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A double vote electoral system as an antidote to divisiveness

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Abstract

In democracies, decisions are typically expressed by means of a single vote to be cast in favor of the political alliance one considers to be the most suitable to govern the country, or a region of it. Voters, however, do not have the opportunity to also express a vote to censure a political alliance they consider to be particularly harmful, if elected. To fill this gap, we propose a double-vote electoral system where voters are allowed to cast not only assertive (positive) votes but also protective (negative) votes, then emphasize its merits as an antidote to divisiveness.

Under democracy one party always devotes its energy to trying to prove that the other party is unfit to rule–and both commonly succeed and are right – Henry L. Mencken

Elections are won by men and women chiefly because most people vote against somebody rather than for somebody – Franklin. P. Adams

Hell, I never vote for anybody, I always vote against – William C. Fields

1 A double voting system

In contrast with monarchies, or dictatorships, in democratic systems of government a voting mechanism allows citizens to express their decision power (Moore 1966). This can happen in a direct way, in so-called direct (or semi-direct) democracies, or in a mediated way, in so-called representative democracies (Lijphart 1977). The latter are the majority among the Western liberal democracies and constitute the focus of the present article, the purpose of which is to suggest a very simple but crucial change in their voting mechanisms, aimed at improving the collaboration between the different political forces and therefore facilitating the search of more effective and harmonic solutions to the complex problems that our modern societies are currently facing, and will have to face in the near future.

Before presenting our proposal, and the reasons behind it, it is important to stress that no democratic electoral system will ever be able to produce something good if voters are not sufficiently well-educated. As Franklin Delano Roosevelt once told Americans (American Education week, September 27, 1938):

> *Democracy cannot succeed unless those who express their choice are prepared to choose wisely. The real safeguard of democracy, therefore, is education.*

This is indeed the bet that every democratic country implicitly makes: that a relevant portion of its citizens have reached a sufficient degree of maturity, knowledge and freedom, and that they are able to take decisions for their maximum good, the good of their homeland and, in ultimate analysis, of the entire planet. And this will also be the underlying presupposition at the basis of the present article.

Now, as Winston Churchill famously said (House of Commons, November 11, 1947, quoting an unknown predecessor):

> *Many forms of Government have been tried, and will be tried in this world of sin and woe. No one pretends that democracy is perfect or all-wise. Indeed, it has been said that democracy is the worst form of Government except for all those other forms that have been tried from time to time…*

Democracy is indeed not perfect, but we are convinced it can be considerably improved. As Roosevelt reminded us above, one way to do so, as a long-term fundamental strategy, is to increasingly invest in the quality of education of the future voters. Among the short-term strategies, there is that of improving the currently used electoral system, and it is the purpose of the present article to indicate a possible way to do so.

Our idea being very simple, we will start by explaining it right away, then will dedicate the rest of the article explaining how it could work in practice and what are its advantages.

We place ourselves in the context of a general election, with a given number of running electoral lists (the term "list" is used here to refer either to parties or parties' alliances), determining the candidates to be elected. These can either be open or close lists, i.e., voters can either directly influence or not the way the different candidates will be assigned seats, but for simplicity of our discussion we assume that we are in a close-lists situation.

So, during a general election, a citizen of voting age will go to the polling station and draw a cross within the rectangle indicating the list of persons s/he wishes to see elected, and this is the single act through which s/he will be able to expresses her/his vision and influence the selection of her/his representatives, in the ambit of an ideally free and fair election.

A collective decision-making process based on the above single-vote action is, however, rather unnatural, and we believe this in part explains why our modern democracies have been in such a big trouble recently, with the worrying rise of populisms and extremisms and consequent strong political polarizations that are under everyone's eyes. Our point is that this too basic single-vote action should be replaced by a more advanced and balanced double-vote action, allowing for the expression not only of a vote *in favor* of a given political force, but also a possible vote *in disfavor* of a force the voter believes should never obtain power.

In other words, voters, in this more advanced double-vote system, will have access not only to the possibility of a vote of opening towards what they want to promote, but also to the possibility of a vote of closing towards what they want to be protected from.

