss of German colonies. In 1925 Alois Fischer calculated estimates on the carrying capacities of various countries, he calculated a carrying capacity of 95/km² for Germany, while the actual population density stood at 134/km² (FISCHER 1925:851-853). A year later Albrecht Haushofer revised estimates made by Albrecht Penck in 1924, so he estimated a carrying capacity of 100/km² for Germany, while the actual population density stood at 135/km² (HAUSHOFER 1926: 791-793). Both estimates showed that Germany was overpopulated, and that any further population increase would as such increase the general risk for starvation in times of trouble.

¹⁴ In another discussion related to history, his line of argument appears to suggest that the character of economic production is to be bound to the soil and as such to a particular location, while the character of military force is to be nomadic, which is food for thought (see RATZEL 1923: 59).

340, 363, 380). Supan likewise acknowledges that no state is possible without transportation infrastructure (SUPAN 1920:168).

In discussing space (SUPAN 1920:46-52), Supan first of all notes that space is the most obvious power indicator because it can be visually perceived through maps. However, he thinks that this focus on the political coloring of maps can lead to dangerous delusions, because countries may strive for space for the sake of looking good on maps without assessing the utility and cost of such expansion. As such he advocated the distinction between *active space* and *passive space*, active space tentatively defined as land with a population density of one person per square kilometer or higher, the sterile rest constituting passive space, one principal intention being to look at land useful for cultivation, disregarding deserts, mountains, and polar regions (SUPAN 1920: 47-48, 65-68). Ratzel also distinguishes between habitable and non-habitable soil, stating that uninhabitable soil does not necessarily add to power and can even be a burden (RATZEL 1923:4, 274, 309, see also 206-208). However, he tended to be more optimistic on the potential of "worthless" soil with regard to mineral exploration and developments in agricultural technology (RATZEL 1923:23, 32). In this regard it is worth mentioning here an article by Max Krahnmann in 1927 entitled "Capital, Technology and Geopolitics" ["Kapital, Technologie und Geopolitik"], where he proposed space as the horizontal variable and technology as the vertical variable, thus a wealthy country with a high level of technology can get more out of its soil in terms of food and minerals than a poor country, further that a country has the option to expand horizontally in terms of conquering space or vertically in terms of investing into R&D (KRAHMANN 1927), the latter being the basic idea of contemporary geoeconomics aiming at techno-industrial supremacy. Hence the three conceptions of space can be constructed, the first being physical, possibly improved by transportation infrastructure, and useful in a military-strategic sense, the second being biological in terms of living space necessary to feed the population of a country, and the third being biological-mineralogical in relation to the level of available technology.

The following table shows six different spatial variables and the Pearson correlation coefficients (r) for them in relation to the power perception scores:¹⁵

Table 1: Spatial Variables and their Correlation to Power Perception in 1998 dimension and technology as the vertical dimension, it does not perform as well

Spatial Variables	r	Data Source
Highways, Paved (km)	0.790	CIA 1990–2008
Highways, Total (km)	0.708	CIA 1990–2008
Krahnmann: Surface Area (km ²) x Per Capita GDP (PPP)	0.544	CIA 1990–2008

¹⁵ The author computed the Pearson correlation coefficient of the logarithm of given variables in relation to the power perception scores. The data used from the *CIA Factbook* was for the year 1998 (interpolated in some cases). The *Wikipedia* data used appears to be current (November 2010).

Exclusive Economic Zone (km ²) + Total Internal Area (km ²)	0.416	Wikipedia 2010
Agricultural Land (km ²)	0.388	CIA 1990–2008
Surface Area (km ²)	0.258	CIA 1990–2008

If, in theory, maritime territory (here measured by the extent of the exclusive economic zone – EEZ) should be the least valuable/useful and agricultural land the most valuable/useful, then the table shows the surprising result that correlations are inconsistent, so total surface area plus maritime territory yields the best result, agricultural land follows, but surface area, which is the most straightforward measure located between the other two measures, actually performs worst. One could argue that access to the sea is beneficial for trade, but only one of the 40 countries of the Caro set is land-locked (Zambia). Another factor that may explain these strange results is that great colonial powers (France, the UK, also the US in the Pacific) of the past still hold a number of islands around the globe that very much increases their EEZ, hence the correlation to power. In any case, those three correlations are fairly weak. Ratzel and Supan had already concluded that much by looking at the territorial size of countries in relation to recognized great power status (see RATZEL 1923:302; SUPAN 1920:49). When it comes to the transportation infrastructure as a factor modifier applied to territory, Ratzel was right on target: the correlations for highways are much stronger. If we put into operation Krahnmann's suggestion on space as the horizontal as highways, but still does better than the pure territorial variables.

