Mikołaj Jasiński
Warsaw University

NICE, CONVENTION, COMPROMISES –
ABOUT PROCEDURES' MEANING
IN PROJECTED POLITICAL INSTITUTIONS

Abstract. This paper discusses problems arising during construction of decision-making rules, using the EU Council's voting system as the main example. The work presents postulates required during a political institution's formal and politically-related construction process. Numerous compromise propositions have appeared during the debate on the voting system for the EU Council including the two main concepts, the Nice and Convention Systems. Here, selected propositions are presented and, using power indices, their consequences are considered. A new concept for attaining compromise is also offered, which requires negotiators to merely establish the power apportionment in the EU, not construct the minutiae of a voting system. The paper presents a way to determine the optimal voting system that satisfies negotiated results as well as postulates presented herein.

I once thought the construction of political decision-making institutions was a matter for politicians or lawyers skilled at formulating appropriately precise principles to regulate decision-making by the entitled. Today, I teach my students about decision-making processes in institutions such as general elections, parliaments and shareholder meetings. We all know that the description of these mechanisms or formulation of normative expectations requires reference to not always intuitive formal theory. Politicians and legal experts negotiating the future decision-making system of the EU Council have completely ignored conclusions of countless expert opinions regarding formal social choice theory; the results of those negotiations evidence exactly the same thing. When considering these results, I formulated a proposed way to construct the voting system in the EU Council that satisfies political as well as formal postulates.

First, I would like to recount the decisional practice of the EU Council, certain traits of which I will attempt to "translate" into formal characteristics. I will also present the expectations of the tool I used to analyze and design the EU Council voting system, which led me to apply the

Shapley-Shubik index[1]. After describing certain properties of the negotiated EU Council voting system, I will present a method for seeking a compromise voting system. The text refers to the well-known power index properties, described extensively and proven in literature on the subject[2]. However, the ways in which the interpretations of these properties are synthesized to formulate a voting system may be new.

When constructing new institutions, information regarding their goals and the expectations weighing thereon are of prime import. This is rather simple with respect to the EU Council; we are familiar with its decision-making practice and the main principles that define hitherto relations among EU member states. Mentioned practice and prior relations are expressions of the underlying goals of states building the EU. Any transformation of the EU Council's voting system after Union enlargement should thus refer to prior experience and account for these goals. This will allow for the goals and expectations to be expressed in the system. Therefore, I will briefly illustrate the legal framework and historical decision-making practice of the EU Council.

Decision-making in the European Union Council[3]

The EU Council makes its decisions during approximately 80 sessions held each year since the 1990s. The Council works in various configurations, depending on the subjects being considered. Decisions are made by a simple majority, qualified majority or unanimously in meetings of the Union Council. The **qualified majority** system is used most frequently. Simple majority votes are used for the least weighty decisions (organizational and procedural matters), while unanimity of Council members is required in issues of utmost importance such as enlargement of EU membership, amendment of treaties, etc., which occur extremely rarely (it was used more frequently at the outset of the European community's existence).

During qualified majority voting, each state is accorded a certain weight, a number of votes based on its economic, territorial and demographic potential, as well as political issues. The table below presents the allocation

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[1] [23], [25].

[2] I have chosen to avoid an excess of formal terminology, limiting myself to the necessary minimum.

[3] I have limited the description of the UE Council's functioning to the necessary minimum. A more thorough description of this subject may be found in nearly every widely available work on the EU.

Table 1

**Political weight of EU members at various stages
of European integration**

Member state	Number of votes				
	6 states	9 states	10 states	12 states	15 states
France	4	10	10	10	10
Germany	4	10	10	10	10
Italy	4	10	10	10	10
Great Britain		10	10	10	10
Spain				8	8
Belgium	2	5	5	5	5
Holland	2	5	5	5	5
Greece			5	5	5
Portugal				5	5
Sweden					4
Austria					4
Denmark		3	3	3	3
Finland					3
Ireland		3	3	3	3
Luxembourg	1	2	2	2	2
TOTAL	17	58	63	76	87
Required qualified majority	12 (70.6%)	41 (70.7%)	45 (71.4%)	54 (71.1%)	62 (71.3%)

of votes at various stages of Union development, beginning with six states (Treaty of Rome, 1957) to the fifteen (fourth enlargement in 1995).