As a simple illustration, consider the typical situation of a meeting where the people present must decide to approve or refute a specific proposal. Obviously, they will be invited to vote either in favor or against the proposal in question and, typically, only if the votes in favor exceed the votes against the proposal will be accepted. We immediately see here the necessity of having two types of votes available: a positive one, in favor, and a negative one, against.

Similarly, we can understand the importance of being able to say both "yes" and "no" in the different situations of our life. Think of a person with a peanut allergy without the possibility of saying "no thanks," when offered a peanut, or a boxer who would not be allowed to use any defense move during a match.

The situation of a meeting where a single proposal has to be voted is of course much simpler than the situation of a general election, where different lists (different proposals) compete together. Does this mean that the natural mechanism of allowing to say both "yes" and "no" would not be available in these more complex situations, where people are confronted with multiple choices? Fortunately, this is not the case.

To see why, consider first the simple situation of a meeting of people voting a single proposal. Clearly, the acceptance of the proposal requires the favorable votes to be strictly greater than the unfavorable votes. If one records the favorable votes with the positive value "+1" and the unfavorable votes with the negative value "-1", one can say that the outcome of the ballot is obtained by summing all these positive and negative unitary values, and that if the result of such sum is a strictly positive number, the proposal is accepted, otherwise it is refuted.

When multiple proposals are at play, as is the case in elections where multiple electoral lists are competing, the above mechanism straightforwardly generalize. Voters are still invited to cast a double vote: one in favor of the list they support and want to see elected, and one against the list that in no way they want to see elected.

Voters, however, are not obliged to cast two votes for their ballot paper to be valid. They can decide to:

(a) only cast a positive vote, in favor of the list they want to see forming the government;

(b) cast both a positive vote in favor of the list they want to promote and a negative vote against the list they do not want to see elected.

All the favorable (positive) votes will then be recorded with value "+1" and the protective (negative) votes will be recorder with value "-1". If there are n running lists in total, there will be n results, which can be both positive or negative (integer) numbers, and the winner of the election will be the list having achieved the greater result, i.e., having obtained the largest integer among the n results.

Note that in principle one could also allow people to just cast a negative vote, against the list they do not want to see in power, without additionally casting a counterbalancing positive vote. As we will explain in the following, such possibility should however be avoided.

2 Representation

Before explaining in the next section why a double-vote system, using both positive and negative numbers, can affect the electoral process in a very positive way, we have to explain how proportionality is to be evaluated.

We will not discuss here the well-known problem that it is generally impossible to distribute seats in a way that is perfectly proportional to the percentages of votes received, so that different methods have been devised to try to minimize the disproportionality that is inevitably created when seats are allocated (Gallagher 1991). These methods will of course remain necessary, *mutatis mutandis*, in our double-vote system.

What we have to explain here, instead, is how the percentages determining the seats have to be deduced from the electoral results.

It is simple. In the unlikely situation where there are no lists with strictly positive results, i.e., no lists having received more favorable votes than unfavorable ones, then of course the election needs to be repeated. In the more typical situation where one or more lists have obtained a strictly positive result, one proceeds as follows.

If a given list has achieved a (strictly positive) result r, and the sum of all positive results is R, the percentage determining its seats is simply given by the ratio r/R. On the other hand, the lists having obtained negative or zero results will receive no representation (no seats), independently of how many favorable votes they obtained (in a double-vote system, negative votes count as much as the positive ones).

Note that the double-vote system is a natural generalization of the single-vote system, as is clear that the latter is recovered in the limit situation where all the voters feel no necessity to censure specific political forces.

3 An antidote to divisiveness

Having explained the basic of our proposal, it is time to analyze what its merits are. At first glance, one might think that the introduction of a double-vote, one to be casted in favor of a list and the other to be casted as a possible defense against another list, is an unnecessary complication, not changing much compared to the traditional method of casting a single-vote in favor of the political force one is willing to support. After all, when we provide support to a list, we automatically remove our support to the others, so a single vote not only expresses our taste, but also, in an indirect way, our distaste.