POPULATION AS A POWER INDICATOR

In relating population to space, Ratzel thinks that population density relates to the cultural (that is, technological) level, though he did not consider that a strictly statistical relationship.¹⁶ A further advantage of dense populations is that they support the accumulation of knowledge and capital (RATZEL 1923:47-48, 91). On the other hand he notes again in an economic sense of supply and demand that increased population densities therefore decrease the value of human life in relation to space, which in return means that the expansion of space increases again the value of the human being (RATZEL 1923:283). In a Malthusian fashion he asserted the existence of a natural limit to population, when a larger population tends to weaken rather than strengthen the force of the state. Hence the force of state does not grow proportionally to population. He illustrates this point with examples from famines

¹⁶ In 1741 Johann Peter Süßmilch suggested a measure for power: population multiplied by population density (with population density serving as a proxy for development) (SÜßMILCH 1765:1/402; HWANG 2008a:5). Ratzel's comment on that measure was that it reflected the overestimation of population as a meter (that is, measurement scale) for state power that was typical for the spirit of the age of enlightened absolutism (RATZEL 1923:303-305). This comment suggests once again his leaning towards space. Supan stated that population density is of lesser importance in assessing the power of a state, more important would be to know the density maximum, the basic idea behind the density maximum is akin to the concepts of living space and carrying capacity (SUPAN 1920:155).

and epidemics in China, as well as the famine in Ireland around 1847 (RATZEL 1923:308-307). He also thinks that the distribution of the population across the territory is of great significance, thus it is better for national cohesion if the population of a state is distributed uniformly across the territory (RATZEL 1923:14, 310).

Supan places more emphasis on population than Ratzel. He also highlights the issue of cohesion as a factor modifier, so he emphasizes that "even though the state is superior to the nation, national unity is still of decisive importance for its strength and durability" (SUPAN 1920:131).¹⁷ According to Supan the state is kept together by force, which he considered the external factor, and a sense of togetherness (community spirit), which he considers the internal factor (SUPAN 1920:82-83, 95-96). Likewise Adolf Menzel had spoken of authority and solidarity as the foundations of the state (see KJELLÉN 1917:14-15). Supan asserts homogeneity to be important for national cohesion. In this regard he discusses three primary factors (SUPAN 1920:98-110), so he judges a common ancestry (pure ethnicity) to guarantee the highest degree of homogeneity.¹⁸ He also judges language to be very important, though he notes that language also needs a common cultural background. So for example black people in the United States have not been integrated despite whites and blacks speaking a common language. He also judges religion to have been significant as a factor in the Middle Ages but of decreased importance since that time.¹⁹ Another factor he regards as important is intelligence, though he suggests that the actual value of a population's intelligence is diminished in the absence of its culturally guided organization. Thus he pinpoints to the importance of organization in his reflections on the Chinese, who despite their intelligence and industriousness, did not (at the time of his writing) have much power (SUPAN 1920:61). In yet another instance, when discussing the issue of transportation infrastructure, he wondered what economic impact a railway infrastructure in China would have in conjunction with these "many hundred millions of bustling and intelligent humans" (SUPAN 1920:171).²⁰ Likewise Ratzel mentions the "strong intelligence" ["kräftige Intelligenz"] of the Chinese, he also quoted Lajos Lóczy speaking of the "high intelligence" ["hohe Intelligenz"] of the Chinese (Ratzel 1923:132).²¹

¹⁷ Original text: "[...] wenn auch der Staat höher steht als die Nation, für seine Stärke und Dauerhaftigkeit doch der Grad der nationalen Geschlossenheit den Ausschlag gibt."

¹⁸ Supan was merely making an observation. He was not in any sense advocating racial policies. Though he opposed miscegenation as an evil, he supported trade and cultural exchange between nations (see SUPAN 1920:135, 181). In this regard it is worth mentioning that the American geopolitician Nicholas Spykman listed "ethnic homogeneity" as one of eleven factors of national power (see SPYKMAN 1942:19). For a more updated treatment on the issue of genetic similarity and its relevance regarding nationalism and geopolitics, see RUSHTON 1986, 2005.

¹⁹ These long-term factors of national cohesion have to be distinguished from public consciousness as an important short-term factor, which Supan considered to be somewhat independent of organization, fluctuating as a consequence of temporary, unconscious impulses (SUPAN 1920:98).

²⁰ Original text: "[...] mehreren hundert Millionen emsiger und intelligenter Menschen [...]."

