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## Potential Uses of the Power-Metric Method in Selected Areas of Geopolitical Analyses

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Polityka i Społeczeństwo nr 8, 157-165

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2011

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**Tomasz Klin**

**POTENTIAL USES OF THE POWER-METRIC  
METHOD IN SELECTED AREAS  
OF GEOPOLITICAL ANALYSES**

The present paper is a contribution to a problem defined in its title that has not been so far discussed by students of geopolitics. The paper contains arguments that are related to two questions: why discussing of the title problem is worthwhile and what are the possible methodological options in this type of research. Thus the papers outlines a concrete research problem and presents some suggested ways of its resolving without aiming, however, at formulating any ultimate conclusions. Rather, its objective is to encourage further academic discussion in the area.

**1. Contemporary geopolitical analyses and quantitative  
methods – preliminary remarks**

Geopolitical analyses, as any other research attempt in social sciences, are burdened with a certain risk related to presuppositions inherent in the researcher, his/her positioning within some concrete space constituted by ideas and information, lack of total immunity against propaganda, current popularity of news in the mass media or in scientific publications etc. (Rice 1969: 241–243). By necessity, existing geopolitical analyses have thus been marked with various flaws, such as state-centrism. However, those flaws do not obscure considerable achievements such as, among others, working out spatial hierarchies – even though those still undergo further modifications. In the area of power-metric research, analysts are able to assess the power of the given state using various models (Sulek 2003: 78–94). This evidences a relatively advanced status of power-metric methods despite scepti-

cism expressed by some researchers towards the power-metric approach as such (Sulek 2003: 75–77; 2004: 72–73). Nevertheless, quantitative methods do find their uses in the discipline of international relations. For example recently scientists have attempted to measure similarities between foreign policies of different states (Signorino, Ritter 1999) and conflict-generating factors to be included in Systems of Geographical Information (Stephene, Burnley, Ehrich 2009). It seems that for some time now the significance of quantitative methods in broadly understood political science and geopolitical research has been increasing or at least they have enjoyed a steady level of popularity. Their advantages are the following: they allow us to assess the size of the given research object, which also means comparing the sizes of different objects, and basing on this making causal inferences regarding increases/decreases of those sizes by manipulating variables. In addition, they reduce researchers' biases and facilitate verification of data by other researchers. Moreover, they are believed to be more precise than applying solely conceptual analyses (Rice 1969: 3–4; Chodubski 2005: 120–122).

What would be useful in terms of a methodological contribution in the area of geopolitics, is elaborating more objective ways to measure the power of geopolitical actors in concrete geographical spaces, outside of their sovereign rule. The existing analyses lack a precisely defined quantitative method that could be approved of by various scientific milieus and would produce credible research findings. This does not mean that the existing analyses fail totally. The relatively widespread use of this approach by the scientific milieu testifies to its usefulness (Jervis 1998: 972). Nonetheless, one must stress that it is still necessary to further develop this approach, among others by fitting it in with other methods adequate to given research objects.

What dominates in contemporary geopolitical analyses is partly behavioural diagnoses (that is the ones that investigate behaviours of research objects, meaning centres of power) and partly intuitive ones. This situation could be illustrated by two examples of diagnoses authored by eminent analysts of geopolitics. The following is an extract from Zbigniew Brzeziński's book: „Potential candidates are Turkey and Iran, much more powerful [than the Central Asian states – T.K.] politically and economically; both of the states fiercely compete for influences in the area of the Eurasian Balkans and this is why they are important geo-strategic players in this region” (Brzeziński 1999: 126). As much as one could easily prove the predominance of Turkey's and Iran's potentials over the Central Asian states by means of power-

metric analyses, it is much more difficult to judge whether the discussed rivalry is significant or marginal in that region and which of the states is going to „win”.

The second, a bit different example is provided by stipulations of Saul B. Cohen: „The status of Eastern Europe and Central Asia was significantly changed when the Eurasian domain got shrunk as a result of the ex-USSR’s and ex-Yugoslavia’s implosions. In the East Asian domain, the weakening of the Russian pressure enabled China to become more assertive in their relations with the Asia-Pacific rim. Within the Maritime World, the expansion of NATO as well as the proposed enlargement of the European Union affected the existing balance between the Maritime Europe and the United States, and also between the two and the Russian maritime domain and its Heartland” (Cohen 2003: 88). This author applied here his own terminology related to geostrategic and geopolitical regions that he had introduced in his first salient work (Cohen 1973: 64–75). A few theses are presented in the quoted piece. However, from the vantage point of the topic of the present paper, what matters are not claims stipulating causes and effects of given facts but facts themselves. For example, the weakening of the Russian influences can be observed but a way to measure this phenomenon in a qualitative manner has not been elaborated. Therefore, one cannot determine the exact degree to which those influences have been weakened or the degree to which China’s importance in the region has grown. Determining quantitative values for the degree of influences of the given power in a concrete geopolitical region would probably not change the results of such analyses but it would reinforce their scientific underpinnings.