From the very beginning, the vote allocation system assumed a need to reinforce the weaker states' position while seeking to implement solutions that did not deprive larger states of influence. In short, it is a formal expression of interstate solidarity within the Union. Clearly, this is not an easy task. Aside from the issue of whether to maintain the unanimity requirement in the EU Council, establishing the weighting system is one of the most controversial subjects discussed in the united Europe. In 2000, the Nice Treaty (2000) introduced new principles for the Union's Council decision-making. Between November 2004 and October 2009, three conditions will have to

be met for a decision to be adopted: 1) the proposal must be supported by more than half the states (this number will be 14 after EU enlargement reaches 27 states), 2) the sum total of weighted state votes must exceed the established threshold (after enlargement, this will be 258 votes, i.e. nearly 75% of all, 345 votes in the entire EU), 3) the total number of residents of states supporting the proposal must constitute at least 62% of the European Union's population. Thus, this is a triple majority system. Note the definite innovation of this voting system. The population factor is added to the traditional "political" weights, which obviously gives large states additional power. This change undoubtedly violates the above-mentioned solidarity expressed in arbitrarily established weights. The second important consequence of the population factor being introduced into the Nice Treaty is the unchallenged violation of the understanding between Gen. Ch. de Gaulle and Chancellor K. Adenauer (prior to the Treaty of Rome on EEC) regarding the invariable equality between France and Germany. The understanding had been treated as one of united Europe's foundations. The new regulation gives the advantage over France to Germany as the most populous state of the European Union.

What is the decision-making practice in the Union's Council within the above formal framework? Above all, the extreme number and multi--dimensionality of this European super-government's decisions stands out; it covers cultural issues, social and health matters, energy policy, farming as well as the Union's budget. The normally daylong sessions have sometimes been extended in crisis or deadlock situations. These "marathon" sessions last until compromises are hammered out. The EU Council attempts to maintain the consensual nature of the decisions adopted in the course of its workings. *Ad hoc* coalitions are usually formed during negotiations; the Union's Council has no permanent coalitions while divisions and interest groups cross all lines.

Because the *ad hoc* coalitions are usually formed during negotiations, it can be assumed that over the long-term (say, over a few years) the ways of conducting negotiations will become extremely diverse and provisional arrangements will be built at random. These observations direct us toward power indices based on an assumption of a large number of decisions. The second observation turns our attention to the extreme diversity of the subject matter, i.e. the multi-dimensionality of the decisions adopted. This diversity allows us to refer to the spatial models of decision-making bodies.

That is all for the legal and procedural aspects of the decision-making process in the Council of the European Union. Further, the specifics of members need to be taken into account in the analysis of the discussed

body's decisional processes. It would seem unlikely that decisions made by each individual member are independent. As opposed to parliaments, the EU Council gathers representatives of the governments of particular Union states, usually the ministers of a relevant field (depending on the subject matter being considered). Therefore, it may be expected that Council members will have common standards for evaluating the resolutions being considered.

How should the appropriate power index be selected?

Postulated power index properties

As we know, there exists a great variety of power indices. There is no single and universal power index, just as no universal and complete set of expectations for power indices has been established. This results from the diversity of preconditions for collective decision-making. Different postulates should be formed when dealing with decisions of a single house of parliament, where coalesced and stable political divisions play an extensive role. Our set of formal expectations would differ if we noted that the government coalitions being formed are exclusively minimal winning coalitions than if we had not made such an observation. Still other requirements may be formulated during analysis of complex decision-making processes, e.g. multi--house parliaments. The decision-making environment being the subject of this analysis is rather clearly defined. The postulates below account for some of its more important aspects.

The majority of votes may be presented as simple games in which the players can back or oppose a given proposal. The decision of the entire assembly is also dichotomous and involves either adopting or voting down a given proposal. A proposal may be passed only if supported by the majority defined in the decision-making rule (this is often a simple majority, and, at times, various qualified majorities of votes). We will consider the weighted voting systems (or weighted majority games) i.e. those where each voter is assigned a non-negative real number, i.e. the "weight," while a necessary and sufficient condition for adoption of the proposal is the voting coalition's attainment of the quota, i.e. the threshold established by the decision-making rule. Even complex voting systems may be presented as combinations of a number of weighted majority games.

A set of n players will be designated N and its particular constituents with small letters, i.e. $N = \{a_1, a_2, a_3, \ldots, a_n\}$. Function f assigns particular players their weights: $f(a_1)$, $f(a_2)$, $f(a_3)$ etc.

The quota will be designated q, where it may be expressed as the total number (total votes) or as percentage (share) of the total weight.