²¹ Indeed IQ tests have shown that the Chinese are more intelligent than any European population, so Richard Lynn calculated a national IQ of 105 (British IQ=100) on the basis of ten IQ tests taken from 1990 to 2001 (see LYNN & VANHANEN 2006:297; further see HWANG 2008a:18-19). Supan's and Ratzel's assessment of the Chinese is further noteworthy, because they do not talk of other populations

The following table shows six different demographic variables and the Pearson correlation coefficients (r) for them in relation to the power perception scores:²²

Table 2: Demographic Variables and their Correlation to Power Perception in 1998

Demographic Variables	r	Data Source
Population x IQ	0.811	CIA 1990–2008; LYNN & VANHANEN 2006; LYNN & MEISENBERG 2010
Population x Cognitive Ability	0.810	CIA 1990–2008; RINDERMANN 2007; RINDERMANN et alia 2009
Population x Ethnic Homogeneity ²³	0.685	CIA 1990–2008; ALESINA et alia 2003
Population x Religious <i>Diversity</i>	0.634	CIA 1990–2008; ALESINA et alia 2003
Population x Linguistic Homogeneity	0.612	CIA 1990–2008; ALESINA et alia 2003
Population	0.566	CIA 1990–2008

It is of logical necessity that a combined score should always perform equally or better in terms of correlation than one of its components. The issue then is by how much. Multiplying population by fitted IQ and cognitive ability scores yields clearly superior results to population alone, so the argument can be constructed that intelligence/education as a factor modifier applied to population adds a much needed quality dimension, with these enhanced population figures indeed then representing "human capital." Not so remarkable are the improvements in terms of correlation when looking at population multiplied by the three fitted homogeneity variables, though the correlations indicate that ethnic homogeneity correlates better to power than linguistic homogeneity, and, when it comes to religion, religious diversity (the reciprocal of homogeneity) correlates better to power than homogeneity surprisingly.²⁴ Caution should be applied in deriving generalizations

with such esteem. Apparently many geopolitical scholars of the time shared this high regard for Chinese potential, so it can be easily observed that China was the most discussed country in the *Journal of Geopolitics* [*Zeitschrift für Geopolitik*] from 1924 to 1936, that is, before Germany and Japan signed the Anti-Comintern Pact.

²² The author computed the Pearson correlation coefficient of the logarithm of given variables in relation to power perception scores. The calculations for combined variables were done in such way as to maximize the correlation to perception scores; the population figures were for the year 1998; the scores on homogeneity/fractionalization used were calculated for various years (2001 or before); and the scores used for IQ and cognitive ability (mix of IQ and educational performance scores) also consist of diverse data for various years.

²³ Ethnic homogeneity/fractionalization was not available for Yemen, which is one country of the Caro set, thus it was estimated by the author using a trend based on linguistic and religious homogeneity/fractionalization, this trend having a Pearson correlation coefficient of 0.691 in relation to the actual numbers. Also a note of caution is necessary: just as it is very difficult to quantify homogeneity/fractionalization, it is also very difficult to assess the reliability of such figures.

²⁴ Alesina et alia observed similar phenomena: "While ethnic and linguistic fractionalization are associated with negative outcomes in terms of the quality of government, religious fractionalization is not; in fact, if anything, this measure displays a positive correlation with measures of good governance. This is because measured religious fractionalization tends to be higher in more tolerant and free

from those results. Much more extensive testing would be necessary for this. Nevertheless, the results indicate that Supan was not wrong in judging ethnic homogeneity most important, religious homogeneity least important, and linguistic homogeneity somewhere in the middle.

ORGANIZATION AS A POWER INDICATOR

Ratzel's *Political Geography* mentions many times the issue of organization. As the state politically organizes space (transportation infrastructure being one aspect), so the development of the state coincides with the organization of space tightening the relationship of the population to the soil, thus increasing the natural sources of power, the difference between civilized people and barbarians being a more effective organization of space (RATZEL 1923:4-5, 28). In this context it should be pointed out that sometimes Ratzel's chauvinistic sounding emphasis on cultural superiority is actually one of technology and organization (hence dynamic), so the less developed states in 1897 lacked structure corresponding not only to the absence of a standing army, bureaucracy, and taxes, but also a lack of transportation infrastructure (roads, railways, canals) (RATZEL 1923:6).²⁵ It is by building the "spiritual" cohesion for a common purpose that the state connects the physically disconnected human bodies and their property (RATZEL 1923:8, 36, 90). The cultivation of the soil as well as increases in population density create the need for security and protection, which in turn gives the state the power to force this "spiritual" cohesion (RATZEL 1923:12, 37-38). Ratzel also discusses the political value of population through development, so the value of the individual increases through economic performance, which in turn implies that a state with many industrious humans also has a strong army (RATZEL 1923:305-306). Rudolf Kjellén also emphasizes the importance of organization, so "nature delivers only the framework and raw materials; it depends on the population and the state to fill it up and shape it, in a word, to organize it" (KJELLEN 1917:79).²⁶

If space and population were relatively simple to discuss, organization is more complicated in terms of content, meaning, and assessment. If one follows Supan's view on the state, then "there can be no doubt that everywhere, where humans live next to each other and socialize with one another, total anarchy is impossible and

societies, like the United States, which in fact displays one of the highest level [sic] of religious fractionalization. This result has no bearing, however, on the question of whether specific religious denominations are correlated with better politico-economic outcomes" (ALESINA et alia 2003:158), also "Our ethnic variable is highly negatively correlated with GDP per capita growth, schooling and telephones per capita. These correlation are slightly lower for the linguistic measure. The measure of religious fractionalization does not seem to bear any pattern of correlation with the above mentioned variables" (ALESINA et alia 2003:165).