## **2. Methodological accomplishments of power-metric research**

To a large extent, power-metric research is based on cybernetics which admits distinguishing between idle potential that enables the object to exist in the condition of inertia, and dispositional potential that accounts for its ability to move. In turn, dispositional power is divided into working (making up for energy losses from the environment) and coordinating one owing to which the subject can make changes in the environment (Sułek 2004: 105–107; por. Moczulski 2000: 393–397). The latter will be specially important in the present analysis since it concerns chances for power centres to expand.

Analysts of geopolitical realities are quite agreed in their claim that military and economic resources constitute main aspects of power (Sulek 2001: 15–35; Kennedy 1995) but this claim is little precise. In the framework of power-metric research at least a few cognitively attractive ways to quantify state power have been elaborated. Some ceased to be adequate altogether, as exemplified by Fucks's model in which power was based on steel and energy production (Sulek 2003: 83).

Also, some more universal models have been created to assess power of political units. One example is Mirosław Sulek's model. Strictly speaking, these are models to quantify the power of territorial political units, essentially of states and their alliances. To save space, we will only present a model to calculate coordinating power. The model looks like this (Sulek 2001: 87–97; 2003: 94; 2004: 107):

$$\text{Coordinating power} = \text{Military expenses}^{0,652} \times \text{Population}^{0,217} \times \text{Area}^{0,109}$$

or, when more attuned to current resources:

$$\text{Coordinating power} = \text{Military expenses}^{0,652} \times \text{Number of active soldiers}^{0,217} \times \text{Area}^{0,109}$$

Basing on the aforementioned methodological assumptions, one could possibly try to transform the model further in order to measure influences. It does not suffice to state generally that the power of the given state is reversely proportional to its distance from the given area (Spykman 1942: 165, 441). This rule is not borne out by reality in which powers have at their disposal various means of making their impact felt in diverse regions of the world. This rule might be possibly modified so as to include distance not only from the main area in which the centre of power is located but also from other objects, such as military bases, areas of similar culture, infrastructure to transfer key resources and others. It is generally assumed that the direction (directions) and strength of involvement of the given geopolitical centre reflects its dispositional potential, which is tantamount to a combined value of power dedicated to its expansion (Moczulski 2000: 416).

### 3. The transformation of the model for the purpose of measuring influences

In the model presented below we include the army personnel, which must be necessarily taken into account when measuring „hard” influences, especially in the context of more recent research that stress-

es that soldiers are more important during anti-guerilla conflicts than all kinds of machinery (Lyall, Wilson III 2009). Developing Sulek's model, while analysing influences of the given power in the given region one must take into account military bases of that power together with their personnel as well as the costs of their maintenance. Since in the present context training and equipment of soldiers are even more important than the number of the soldiers, it seems that one should concentrate on budget expenses in the area of the military. Additional significance is to be attached to the accompanying civilian expenses.

Even though while measuring the state power one takes its area to constitute a positive factor, in case of measuring its influences its area will constitute a negative factor, meaning that the bigger the area, the smaller influences of the same potential as expressed by other factors. In an analogy to the human factor – the more people on the given geopolitical area, the smaller the influences.

All kinds of geopolitical research, although premised on geographical foundations, are part of social sciences. This is why, in order to be correctly performed, such research must take advantage of methodologies typical of social sciences. One could say that this is a natural course of geopolitics's development (in the sense of scientific investigations): classical analyses of arrangements of forces in space must be enriched with spontaneous technological changes (Skolnikoff 1993: 140–166) but also with cultural and religious aspects as evidenced by scholars from germane scientific disciplines, since these are becoming more and more popular in contemporary politological research (Castells 2008; Huntington 1998; Harrison, Huntington 2003; Wendt 2008: 231–337). Taking them into account constitutes nothing less than a duty for students of geopolitics. However, from the methodological point of view this is not easy. First, there is problem of considerable divergencies among scholars that are related to the significance of culture as a determinant of politics as well as of its permanence/changeability. Second, how to quantify cultural phenomena? The first problem could be possibly set aside. By means of a detailed case study the researcher is able to assess what is the significance of culture in a concrete situation without engaging in grand debates typical of eminent representatives of that scientific milieu. The second problem needs, however, a deeper consideration.

From a geopolitical perspective, culture and religion must be analysed as components of identity. This means that their meaning is changeable as demonstrated especially during any kind of conflict: an

attempt to dominate the given society leads to an increase in the identity of collective resistance – this process is perceived as the main structural determinant of contemporary social subjects (Castells 2008: 23–26). If one was to assume that a geopolitical conflict (not necessarily an armed one) takes place at a moment when vectors of expansion of two or more centres of power clash (cf. Moczulski 2000: 457–459), in consequence one would have to acknowledge that conflicts of this kind are phenomena relatively prolonged, lasting at least for many years, which is why it is worthwhile elaborating a not too complex model in which the cultural factor (identitarian) would be attributed a certain stable value in time. This seems congruent with the logic of the general approach of the power-metric research – economic, demographic and other resources are also changeable to an extent, albeit certainly less than self-identifications. As a result, simplifying, one could ignore this changeability in time. It needs to be mentioned that in the presented model what is at stake is not exclusively some actual culture (*kultura faktyczna*) but some cultural-political aspirations (for example marked differences of habits and customs do not inhibit Kurds to maintain their pro-American orientation).