The weighted voting system, defined by two quantities, the quota and weight vector, will be expressed in the following form:

$$[q; f(a_1), f(a_2), f(a_3), \ldots, f(a_n)].$$

A subset of game participants will be referred to as a coalition and designated with capital letters, A, B, C, etc. Coalition C of game participants will be referred to as the winning coalition if the sum of the total weight of its members is equal to or greater than the quota required for the body to adopt the decision ($\sum_i f(a_i) \geq q$). Otherwise, the coalition will be a losing coalition. The set of all winning coalitions will be designated W.

Because a given coalition C is a winning coalition if and only if the total weight of its members is equal to or greater than q, then each coalition containing the winning coalition C is also a winning coalition. This particularly applies to the N set of all players.

A minimal winning coalition is a winning coalition, which becomes a losing coalition in the event of the defection of any player. The set of all minimal winning coalitions will be designated M (of course, set M is a subset of all winning coalitions W). The value of a certain power index for player a, i.e. the measure of its significance (power) in the decision-making collective will be referred to as $K(a)$.

What should be expected of the desired index? I will additionally attempt to present the political ramifications of each postulate.

Dummy player postulate

If, in the system under evaluation, a given player (voter, club, shareholder) is not necessary to make any coalition a winning coalition (adds no additional power to any coalition), the power index should be equal to 0 for such a player. This is identical to the absence of such player in any minimal winning coalition.

$$a \text{ – dummy player, i.e. } \sim(\exists C : C \in M \wedge a \in C) \Rightarrow K(a) = 0$$

This postulate is rather obvious and requires no further comment.

Symmetry (anonymity) postulate

The value of the power index should not depend on the order of the weights in the system. In other words, irrespective of how we record the system structure: $[q; f(a_1), f(a_2), f(a_3)]$, $[q; f(a_2), f(a_1), f(a_3)]$, $[q; f(a_2), f(a_3), f(a_1)]$ etc., we should attain the same set of winning and losing coalitions. In all

cases, we should obtain the same vector of power, which corresponds to the player vector permutation. The basis for the power index assigned to a player should only be the weights assigned thereto and the remaining players, and not their labels.

Despite differentiated relations among particular states, I decided to accept this postulate for two reasons. First, one of the fundamental assumptions accompanying the uniting of Europe is solidarity, thus behavior contrary to the divisions and aversion, which the Community is to "cover up." Second, even if this goal is not fully realized, the variety of decisions made over the coming years by the EU Council will reveal numerous axes of division among Union members. Therefore, over the long-term, it may be accepted that the symmetry among players will be maintained in establishing winning coalitions; each of the divisions (spatial dimensions) will be of equal significance.

Monotonicity postulate

If a certain player is weighted higher than another in a given system, that player's power should be greater than or equal to the latter, or $\forall\, i \neq j : (f(x_i) > f(x_j)) \Rightarrow (K(x_i) > K(x_j))$. Though this postulate is debatable for political reality teaches that a larger player is not always a desired coalition partner for the smaller player[4], this postulate seems necessary in selecting an appropriate analysis tool due to its intuitive nature. This is particularly important in describing complex voting systems, in which evaluation of the significance of particular system elements is not obvious ("if my state, e.g. state a has more votes than b, I would expect its position to be equal to or stronger than state b"). Last but not least, it is necessary to keep this (and the following) postulate for reasons of persuasion. The main audience for the analyses, i.e. politicians and their electorates, needs intuitive solutions.

Bloc postulate

If one of the players joining a block is a significant player, the power index of the bloc should be greater than the power index of the other player alone.

This postulate may be expressed as follows:

a, b – vote participants $\quad (K(b) > 0) \Rightarrow (K(\{a\} \cup \{b\}) > K(a)).$

Intuitively, this postulate may be presented as follows: it is difficult to imagine anyone joining powers with another who is needed in a coalition and

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[4] See [9], [10], [21], [24].

not expect an increase in importance. Fulfilling this postulate will also be important during investigation of various coalitions' superadditivity.

Homogeneity assumption

The last assumption refers to a difference approach to power indices. Formulated by Straffin[5] and discussed in later works[6], it refers to the probabilistic interpretation of power indices. Straffin considers a voting model in which the probability that i-th voting for a resolution (p_i) may be treated as the value of a certain random variable that assumes values from a unit interval $[0, 1]$. Following that logic, we may ask: what is the probability that i-th's vote will impact the vote result? One of the proposals considered by Straffin[7] refers to the homogeneity assumption:

> For each i-th voter p_i is the same, equal number p as the value of a random variable distributed uniformly on the interval $[0, 1]$. (The homogeneity is among members: they all have the same probability p of voting for a given proposal, but p varies from proposal to proposal).