²⁵ Ratzel also used organization as a major variable in his interpretation of colonial history, so the Spanish colonization in the Americas was lacking in organization but sufficient in the number of colonists. Vice versa, the French colonization in North America excelled in organization but was insufficient in the number of colonists, while the British performed adequately in both organization and the number of colonists (RATZEL 1923: 267-268).

²⁶ Original text: "Die Natur liefert im Grunde nur den Rahmen und den Rohstoff; es liegt dem Volk und dem Staat ob, jenen auszufüllen und diesen zu gestalten, mit einem Wort, sie zu organisieren."

traces of organization have to be found" (SUPAN 1920: 142).²⁷ Hence organization can be considered common and constant. In general one can deduct from the numerous ways and instances that organization is used in the works of Ratzel and Supan that organization refers to what is nowadays called governance, that is, organization refers more often than not to political organization, the term "political" implying the state.²⁸ Nevertheless organization can also relate to economic activity, so governance and economics go hand in hand in promoting development. The source of confusion becomes obvious when one considers that Supan trisected power into three basic measures, that is space, population, and organization, but he similarly trisected the analysis in political geography to be concerned with the physical structure, demographic structure, and economic structure (see SUPAN 1920:84, 87). Obviously the first two in each set are identical, only the third in these sets is different.

The following table shows the six Worldwide Governance Indicators (WGI) from the World Bank and the Pearson correlation coefficients (r) for them in relation to the power perception scores.²⁹

Table 3: Governance Indicators and their Correlation to Power Perception in 1998

Governance Indicators	r	Data Source
Population x Rule of Law	0.835	CIA 1990–2008; World Bank 2010
Population x Control of Corruption	0.827	CIA 1990–2008; World Bank 2010
Population x Government Effectiveness	0.802	CIA 1990–2008; World Bank 2010
Population x Political Stability & Absence of Violence/Terrorism ³⁰	0.754	CIA 1990–2008; World Bank 2010
Population x Voice and Accountability	0.752	CIA 1990–2008; World Bank 2010
Population x Regulatory Quality	0.722	CIA 1990–2008; World Bank 2010

The correlations show that organization/governance delivers higher correlations than spatial or demographic variables alone, which is in itself unsurprising. Though again one must be careful not to generalize from these results, this ranking

²⁷ Original text: "[...] kann es keinem Zweifel unterliegen, daß überall, wo Menschen nebeneinander wohnen und miteinander verkehren, völlige Anarchie unmöglich ist und sich Spuren einer Organisation finden müssen."

²⁸ For example Supan discussed three types of political organization in the chapter on the demographic (!) structure, which are autocracy, oligarchy, and democracy (see SUPAN 1920:96-97).

²⁹ The author computed the Pearson correlation coefficient for the logarithm of a given variable in relation to power perception scores. The calculations for combined variables were done in such a way as to maximize the correlation to perception scores. All the data used was for the year 1998.

³⁰ Peter Beckman uses such a measure as a component of his three power formulas for assessing the power of countries in three different time periods. So political stability represents the ability of the government to mobilize its population. He argues that political instability means that governments need to devote more resources and attention to domestic control (see BECKMAN 1984:54).

hierarchy of governance indicators invites speculation. So it is interesting to observe that political stability only occupies an intermediate position: one may speculate that governments able to cope with unending instability and violence (for example, Israel) are relatively stronger than governments that don't. This in return should suggest that government effectiveness is the most important, but in fact it also occupies only an intermediate position. Instead, rule of law and control of corruption are most important. These two variables are also more closely related to each other than to the rest. If these results can be sustained by more extensive testing, it could suggest that trust in the social order is an important glue for making a strong society and, by extension, a strong country. Bertrand Russell wrote that "economic power, unlike military power, is not primary but derivative. Within one State, it depends on law" (RUSSELL 1938:123). In other words property is a meaningless concept if there is no system of rules and force to protect it, so property needs laws and a government to enforce them. Thus the integrity of government and the execution of laws might be the very foundation of socio-economic development and, by extension, national power.