The problem is that there is an evident disequilibrium between the act of supporting a list, which is specific, and the complementary effect of not supporting all the others, which is non-specific. The only situation where a double-vote can be seen to be identical in terms of its pragmatic effects to a single-vote, is when there are only two electoral lists and all voters voting in favor of one of them also systematically vote against the other one, and

vice versa (until a new political force appears on the scene; see the next section). In this particular situation, only the favorable votes really matter to decide which will be the winner of the election, the only difference being that the non-winner is now characterized by a negative result, and if we follow the rule we indicated in the previous section, it will obtain no seats. This could be considered as a situation to be avoided and a different way of proceeding might be considered to handle situations where only one list obtains a positive result (we will address this issue later in the article).

Let us now explain why a double-vote electoral system can become an important tool to fight against extreme political polarization. Plato is well-known for having first exposed, many years ago, the risk for democracies to shift into tyrannies, in periods when people face insecurity and, all of a sudden, a "would-be tyrant" takes advantage of the situation by offering himself as the savior, with all the answers to the perceived problems. When this happens, i.e., when in uncertain times some political forces try to gain votes by becoming more and more ideological and demagogic, promoting drastic and extreme views that can easily inflame the minds of a portion of the population, the political debate starts little by little to lose rationality and the ability to solve (real) problems in a coherent and organic way.

This is so because the typical strategy to gain attention and votes is that of pleasing a part of the population to the expenses of another part of it, thus creating a climate of ever greater polarization of views, and of diffidence, which can easily transform into hate.

We hope the reader agrees that this is the worst possible scenario to have if we want to find and implement real solutions to the central and urgent problems that our modern societies are facing, as this requires long-term strategies, hence a long-term stable collaboration between the different political alliances (and in fact, also international long-term collaborations, if we consider those global problems, like the proliferation of nuclear weapons, climate and biodiversity crises, that can only be tackled at the international scale). For this to be possible, a process where consensus can be created is necessary, which is extremely difficult to achieve when some of the political actors are in a state of strong ideological identification, producing a radical polarization where incompatible views are maintained in a very rigid way.

This is so because consensus is based on authentic dialogue and on the idea that every voice is important to be heard, and that every concern is justified and must be taken into due consideration, at least to some extent.

Note that consensus (or rather, its search) is not only a condition *sine qua non* for finding real and better solutions to actual problems: its pursuit also allows to increase the sense of trust and community, being a process where, as we said, no ideas are in principle lost. A good virtuous example of this is the scientific debate, which precisely works (at least ideally) through an honest critical confrontation of the various existing views, with the aim of obtaining more synthetic and advanced consensual positions, which however are never an expression of unanimity and are always recognized as being views in progress.

The reader will probably be thinking that this is a wonderful *desideratum*, but that in practice this is hardly achievable, because politicians are human beings, full of weak traits, some of them often cultivating very limited visions of things. Others are too attached to their seats and are not always animated by high moral principles, not to mention the fact that characters can be at times belligerent, which obviously makes communication between the different parties who have to make collective decisions even more difficult.

All this is indeed true, and this is precisely the reason why we need to find a way to give more power to those more lucid (and often more moderate) voices who possess those human traits allowing them to reflect more deeply about the nature of the problems a society faces and to create more effective and consensus building collaborations. These more lucid individuals, however, are not usually able to gain or maintain power and influence in our democracies, when the latter become too polarized. And this is where we think the interest of introducing a double-vote system lies.

Extremisms and populisms of the kind that artfully obtain their power by instigating conflicts in the population, rather than a sense of greater unity, will indeed quickly annihilate as soon as a voting system also contemplating the possibility of negative votes is introduced, in the same way a negatively charged electron and its antiparticle (the positron) annihilate when they are brought together and are allowed to interact.

This is probably what happened in the primordial times of our physical universe, following the Big Bang: our universe, with the life it today contains, emerged from the "electoral result" of a huge combination of (positive) "matter votes" with (negative) "antimatter votes." Evidently, something in the laws of the universe, and/or in its initial condition, expressed a preference towards matter, so that a tiny portion of the latter (of the positive votes) survived the particle-antiparticle annihilation process (the electoral vote count) and our actual universe is what has evolved out of this initial scrutiny.