Straffin presents a valuable interpretation of this assumption. The probability p_i describes the level of acceptability for the i-th voter. Acceptance of the homogeneity assumption (for any voted matter $p_i = p$ is identical for all voters) means common evaluation standards for proposed resolutions to be voted on.

Shapley-Shubik Index

Of the most familiar and widely used indices to describe decision-making bodies, the only one, which fulfills these postulates, is the Shapley-Shubik index. It stands out among normalized power indices because it fulfills the transfer postulates[8]. Moreover, the above-referenced bloc postulate has a particularly valuable interpretation of said transfer postulates. Finally, this index defines the probability of impacting the voting result presuming acceptance of the homogeneity assumption.

Previous analyses usually referenced two indices, the Shapley-Shubik index and the Banzhaf index. The results obtained using both indices are

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[5] [30], [31].

[6] See, *inter alia*, [4].

[7] To avoid an excess of topics, here, I will not discuss the proposed model in its entirety.

[8] See, inter alia, in works [4], [14], [15].

usually quite similar. However, opinions regarding the appropriate analysis tool are divided[9]. Acceptance of the above-referenced postulates made me apply the Shapley-Shubik index in my proposal.

This index also possesses an interpretation that properly recreates at least some qualities of the decision-making process in the Union Council. I mentioned above that with respect to the consensual character of Council decisions, the generally *ad hoc* constructed coalitions and lack of permanent agreements between Council members, negotiations will take numerous and differing paths, and decisions will be reached in varying ways over the long term. The Shapley-Shubik index assumes a random manner of consensus building (here, I am more akin to adopt equal probability of each way to attain consensus than of the equally probable all winning coalitions). Thus, it is referred to as the coalition building index.

New proposal – EU Constitution vs Nice Treaty

The European Convention appointed in 2001 drew up a draft European constitution. The proposed voting system was one of its most controversial points.

The table 2 presents the political and population weights of particular states after the Union enlargement.

The three-factor procedure provided for by the Nice Treaty has already been presented above. The Convention's initial draft introduced two conditions, which had to be met for the Union's Council to adopt a decision. This voting system dropped the weight criteria so key to the Nice system. Decisions must be backed by more than half the states with at least 60% of the European Union's population. Table 3 presents the criteria of both systems.

The ultimately accepted version of the voting system is based on the concept drafted by the Convention. It will be a two-factor system, in which **at least 55% of the states** (i.e. 15 out of 27) with **at least 65% of the European Union's population** will be needed to adopt resolutions put forward by the European Commission or EU Foreign Minister. These regulations are to be supplemented in 2009–2014, which in the politicians' opinion, **will secure the interest of the medium states against domination by large EU states**. These addenda are comparable to the Nice compromises (!) and provide that if a resolution proposed by the

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[9] *Inter alia* [20], [22].

Table 2

**Populations of member states as a % of EU population
and number of votes (the "Nice weights")**

State	Population (%)*	Number of votes
Germany	17.1	29
France	12.2	29
Italy	12.1	29
Great Britain	12.0	29
Spain	8.3	27
Poland	8.0	27
Romania	4.8	14
Holland	3.2	13
Greece	2.2	12
Czech Republic	2.2	12
Belgium	2.1	12
Hungary	2.1	12
Portugal	2.1	12
Sweden	1.8	10
Bulgaria	1.8	10
Austria	1.7	10
Slovakia	1.1	7
Denmark	1.1	7
Finland	1.1	7
Lithuania	0.8	7
Ireland	0.7	7
Latvia	0.5	4
Slovenia	0.4	4
Estonia	0.3	4
Cyprus	0.2	4
Luxembourg	0.1	4
Malta	0.1	3
Total	100.1**	345

* Data based on [3]
** The excess results from rounding

Table 3

Decisional rules according to the Nice Treaty
and the Convention's initial draft

	Nice System	Constitutional System
Political weight criteria	258 votes (74,8%)	–
Population Criteria	62%	60%
Number of states criteria	Simple majority	Simple majority

European Commission is opposed by **at least 33.75% of EU states**
(10 out of 27) or states populated by **at least 26.25% of the Union's**
population, the Council's decision will be debated anew within a 'reasona-
ble time'. Though the authors of the adopted draft maintain otherwise, the
deferment for a 'reasonable time' is tantamount to blocking of the decision.
After 2014, the EU Council will decide whether to remove this addendum.