NATIONAL POWER AS ORGANIZED ENERGY

Ratzel frequently uses the term "energy" in reference to the activeness of states, for example in reference to climate zones he stated that "the political energy, spiritual force, and economic activity bestow upon the states of the colder nations a decisive preponderance over the warmer" (RATZEL 1923:197).³¹ This also entails some elements of power he considered as important for domination, though he made no systematic effort to define national power, so the elements of national power change with every paragraph. In another context he describes war in line with spatial expansion as a collision of energies (RATZEL 1923:451). Supan also frequently uses the term "energy" but to describe the power of the state rather than its activeness (see SUPAN 1920:12, 37, 60-61, 78, 80). He also tries to build a system and provide a definition:

"Power, or more generally force, and the will to use it, we can summarize in the concept of energy. The state-based society represents a sum of individual energies that differ in value. But this is not a simple summation. How else to explain that the Chinese, despite their intelligence and their generally recognized industriousness, throw only a small amount of energy into the equation? Apparently because the energy units are not uniformly oriented and as a result of this thwart and hamper each other, in a word, because the organization is missing. Thus we come to the conclusion that the power position of a state depends on its organized energy, which is represented by population. The space plays only a role insofar as it offers opportunities for the energy to be active". (SUPAN 1920:60-61)³².

³¹ Original text: "Den Staaten der kalten Länder verleiht die politische Energie, die geistige Kraft, die wirtschaftlich Aktivität ein entscheidendes Übergewicht über die warmen."

³² Original text: "Macht, oder allgemeiner gesprochen Kraft, und Wille, sie zu gebrauchen, können

Indeed he states that organized energy is represented by population, but in the context operationalizing the pressure quotient (next section), he states that "a different result would be obtained, if the calculation were based on the energy sums of both sides, but for that we lack all capability for quantification" (SUPAN 1920:78).³³ The Worldwide Governance Indicators (WGI) are only available since 2002, and rather than being hard data, they merge the data of diverse surveys.

Moreover it is important to look at how Supan explains power. There are many individuals with differing degrees of power, and in a state of anarchy these individuals use their power against one another, or they slow each other down by moving in mutually exclusive directions (for example, one person floods a piece of territory for irrigation, while another person is mining), the lack of coordination benefiting neither individual.³⁴ It is like the difference between speed and velocity, so the atoms in a body may have a lot of speed, but if they do not share the same direction, the body does not move. It is only through a common direction that the body has velocity. Or, to return to Marian Mazur, it is the structure of the machine that allows the machine to function properly. If the machine exists in terms of matter and if there is energy to make it work, it will still not work if the design is flawed (see MAZUR 1961:214). It is the state in Supan's conception that structures and organizes society, so as to encourage individuals to cooperate most efficiently in such a way that their actions inadvertently maximize the sum total. Supan was not a Marxist advocating micro-management along with total control, rather he focused on the macro-management of society in the form of setting some priorities and setting up institutions to enforce laws and policies.

In his discussion of power (SUPAN 1920:58-61), Supan also mentions the will as the root of power,³⁵ the most immediate tool of this will being the weapon. In

wir in dem Begriff Energie zusammenfassen. Die staatliche Gesellschaft stellt eine Summe von verschiedenwertigen Einzelenergien dar. Es findet aber hier nicht eine einfache Summierung statt. Wie wäre es sonst zu erklären, daß die Chinesen trotz ihres allgemein anerkannten Fleißes und trotz ihrer Zahl nur eine kleine Energiesumme in die Waagschale werfen können? Offenbar deshalb, weil die Energieeinheiten nicht einheitlich orientiert sind und infolgedessen sich durchkreuzen und vielfach gegenseitig hemmen, mit einem Worte, weil die Organisation fehlt. So kommen wir zu dem Schlusse, daß die Machtstellung eines Staates von seiner organisierten Gesamtenergie, die durch Bevölkerung repräsentiert wird, abhängt. Der Raum spielt dabei nur insofern eine Rolle, als er der Energie Möglichkeiten zu ihrer Betätigung anbietet" (SUPAN 1920:60-61).

³³ Original text: "Ein anderes Resultat würde sich dagegen ergeben, wenn wir die Berechnung auf die beiderseitigen Energiesummen basieren könnten, aber für diese fehlt uns jede Möglichkeit eines zahlenmäßigen Ausdruckes."

³⁴ Likewise Ratzel thinks that in nations, which are split into many states (as in the case of Germany before 1871), the forces of these states will act against another instead of providing impulses for the growth of the whole, the term "reorganization" ["Reorganisation"] standing then for the summation of these split forces (RATZEL 1923:151). Ratzel links in general the ability to build larger states to the level of technology and organization, so primitive populations build only small states, and in return one can infer from the size of a large country something about its cultural level (see RATZEL 1923:147-149, 152-154).