A general election is like a "small Big Bang" for a country, giving birth to a new Parliament, which also needs to pass through an initial "balancing out" of the bulk of pre-existing antinomies, in order to remain with a more honest representation of the constructive forces at play in a country.

In a nutshell, with a double-vote system, a political alliance trying to obtain the favor of half the population by antagonizing the other half, will achieve an electoral result close to zero, because the number of votes in its favor will be comparable to the number of votes against it. Hence, it is very difficult that such a list will obtain a relevant representation following the election, as is clear that the less conflictual political alliances, not applying the aforementioned polarization strategy, will not receive (or will receive very few) negative votes, so, even if they can only collect a modest number of favorable votes, they can still compete and even win over the political forces that have maybe collected a considerable amount of positive votes, but also of negative ones.

To fix ideas, consider a big party list having obtained, in a given country, 10 million favorable votes and 9.5 million censure votes. Its electoral result will be of 0.5 million. Consider now a much smaller party list, having obtained 1 million favorable votes, but also a much smaller amount of censure votes, say, 0.1 million. Its electoral result will be of 0.9 million, which is a better result than that of the bigger party that presented a too polarizing program.

As a consequence of the above, a new kind of politicians will swiftly arise, namely, a type that can gain the support of voters without having other voters feeling the need to defend themselves from the program they propose. Of course, in the moment this more natural and sophisticated system of distribution of power

among the political forces will be put in place, a crisis of adaptation will follow, as nowadays politicians and parties are not used at all of also taking care of not opposing with their views a part of the population, because of the danger of also collecting negative votes.

But as we are reminded by the etymology of the Greek word "crisis," which means "choice," this is a welcomed situation that will allow the population to express in a more effective way their choices, and the politicians to adopt political agendas having a much more universalistic value, and if they are not ready to do so, they will simply disappear from the political scene as "species that did not survive evolution," in the same way bad scientific ideas disappear from the scene of the scientific debate.

4 Protecting the new political forces

We think it is quite clear from the above analysis that the double-vote system we propose will be able to dismantle the increasing political polarization of our liberal democracies and the associated "culture of contempt" that has become so evident in the last years, whose causes are multiple and multifaceted (Waytz et al 2014; Blankenhorn 2018; Brooks 2019). However, what we want to consider in this section is what could be perceived as a possible shortcoming of our proposal.

One may wonder if in a double-vote system democracy it would become too hard for new political forces to gain power. Indeed, new ideas are like newborns, they need to be protected in order to grow, before being able to face the inevitable obstacles of adult life (think of the protecting role of a loving parent). If these obstacles come too soon, the newborn will inevitably succumb.

In our case, if a new political movement will be directly opposed by the voters of well-established political forces, receiving from them a relevant number of negative votes, it will have no chance of obtaining a positive result at the polls, hence will never receive any seat in the Parliament. Since new ideas must have a non-negligible chance to emerge, as of course we need them for our societies to face the new challenges, this possible blockage operated by a

double-vote system, if truly effective, should be a matter of serious concern.

Imagine you have two opposing political forces, say of comparable size, and that a third new force presents itself to an election. In the absence of the latter, as we explained already, supporters of one list will usually also vote against the other, and vice versa, and consequently, the absolute values of their electoral results will be small numbers compared to the numbers of favorable positive votes they receive (we recall that in a double-vote system the results are given by the difference between the positive and negative votes received, hence can be also be negative, when more negative votes are received than positive ones).

But with the advent of a third political force, something important happens. Imagine that the number of expected favorable votes it is able to receive (for example, according to pre-electoral surveys) is comparable in size to the magnitude of the results that are usually obtained by the two established forces. If this third political force collects no negative votes, it will have a good chance to unseat the two major political forces. In other words, the latter will perceive the new arrival as a real menace.