Let us take a closer look at the superficially complex procedure pre-
sented above. First, a general remark. If opposition by a fraction of $1 - q$
states or states populated by a percentage of $1 - p$ Union residents suffices
to block an adoption of a decision, then a fraction of states larger than q
populated by a percentage p residents suffices to pass the same decision. For
draft legislation presented by the EU Commission for an adoption by the
Council, the support of more than 66.25% states with population comprising
more than 73.75% of the Union's population is needed to push the legisla-
tion through. These are more stringent requirements than 55% of the states
and 65%, respectively, of the population. Meeting those higher thresholds
will be taken into account during negotiations since the inability to block
a decision will mean its adoption by the body. Therefore, it is sufficient to
account for only the said "addenda" in order to present the consequences of
introducing such a supplemented system. We thus have a double majority
system with a 66.25% threshold for states instead of the 55% and 73.75%
threshold for population instead of 65%. The drawings below present the
reference to division of power for the Nice system and the Convention's in-
itial project to the division of power for the system established at the June
2004 EU summit.

It seems the figures 1 and 2 require no special comment. I will also
eschew a detailed discussion of these and other proposals considered. You are
quite familiar with these analyses especially since the readers and listeners
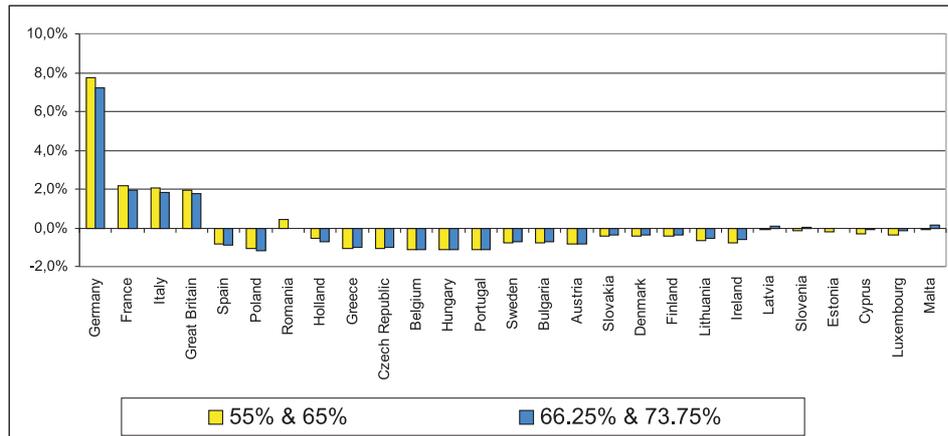of this work authored some of them.

Fig. 1. Who gains and who loses on the introduction of the 55% & 65% and 66.25% & 73.75% system compared to the Nice system
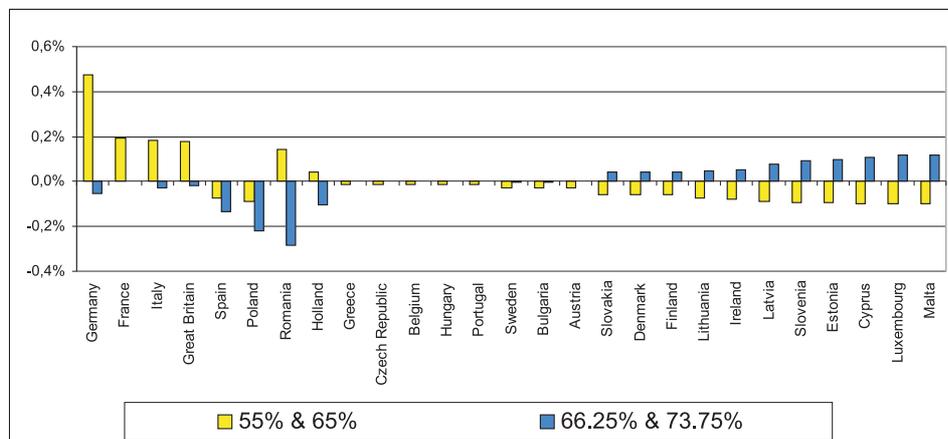

Fig. 2. Who gains and who loses on the introduction of the 55% & 65% and 66.25% & 73.75% system compared to the Convention's initial system

The fundamental issue I would like to discuss is resignation from the political weights, which were the basis for the previous EU Council voting systems as well as the Nice system. The consequences of this decision are very significant, not just for particular states (including my state, that was so "spoiled" by Nice), but for the future stability of a united Europe. This problem needs to be considered both in the context of the endurance of divisions within the European Union as well as in light of the Community's further enlargements.