³⁵ Rudolf Kjellén sees the state as will and power, the will standing for aims, and power standing for the capability to achieve them. Nevertheless he also emphasizes space as a necessary condition for the state's existence (KJELLÉN 1917:8, 47). In any case, Kjellén placed politics into five categories in

antiquity and the Middle Ages this weapon was primarily human in the form of military personnel and hence a function of population, but with the invention of gun powder and the ever increasing mechanization of warfare, military force came increasingly to depend on financial means, which means military expenditures as a function of national wealth.³⁶ Besides that, Supan supports limited autarchy as much as necessary in order to preserve the heterogeneity of the economic structure, which he finds as important as the homogeneity of the demographic structure; both Ratzel and Supan were followers of Friedrich List (see RATZEL 1923:263; SUPAN 1920:183). If the beauty of Supan's trisection of power into *space*, *population*, and *organization* is its relative clarity and persuasive simplicity, this discussion of the will, military personnel, and military expenditures in line with national wealth complicates things. How do we properly interpret and integrate these additions into the trinitarian paradigm? Here Mirosław Sułek may help. Since 1990 he has been working on the quantification of national power based on *space*, *population*, and *organization*, reflecting the same elements that Supan thought essential (see SUŁEK 1990, 2001:87-123, 2003:93-94, 2010:143-151). He has developed two formulas, one for coordinative power and the other for disposable power:

$$P_{kz} = W^{0.652} Z^{0.217} p^{0.109}$$

P_{kz} = coordinative power; W = military expenditures; Z = number of soldiers in active service; p = territory

$$P_d = D^{0.652} L^{0.217} p^{0.109}$$

P_d = disposable power; D = nominal GDP; L = population; p = territory

In both formulas space is quantified by surface area, further population is quantified in the first formula by military personnel and in the second formula by total population. When it comes to organization, Sułek concluded that this is best approximated by nominal GDP, military expenditures in the first formula being obviously based on nominal GDP. According to Sułek, the rate of military spending ($m = W / D$) represents, what he describes as the moral factor or "tension of will," which refers to the willingness of society to reduce private consumption in favor of military expenditures that increase the power of the state. Hence the difference between the first formula and the second formula could also be interpreted as the will or moral factor:

$$\text{will} = P_{kz} / P_d$$

P_{kz} = coordinative power; P_d = disposable power

Even though Sułek did not know about Supan, Sułek has in effect operationalized Supan. Sułek's thinking not only consists of the same three basic measures proposed by Supan, but the hierarchy of importance of these three basic measures, which is indicated by the weights in Sułek's formulas, is also identical to that of Su-

relation to five elements of the state: geopolitics concerned with space, demopolitics concerned with population, econopolitics concerned with economics, sociopolitics concerned with society, and kratopolitics concerned with governance (see KJELLÉN 1917:43).

³⁶ Another indication that Supan considered economic data important for the assessment of power is that he complained about the unfortunate absence of comprehensive economic data as well as the unreliability of existing estimates (see SUPAN 1920:59, 148-149). In this regard it should be remembered that the *Fischer Almanach* (one of the most popular almanacs in Germany) has published the GNP of (some) countries only since 1973.

pan. In addition, Sulek assigns a proper place for the will, military personnel, military expenditures, and national wealth, thus he completely integrates them into this trinitarian paradigm, whereas in Supan's work the proper place and function of these variables appear somewhat ill-defined in his effort of systematization. If something is missing in Sulek's approach, then this article might suggest a look at transportation infrastructure, intelligence, homogeneity, and governance.

The following table shows eight variables (two synthetic) to measure national power and the Pearson correlation coefficients (r) for them in relation to the power perception scores:³⁷

Table 4: Common Power Indicators and their Correlation to Power Perception in 1998

Variables	r	Data Source
Military Expenditures (current \$)	0.927	AVC 2009
Coordinative Power	0.917	AVC 2009
Total Electricity Net Consumption (kWh)	0.906	EIA 2010
GDP (current \$)	0.900	AVC 2009
Total Primary Energy Consumption (Btu)	0.897	EIA 2010
GDP (PPP)	0.870	CIA 1990–2008
Disposable Power	0.866	CIA 1990–2008
Armed Forces Personnel	0.656	AVC 2009; CIA 1990–2008

All measures with the exception of military personnel perform reasonably well. Moreover, it is interesting to observe that electricity outperforms both GDP measures, though the energy variables and nominal GDP are rather close. Both Sulek's measures have a lower correlation to the power perception scores than one of its components (military expenditures in the case of coordinative power, nominal GDP in the case of disposable power). He got his weights by logical-empirical deduction, so the issue is why his measures do not perform better than some of its components. One explanation is that the spatial dimension does not correlate well to the perception of power. This could be interpreted to mean that space is important for future potential rather than actual power. The performance of Sulek's assessment could easily be improved if his two formulas were merged and the spatial dimension dropped altogether. However we know that space is also important for the present, so even though it appears like a poor predictor of national power for the time being, this represents an unresolved issue calling for ideas.