Here we must consider an aspect that is inevitably present, at different degrees, in any voting system, be it based on a single-vote or a double-vote mechanism: *manipulation*. The paradigmatic example, in the traditional single-vote situation, is that of so-called protest votes, which can be of different kinds and include voting for a list even when it is not the preferred one. It is a manipulation of the system (a sort of "dirty game") because a vote will then be given not with the purpose it was conceived for, which is that of appointing the women or men who best represent one's ideas, but in an attempt of achieving a different purpose.

These types of manipulations can and will also happen in a double-vote system, but the more specific situation that concerns us is the possibility for voters supporting an established list to give negative votes to a new running list, with the sole purpose of protection their list from the danger of its rise, even though there are other lists running for elections whose political program is considered to be more harmful than the program of such new list.

Generally speaking, a manipulation of the vote, to be effective, requires a situation where it is possible to predict what the consequences of a given line of action are. Here, however, we are already in a situation where it is quite difficult to know in advance what the consequences of a strategy as described above will turn out to be, i.e., if it will go to one's proper advantage or disadvantage. So, a natural mechanism of protection of the new political forces seems to be already in place in our double-vote system proposal.

Will it be sufficient? If we think of the possibility of hidden alliances that could take place among the most adverse political forces (my enemy's enemy is, at least temporarily, my friend), capable of piloting the vote of a portion of the electorate in an instrumental way, the answer could be, pessimistically and prudentially, negative.

It is however possible to avoid the problem altogether by including in the voting system a protection mechanism that cannot be manipulated. We observe that in numerous countries with proportional electoral systems a so-called *electoral threshold* already exists. This corresponds to the minimum number of favorable votes a list needs to obtain to be entitled in receiving seats in a legislature. Typically, these electoral thresholds are placed somewhere in between 2% and 5% of the totality of favorable casted votes and are applied for different reasons, including limiting an excessive fragmentation of the political forces and allowing for a greater functionality of the elected assembly.

Similarly to the electoral threshold, which defines the minimum size of a list for it to be considered "adult enough" to constructively participate in a legislature, a *protection threshold* could also be introduced, determining which are the electoral lists that need to receive a special protection, because of their small size. This protection threshold will of course be much lower than the electoral threshold, as its function is different: it has to discourage the false plays operated by the "old" (bigger in size) political forces, but at the same time it has not to constitute an unfair advantage.

5 Implementing the new system gradually

Summing up, the double-vote system we propose contemplates two different demarcations. One is at the core of the system and is meant to eliminate from the seat distribution process those lists that are too divisive. The other one, which we just discussed, is a precaution to provide special protection to the new political forces. This precaution might be necessary just in a first phase of implementation and use of the new system, i.e., until both the political forces and the electorate learn to act in a wiser and more responsible manner.

Indeed, as we mentioned already, it is reasonable to expect that a double-vote system will gradually transform our democracies in a deep and lasting way, as is clear that politicians will have to substantially increase the quality and balance of their discourses to be able to continue to be elected.

Note that politicians of a higher quality, genuinely caring for the entire population and able to adopt a more integrative and less divisive approach, already exist in our societies; it is just that the actual single-vote system makes it very difficult for them to access power.

Note also that not only politicians, but also voters, will gradually undergo a deep change. Indeed, one thing is to just vote for the list in which one has the tendency to identify (consider how numerous voters just vote the same party every year by habit), and another thing is to be able to cast a meaningful negative protection vote to a contender political force. This requires doing some research, i.e., to learn about the different political forces at stake, in order to recognize the one which presents the greatest threat. We are not saying that voters will automatically do so in a diligent way, but certainly asking them to cast a double vote will stimulate a more complex and less one-dimensional way of thinking and acting.

A change in the electoral system needs to be accompanied by a corresponding cultural change, and the latter needs to be facilitated

by providing voters all important information. A new electoral guide must be carefully redacted and sent to the population (and become a subject of study in schools). Such guide will have not only to tell new and old voters how to correctly cast a positive vote, in order to freely choose the women and men who will best defend their ideas, but also how to correctly cast a negative one, to defend themselves against those who instead are promoting ideas that are considered to be unacceptable.