Power of divisions in a united Europe

Investigation of the sub – as well as the superadditivity of various coalitions in a decision-making assembly allows for a projection of which voter coalitions will be treated thereby as valuable (depending on whether the coalition power is greater than the sum of the power indices of particular voters treated individually). Returning to the political interpretation of this property in the EU Council, we may attempt to answer the question of whether, in a given system, future votes will induce certain groups of states toward the conviction that it is worthwhile to vote in blocks (possibly establishing long-term strategies), or whether it would be more advantageous to vote separately without joining fixed coalitions.

Table 4
Superadditivity of selected coalitions in the basic EU Constitutional, minority blocking as well as in the Nice system

	Coalition	55 & 65	66.25 & 73.75	Nice
power of coalition total power of separated countries **superadditivity**	Germany & France	32% 27% **118%**	30% 26% **113%**	19% 17% **111%**
power of coalition total power of separated countries **superadditivity**	Germany & Italy	32% 27% **118%**	30% 26% **114%**	19% 17% **111%**
power of coalition total power of separated countries **superadditivity**	Germany & Great Britain	32% 27% **118%**	30% 26% **114%**	19% 17% **111%**
power of coalition total power of separated countries **superadditivity**	France & Italy	25% 22% **114%**	25% 21% **120%**	19% 17% **110%**
power of coalition total power of separated countries **superadditivity**	France & Great Britain	24% 21% **114%**	25% 21% **120%**	19% 17% **110%**
power of coalition total power of separated countries **superadditivity**	Italy & Great Britain	24% 21% **114%**	25% 21% **118%**	19% 17% **110%**

To eliminate an index's paradoxical properties, it is significant for the power index used to investigate superadditivity to fulfill the block postulate. The Shapley-Shubik index fulfills this postulate. I considered various hypothetical coalitions. One type of coalition includes states according to their size. In adopting a voting system that distinguishes states solely using population weights[10], we determine superadditivity of many coalitions built according to population size. The table 4 contains a comparison of dual-element coalitions established among four of the Union's largest states.

Clearly, the solutions adopted in June 2004 will provide a greater incentive for these states to vote in blocks than the Nice proposal did. In turn, this will influence a creation of countercoalitions among the states threatened by various "large tandems." This gives a rise to divisions. Increasing the durability of divisions seems to run counter to a Europe ideally founded on stability and collective construction of common values and market. Generally speaking, an organization in which divisions are reinforced has a greater propensity for deep crises.

Further European Union enlargement: What will EU states do when accepting Turkey into their ranks?

Politicians are discussing the realistic prospect of Turkey's accession to the European Union ever more frequently. The argument is that moderate Islam represented in Brussels would strengthen Europe's position with respect to other Islamic states, particularly respecting the ceaseless hotspots in the Middle East. Today, Turkey's population of 66 million would be the second only to Germany's. Each year, Turkey's population grows by about 1 million. According to demographic forecasts, by 2020, or ten years after implementation of the new voting system, Turkey will be the most populous state with territory on the Old Continent. Turkey's vote will then be more important than that of the Union's largest founders, which have far more extensive economic potential and rightly expect the leading position in the Community's decision-making process.

The question posed above merely indicates the most extreme case exemplifying a more general problem. The complete abandonment of politicized

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[10] Each of the proposed two-factor systems was a conjunction of two weighted majority games: games with weights identical for each country and a game with the weights being fractions of particular states' populations. They differed only in their threshold levels.

weights and basing of the decision-making procedure on population weights will, in the future, cause Europe to feverishly seek additional solutions to maintain a balanced process. These will clearly be arbitrary solutions that call upon strictly political arguments. Nonetheless, this can be foreseen right now. The only way to avoid sketchy modifications of the voting system was to adopt negotiable and arbitrary political weights (not necessarily of the Nice variety). When building a community, it is impossible to avoid negotiations, even ones as prickly as "which of us is the most important?" Therefore, paradoxically, the maintenance of political weights will serve the stability of the future European Union and preserve the influence of its undisputed leaders.

How to reach consensus?

Numerous proposals have been formulated as the basis for compromise. Contrary to politicians' public declarations regarding the need to increase the system's effectiveness[11] and equality among the vote of the European Union's citizens, a system with lower effectiveness than proposals submitted during negotiations, which does not equalize the vote at all, was ultimately selected. This occurred, even though there were systems proposed that referred to effectiveness or those that postulated equality of the vote[12]. Thus, other arguments convinced the politicians. On what basis was one solution selected over another? When comparing the balance of power in the selected system, in the Convention's proposal and the Nice system, it seems the most important issue was the need to reinforce the position of the Union's biggest states. However, it remains uncertain whether the rather intricate system selected will actually meet the negotiators' expectations. The agreements give the impression of being random and resulting from "groping in the dark." The indictments against the adopted formula[13] (including those mentioned above) leave little room for optimism.