³⁷ The measures must have some relationship to Supan's thinking, so if Supan thought of power as energy (regardless of whether this was intended as metaphor or not), it constitutes an invitation to have at least a look at energy consumption as well as electricity consumption. The synthetic variables were calculated for 1998 using Sulek's two formulas. The author computed the Pearson correlation coefficient for the logarithm of a given variable in relation to power perception scores. All the data used was for the year 1998.

THE PRESSURE QUOTIENT

Supan considers the political borders between two countries as just a temporary expression of momentary power relations, in line with that he assumes that there will always be war,³⁸ and that peace can last only as long as the political pressure and the counter-pressure (i.e. power) of countries balance/cancel another, thus power is relative and depends on location in the concrete form of direct neighbors (SUPAN 1920:25, 29, 77, 79, 188-189). So if the relative power of one side dramatically increases, the border may move correspondingly after some delay (that is, after a war). As most borders are the results of war, they normally benefit the victor (SUPAN 1920:31, 41), so the "unfairness" of borders is inherent, in the same way that the reversion of borders has been normal.³⁹ Ratzel stressed that location is as important as space, thus the assessment of location corrects for over- and underestimations of space (RATZEL 1923:187-188, 301).⁴⁰ At another point he talks of "radii of force" emanating from a state that disperse like waves, which clearly suggests that power decreases with distance (see RATZEL 1923:91). Moreover he stresses that the strength of a country depends also on the weakness of its neighbors

³⁸ Supan also described a sense of opposition to other nations as the downside of this sense of togetherness (community spirit) that builds a state (SUPAN 1920:98). In this context it may be useful to recall Carl Schmitt's theory on the political. For him, the essence of the political is the friend/foe distinction, and the political field is one where forces and powers constantly unite as friends and divide as enemies, the foreigner always being a potential enemy, with nations that are weak in will and force perishing in the political sphere (SCHMITT 1932:9, 26-27, 46, 53-54). It is precisely this foe/friend distinction that makes the concept of national power meaningful, in a world full of friends, differences could still exist as for wealth and spirit (intelligence, morale, et cetera), but the notion of national power would be meaningless, just as it would if a world government existed. As for Supan's *political* leanings, he supported a German-Russian alliance in opposition to the United Kingdom, the Latin countries (France, Italy), and Japan (SUPAN 1920:195).

³⁹ If nowadays France will no longer attack Germany, and Germany will no longer attack France, then this is the indirect consequence of advances in destructive technologies and not due to some propagandistic advances in morality. Yet another reason, which also has little to do with morality, is structural, that is, European nations can no longer afford mutual enmity and inter-European "civil wars," because extra-European powers have been on track to overpass and sideline Europe. Leo von Caprivi, who followed Otto von Bismarck to be the German chancellor from 1890 to 1894, had already realized that much in a speech to the German parliament when he said that "a state, which has played a role as a European great power in the course of history can in due course in terms of its power come to be included among the small powers. Now if the European states want to maintain their position in the world, they will not be able, as far as at least their other inclinations go, to avoid joining closely with another" (Caprivi, quoted in RATZEL 1923:258); original text: "[...] ein Staat, der als europäische Großmacht eine Rolle in der Geschichte gespielt hat, kann, was seine materielle Kraft angeht, in absehbarer Zeit zu den Kleinstaaten gehören. Wollen nun die europäischen Staaten ihre Weltstellung aufrecht erhalten, so werden sie nicht umhin können, so weit sie wenigstens ihren sonstigen Anlagen nach geneigt sind, sich eng aneinander zu schließen." British historian Niall Ferguson has also suggested in one of his books that the result of Germany winning WWI would have been for the European Union to have come 80 years earlier (see FERGUSON 1998:168-173).

⁴⁰ Ratzel contrasted Russia and Great Britain in this regard. While Russia had the most uniform space as one huge chunk of land, Great Britain had the advantage of many dispersed, but strategically important, locations that enabled it in Ratzel's opinion to be the only true world power at the time (see RATZEL 1923:252, 270).

(RATZEL 1923:231). Supan asserts that both foreign and domestic policy depend on location (SUPAN 1920:80). Though he concedes that the sea does not necessarily offer protection, he also developed a maritimity quotient (maritime borders/land borders) (SUPAN 1920:70-72; further see HWANG 2008b, or 2008c). He considers the pressure coming from a common border area much more permanent, hence the pressure quotient he developed takes account only of land borders (SUPAN 1920:76-78).⁴¹ The pressure quotient can be expressed two ways:

$$\text{pressure quotient (1)} = \text{pop}_{\text{ext}} / \text{pop}_{\text{int}}$$

pop_{ext} = the population of countries that one shares a land border with;

pop_{int} = the population one has

$$\text{pressure quotient (2)} = \text{afp}_{\text{ext}} / \text{afp}_{\text{int}}$$

afp_{ext} = the military personnel of countries that one shares a land border with; pop_{int} = the military personnel one has

As already stated in the last section, Supan would have preferred using the energy sums of countries rather than population or military personnel, but he did not see any way to quantify these.