So, it is not only about being able to technically fill in a ballot in a correct way, but also, and equally important, about understanding the spirit and rationale of the double-vote process. In particular, it must be explained that a vote of censorship has important consequences and should never be given lightly, or in a Machiavellian way.

Voters should vote according to conscience and with deep conviction not only when they support a list, using the positive vote, but also, and above all, when they "denounce" a list, using the negative vote, being clear that it is not mandatory to use the latter, which is a power to be used responsibly and not for the mere purpose of eliminating an inconvenient opponent, without the latter being considered to be truly harmful for the country. In other words, if no lists are considered to be detrimental, the negative vote should ideally not be used. The negative vote is a defense tool and if a voting citizen believes that none of the political proposals in the race is dangerous for the country, it should in principle not be used.

As we mentioned in Section 1, theoretically speaking one could consider the possibility of allowing people to also only cast a negative vote, without being compensated by a positive one, in case one would feel that anyone of the political lists can conveniently represent one's idea. However, if we take into account the important disaffection and disillusionment of the electorates in our today democratic countries, part of which struggle to recognize themselves in the current political forces, the risk is that, in a first phase, the possibility of using the negative vote alone, without counterbalancing it with a positive one, might end up being too destructive, if such a possibility is adopted by a too large group of people.

Indeed, this could bring about a situation where all electoral lists obtain a negative result, with the consequence that the election has

to be repeated. This can either be considered as something to be avoided, or as a necessary way of obtaining a more faithful picture of the actual situation in a country. We however believe that when initially applying the new electoral system, and as long as it will not be fully understood and assimilated (which can take some time), it might be more prudent to avoid the aforementioned possibility, which can always be introduced in a second phase, when the political forces and the electorate is less polarized and divided.

Another aspect that should be taken into account is the not impossible situation that we mentioned already, where only a single list obtains a positive result, whereas all the others obtain negative ones. If we follow the indication given in Section 2, this will give rise to a list having 100% representation in Parliament. Since this is the force which received the best balance between positive and negative votes, it is reasonable to assume it will be a moderate one, hence, the 100% representation should not be an issue and could in fact even represent an advantage in terms of governability.

However, again as a matter of prudence, it might be wiser in a first phase of application of the new electoral system to maintain the presence of a certain percentage of opposition in Parliament, allocating for example a fixed 20% (or another percentage to be determined) of seats to the second-ranked list.

6 Concluding remarks

Our aim with this article was to present the basic idea behind a double (positive and negative) vote electoral system and explain its advantages in promoting more mature political dynamics in our modern democracies, which are today undoubtedly in serious danger.

Our proposal must certainly be further analyzed and tested, using different criteria and also possibly considering multiple samples of simulated elections, to analyze the differences in terms of results and representativeness when the traditional single-vote system is confronted with the proposed double-vote one. These simulations will also be helpful in determining if a protection threshold for the newborn political forces is needed and what its

optimal percentage should be.

Generally speaking, we can imagine that different countries, due to historical and cultural differences, might implement some aspects of the double-vote system in slightly different ways. What is important, however, is that these variations will not affect the fundamental idea at its basis, which is that of facilitating the access to power to the less divisive (and therefore more balanced) political views, thanks to the introduction of the additional negative defensive vote.

To put it in a different way, the fundamental idea at the basis of our proposal is to allow for the introduction of the balancing power of negative numbers within the realm of how numbers are used in our modern democracies. Indeed, in a sense, our electoral system is still stuck in the false belief that only positive numbers exist, as if we were still at the times of Diophantus, when back in the 3rd century AD negative solutions to certain equations were considered to be useless, if not absurd.

But as time passed by, negative numbers were recognized being the natural representatives of multiple fundamental aspects in nature and in our human activities. Think of the importance of negative numbers in economy and finance, allowing for the identifications of situations of debt, overdraft, losses, etc., or their importance in sport, like when in sprint races wind is measured as being either in favor (positive wind) or against (negative wind) the runners, not to mention how science has introduced negative numbers almost everywhere in its theories, as for example in the fundamental distinction between positively charged and negatively charged particles.