Below, I would like to present a method that would satisfy the formal and political postulates in establishing a voting system.

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[11] With respect to the consensual nature of the agreements in the Council this postulate should not be regarded as fundamental.

[12] See, *inter alia*, [1], [5], [12], [13], [22], [26], [27].

[13] [7], [12], [28], [29].

Compromise – description of the method

1. Single majority system. The multifactor voting systems considered by politicians are unnecessary. It can be shown that the Nice system and the two factor systems have corresponding forms in weighted voting systems (with a single weight criteria – the quota), equivalent with respect to the division of voters' power. Postulating a simple system postulate would provide a clear and transparent system that is easier to present to public opinion.

2. Political weights. How should the demographic, economic and political differences of individual European Union states be accounted for? There is no way to avoid negotiations. Here, it makes sense to discuss the general interpretation of power indices. Power values assigned by indices to particular players actually correspond to certain attitudes of decision--making bodies' members that arise from experiences collected over a large number of votes. They express the conviction of the body's members regarding the need for them and their partners in the voting process. The power index values are a consequence of the vote configuration in a decision-making body, "researched" numerous times by decision makers when establishing coalitions in connection with votes. Thus, it may be said that the power index values are the magnitude that is first and foremost directly felt by the vote participants, rather than the weights. Previous negotiations concerned construction of the voting system and establishing **weights** satisfactory to all. In fact, however, the dispute concerned the **significance** of particular states and such were the arguments raised. Consequently, the negotiations were not topical. In order to sketch out the appropriate arrangement of weights-votes in the assembly, the opposite of what had been previously done needs to be done now. Ask the politicians themselves regarding their expectations – not expectations regarding the allocation of votes – but, rather, concerning the importance of their states in the decision-making process in matters of significance to the European Union. Through negotiations, the politicians would establish the proportional powers of particular states in the Council of the European Union by allocating successive fragments of the total "power pie". With a certain value arrangement for a given index of power at hand, it is then possible to precisely designate a correspondingly weighted voting system. Accordingly, with an established decision-making rule (weight criteria – quota) it is possible to find a weight arrangement for which the allocation of power will be the same or very near as that which has been assumed (with 27 players it can be accepted that the allocation of power implied by the weight arrangement would be practically identical with that which has been assumed). Finding such an arrangement in

practice is not entirely simple but doable. However, this would not be an indisputable composition – a greater number of such weight arrangements may exist.

3. Decision-making rule. An issue to be yet discussed during the analysis of the decision process is the problem of vote result instability referred to in the voting theory as voting cycles. The occurrence of cycles creates a possibility for strategic manipulation. If decisions are made in the collective body sequentially (in a successive vote, the winning alternative competes with the next on the agenda until the exhaustion of a set of alternatives) the resulting arrangement may be dependant on the order of resolutions presented for voting. This property is referred to as the voting paradox (or Condorcet's paradox).

Due to the multidimensionality of decisions taken in the European Union Council, the spatial aspect of the voting cycles problem must be accounted for. The problem then becomes even more complex, as indicated by McKelvey's theorem[14]. It is not sufficient to assume that decision makers' preferences are unimodal. Excepting situations of exceptional ideal points' symmetry, there is no Condorcet's winner. The example below illustrates the problem:

Example 1

Let us consider three voters, J, K, L with ideal points in two-dimensional space, as in the figure below.
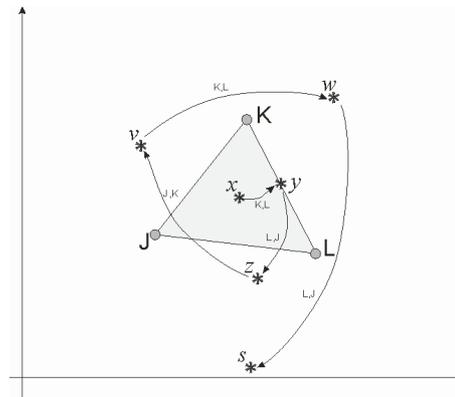
Source: [8]

Fig. 3. McKelvey's Catapult

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[14] [17], [18].