The pressure quotient has become a bit dated with the advancement of air power and missile technology. However the following table shows the calculation of the pressure quotient for one geopolitical hotspot where it still matters very much, that is, Israel:

Table 5: Pressure Quotient of the State of Israel in 2005

Country	Military Expenditure US\$	Armed Forces Personnel	Nominal GDP US\$	Population
Egypt	2,630,000,000	440,000	93,200,000,000	77,600,000
Jordan	986,000,000	100,000	12,600,000,000	5,800,000
Lebanon	970,000,000	57,000	21,600,000,000	3,800,000
Syria ⁴²	1,192,914,286	325,000	25,840,000,000	18,400,000
Total	5,778,914,286	922,000	153,240,000,000	105,600,000
Israel	10,800,000,000	180,000	131,000,000,000	6,700,000
Total / Israel	0.535	5.122	1.170	15.761

Data Source: AVC 2009; CIA 1990-2008.

The table demonstrates that population is a very poor indicator of national power, because if we consider the pressure quotient resulting from it in this case, Israel should have been smashed a long time ago. Military personnel certainly im-

⁴¹ Supan may have taken part of his inspiration for his pressure quotient from Rudolf Kjellén, who stated that if a state loses power, the borders of such state will have to resist the increased pressure from the other members of the system (KJELLÉN 1917:78).

⁴² GDP data for Syria seems to have been exaggerated in the WMEAT data, hence the GDP value from the CIA Factbook for 2005 was taken, also the military expenditure of Syria was recalculated correspondingly.

proves the value of this measure, though it seems that nominal GDP and, more importantly, military expenditure are better in explaining the threat that Israel poses to its neighbors rather than considering only the threat that they pose to Israel. In any case, regarding the international situation, an integrated distance model (gravity model) may be more appropriate, John Q. Stewart had already suggested a measure for such (power / distance) in 1945 (see STEWART: 1945:160-167, 1954).

CONCLUSION

The definition and quantification of national power is a complicated issue, and the purpose of this article is not to offer a solution, rather to provide some grounding and offer suggestions by looking at how far Supan got in his effort to be more systematic than Ratzel. Space and population by themselves are insufficient, because quality is missing. The quality of space may be assessed by looking only at the amount of agricultural land. Such a measure performs somewhat better than using total surface area. The quality of population can be assessed by looking at intelligence, though this does not exclude any other relevant factor modifier that has not been tested or cannot be tested because of a lack of data. In fact one gets a clearer impression of the paucity of comprehensive data available just 90 years ago. For many rather basic things no statistics existed, and the statistics that did exist were neither comprehensive nor reliable, even for the most basic questions like the population of Brazil or China, for example. However, this situation may also have conferred one advantage, because it encouraged parsimony⁴³ in trying to measure national power. The main database of the World Bank contains nowadays 1158 variables (it is a bit less in effect as some variables appear more than once in different forms). This information overload has led to the development of excessively intricate approaches in the measuring of national power, and more often than not the intricate models perform worse than the simple ones. The challenge remains to construct a parsimonious measure of national power that retains validity over a longer time period. This article did not intend to offer such a measure, but it hopefully presented a few relevant indicators within the rough framework of a tentative system. A next step could be the testing of more variables, and their combinations, on the basis of more surveys. In this regard Mirosław Sulek has already laid the magnificent groundwork by conducting a great number of surveys on national power every year since 2003 (see SULEK 2007). Much more effort of this kind is needed on an international scale in order to encourage the development of *powermetrics* as a viable geopolitical discipline.

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⁴³ In statistics "parsimony" refers to a general preference for fewer variables (Occam's razor).

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SUMMARY IN POLISH

Alexander Georg Supan (1847-1920) był austriackim geografem. Pełnił funkcję redaktora naczelnego pisma „Petermanns Geographische Mittheilungen”, był profesorem m.in. na Uniwersytecie Wrocławskim w latach 1909-1916. Jego główną pracą była książka: *Grundzüge der physischen Erdkunde*, wydana w 1884 r., w której przedstawił swoją koncepcję państwa. Nawiązywał w niej m.in. do dorobku klasyki geopolityki niemieckiej Friedricha Ratzla. Supan twierdził m.in., że granice są jedynie czasowym odzwierciedleniem siły danego państwa, więc nie mogą stanowić czynnika trwałego. Przedstawił m.in. metody pomiaru potencjału geopolitycznego państwa obejmującego takie czynniki jak położenie, wielkość, kształt granic, siłę militarną.