The transformed model could thus look like this<sup>1</sup>:

$$P = (W^{0,652} \times S^{0,217} \times C^{0,109}) / (k \times l^{0,652} \times p^{0,326})$$

where: P – real power in the given area, W – military budget of the expedition forces, S – the personnel of the expedition forces, C – civilian budget, k – cultural distance, l – population in the area, p – surface

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<sup>1</sup> The same power indicators have been used here as the ones proposed by Mirosław Sułek: the military budget of the expedition forces is the most important, visibly less important is the number of soldiers, the civilian budget is of secondary importance being relevant exclusively in situations of relative effectiveness of the military forces (economists themselves are in a serious disagreement as for the significance of developmental and military assistance that is included in the civilian budget, which is why one cannot exclude modification of the power indicators in the future). On the other hand, on the side of „resistance” to those influences we have primarily population, since people’s attitudes are most decisive as well as the area of the object. In accordance with Sułek’s argumentation, the ratio is 2 : 1, which is justified by courses taken by real life contemporary anti-guerilla conflicts. The whole is influenced by a strong cultural coefficient that is impossible to determine on the basis of quantitative data, which is why simplified values have been adopted: 0,5 for societies with a relatively positive attitude, 1 for a „neutral” one in terms of identity and 1,5 for groups significantly distant in terms of culture from the culture of the power – subject of the influences. The considerable differentiation of the values is justified by the significance of collective identities for different ways of perceiving foreign influences – from a friendly attitude and acceptance to hostility.

of the area. Obviously, this model takes into account exclusively „hard” influences and has no application in the much more common analyses of „soft” influences, that is diplomatic, economic ones (in the broadest sense) and others.

The application of this model enables one for example to estimate the difference between „hard” influences of the USA in Afganistan and Iraq as of 2008 and 2009 (data quoted after: Belasco 2009a: 13; 2009b: 9, 12).

**Table. The comparison of „hard” influences of the USA in Iraq and Afganistan in 2009 (in brackets data as of 2008).<sup>2</sup>**

	Afganistan	Iraq
population	28,4 mln	28,9 mln
area (km <sup>2</sup> )	652,2 thous	438,3 thous
cultural coefficient	1,5	1,3
military budget of the USA (USD)	51,1 mld (40,6 mld)	90,6 mld (138,3 mld)
US military personnel	50,7 thous (30,1 thous)	135,6 thous (157,8 thous)
US civilian budget (USD)	3,7 mld (2,6 mld)	3 mld (1,9 mld)
Results of calculations	0,318 (0,236)	0,732 (0,944)

The above calculations lead to the following conclusions:

1) The influences (potential) of the USA in Iraq were almost two and a half times as big as those in Afganistan as of 2009 and as much as four times as big in 2008.

2) The influences of the USA in Afganistan were increased by about one third following the coming to power of President Barack Obama.

3) In the same period the influences of the USA in Iraq decreased by a little more than 20%.

#### 4. Concluding remarks

<sup>2</sup> All data quoted in approximation to the first digit after the coma. The data concerning the area and population based on *The World Factbook*. Because of the generally anti-Western attitude of the population in Afganistan, the value of the cultural coefficient was assessed at 1,5; while in Iraq about 20% of the population has a positive attitude to the Americans (Kurds) – the value of the coefficient is 0,5, whereas the Arab population is assumed as anti-American – the value of the coefficient is 1,5; for this reason the total coefficient value for Iraq is 1,3. The position „civilian budget” encompasses only official expenses for international aid and „diplomatic operations”. In the calculations, the figures visible in the Table were used (without mld, mln and thous) – e.g. 28,4<sup>0,652</sup>; the figures in the operations (except for the final result) were approximated to the second digit after the coma.



It is justified that power-metric research should develop in the direction of working out a quantitative method of assessing power of non-state actors since their importance is constantly increasing. Generally, one should draw attention to the need of in-depth research into „soft” influences since the contemporary world seems to be entering an era of deconcentrated power, with declining importance of powerful states and traditional forceful ways to play out reciprocal relations (Haass 2008). So far this kind of research is plagued by too many methodological difficulties.

In the present paper, I indicated some options to develop power-metric research for the purpose of geopolitical analyses, especially regional and local ones. The theses discussed here should by no means be treated in terms of an apology for quantitative methods in this kind of research. They have not only aforementioned advantages but also disadvantages – primarily the difficulty in establishing a proper way to estimate concrete values (Rice 1969: 4), but also problems with context analyses and reciprocal conditioning as those are difficult to detect by standard statistical methods (Friedrichs, Kratochwil 2009: 720–721). Rather, the present paper aimed to complement to a degree the existing research in the direction that seems a logical consequence of developments in power-metric research. One may hope that the present paper will contribute to further discussions concerning the uses of power-metric research in geopolitical analyses.

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