Even though option X seems advantageous to the entire voting trio (it is located within the triangle mapped out by their ideal points, thus being as "near" as possible to the entire group – it belongs to the Pareto set), the coalition of K and L, who would prefer alternative Y, may vote against it. That, however, would lose to alternative Z supported by the coalition of J and L. Alternative Z would lose to V, which would be beaten by alternative W, to be in turn beaten by S (the letters next to the arrows indicate the coalition, which is interested in backing a given change). Thus, a party controlling the voting agenda could instigate selection of any option. This is not a matter only for voting theorists. It may turn out to be a tremendous headache for politicians. On the one hand, a seasoned leader of an assembly familiar with voters' preferences and the extent of the political dispute, may successfully shepherd along certain resolutions favorable to him or her. On the other hand, even the genuine and sincerely expressed will of the body's members (e.g. the EU Council) may be subject to accusations of manipulation. This is especially so in the recently expanded composition.

In 1988, Caplin and Nalebuff[15] proved a theorem, which may be treated as one of the best proposals for resolving the problems presented above. They showed that if voters' preferences are unimodal and if their positions in the collective body are not extremely polarized (an assumption regarding the arrangement of voters' ideal points being concave[16]), then application of the qualified majority rule of no less than 64% (precisely $1 - 1/e \approx 0,632$) in a voting arrangement will prevent the appearance of cycles. It will consequently assure stability of the assembly's decisions. Recall that e.g. in parliaments, issues of particular importance require sizeable qualified majorities, such as a 2/3 vote in favor.

We are thus familiar with the sought value of the qualified majority of 64%. Higher values would decrease the collective's efficiency. I do not consider this to be a key issue, but it is certainly the one to be kept in mind.

4. Establishing weights. Above, I wrote that the established allocation of power and quota do not determine allocation of weights. With an established decisional rule, it is possible to find various weight arrangements, which would result in precisely the same coalitions being formed.

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[15] [2]

[16] This condition is met if $p[\lambda f(W_s) + (1 - \lambda)f(W_t)] \geq \lambda p[f(W_s)] + (1 - \lambda)p[f(W_t)]$, where $p[f(W_s)]$ and $p[f(W_t)]$ designate the density of voters' ideal points, respectively, W_s and W_t, while $0 \leq \lambda \leq 1$.

The method for selecting the most appropriate one among formally equivalent weight arrangements is actually an open question. It may be served by the **transparency criterion** proposed by Słomczyński and Życzkowski[17]. According to that criterion, the selected weight allocation should minimize the deviation from the power allocation. Traditional statistical parameters may be accepted to measure the extent of said deviation (but this is another matter).

The advantages of the suggested manner of designing a decision-making system in the EU Council include stable relations among states. In the event of successive Union enlargements, negotiated power proportions would remain unchanged and would not require additional negotiations. It would be only necessary to establish the relative position of the state being accepted into the Community. After establishing the power proportions of the new Union member with respect to the power index values of the "old" members, it would then suffice to convert the values of all power indices to total 100%. Meanwhile, the procedure for adapting the weights to the new power allocation (using the quota of 64%) would remain unchanged.

Example 2

To simplify the matter, we will consider a three-person collective, in which voter A, pursuant to prior arrangements among the voters, has four times more power than C and twice that of B. The power allocation will be $[57\frac{1}{7}\%, 28\frac{4}{7}\%, 14\frac{2}{7}\%]$. Let us assume the newly arrived member, say D, would have more power than B but less than A. We will accept the following negotiated power proportions for voters A, B, C and D: $4:2:1:3$. Therefore, the new allocation of power in collective $\{A, B, C, D\}$ would be as follows $[40\%; 20\%; 10\%; 30\%]$. It is sufficient to solve a simple equation with one variable. It is easy enough to verify that the initial and negotiated proportions have been maintained.

Clearly, the allocation of power will "flatten out" with the accession of successive members if the previously established proportions are maintained. This is a natural consequence of divvying up the same "pie" (i.e. 100%) into ever-smaller pieces. However, this procedure guarantees the stability of power proportions in the collective body.

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[17] [27]

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Summary

The trials of negotiation are unavoidable on the road to finding an appropriate voting system for politicians. What is vital, however, is that these negotiations concern the correct topic, i.e. the actual significance of member states, not the weights assigned thereto. By following the procedure proposed herein, it would be easier to achieve actual compromise. What is more, the proposal presented would provide increased opportunity for a genuine debate, where technical details regarding the manner of decision-making would not interfere with the intentions of negotiators. If an understanding is reached as to the proportion of power, realization of its technical aspects (establishing the weights) would be a task for scientists, not politicians and their bureaucrats.

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Mikołaj Jasiński
Department of Statistics, Demography and Mathematical Sociology
Institute of Sociology
Warsaw University
e-mail: mikolaj.jasinski@uw.edu.pl