Speaking of number extensions, it is worth here mentioning an important evolution that many democratic systems went through, which took place within the realm of positive numbers. It corresponds to the inclusion of (positive) rational numbers as a way to properly calculate proportions (we need fractions to calculate proportions, i.e., rational numbers). Indeed, the way votes are locally counted in different territorial districts, during an election, is not the same in the Anglo-Saxon countries (such as UK, Canada and USA) as compared to continental European countries. In the former, the *first past the post* (also called *winner-take-all*) rule is applied, i.e., the candidate who gains the most votes takes the single seat

associated to that district (so, only natural numbers are used), while in the latter there is a proportional distribution of elective power that follows the proportions of votes received (hence, rational numbers are also used).

Since the UK played an essential role in the development of modern democracies, countries that were historically strongly influenced by it also imitated the 'first past the post' system. The continental European system, on the other hand, is to be considered as a more recent and advanced mechanism, as it allows for a fairer distribution of power, being also better protected from the fate that UK-like systems suffer: the evolution towards a system formed of only two parties, inexorably fighting for the conquest of power, which will periodically move from one side of the aisle to the other.

The continental European system leads to the necessity of forming coalition governments, power being distributed in a much more complicated way than in the two-party system, and this of course can increase the difficulty of the decision-making process in Parliament. However, easiness of decision-making should never be a criterion (at least, not a primary one) for deciding about how power is to be distributed, as it should also be acknowledged that decisions with important consequences for a country are, and should be, hard to take. What is important, however, is to have a mechanism allowing to have the right persons elected with the required competencies (including the moral ones) and sense of responsibility, allowing them to successfully cope with the difficult process of taking complex decisions, possibly in a consensual way.

Now, if the passage from natural numbers to rational numbers was aimed at achieving a better representation of the different stakes (represented by the multiple lists receiving seats), the subsequent passage to negative numbers in the realm of how numbers are used in democracy is what we believe could be the necessary step ahead in the evolution of the European proportional systems, facilitating the access to power to truly competent individuals, with real capacity of creating consensus, rather than division.

We are indeed convinced that one of the characteristics of human intelligence is its ability to access creative solutions to real problems, able to bring people together rather than divide them.

And we are convinced that the more balanced double voting system we have here proposed and illustrated can be among the factors that will allow such intelligence to more easily emerge and thrive.

Of course, our proposal is not a cure-all solution. It is just a tentative of refining a system which can certainly be improved in many different ways. Democracies are a courageous and optimistic bet in humanity, in its ability to evolve both in terms of knowledge, discernment and ethics, and there is no doubt that democratic systems still contain numerous imperfections in need of being addressed and possibly corrected, and the one we identified in this article, although fundamental, is just one example. To give another example, think of the problem of the inevitable tension between democracy and justice (Van Parijs 1993), caused by the fact that the distribution of voting power among the population does not usually follow a natural proportionality principle, according to which (Brighouse & Fleurbaey 2010): "Power in any decision-making process should be proportional to individual stakes."

Another example of imperfection is that, within parliaments, decisions are taken through a majority voting, which is a "right of the strongest" in disguise. And in those ambits where a consensual decision making is targeted, as is the case of the European Parliament, there is the opposite problem of a possible manipulation of the system by the minorities. Interestingly, this could be avoided by the addition of a *weighted symmetry breaking process* in the way votes are cast, able to discourage most attempts at manipulating a parliamentary vote, and we refer the interested reader to Aerts (2005) for more details about this mechanism, which can be seen as a further extension of the typology of numbers that can be usefully used in democracy, in this case also including the random ones.

As a last remark, we observe that democracies are today bicameral, i.e., they have legislators in two separate chambers (also called houses, assemblies, parliaments). For instance, in the UK, there is the House of Commons and the House of Lords. One of the two chambers, let us simply call it the Parliament, is where the real legislative power is and where people are truly represented, whereas the other chamber, let us simply call it the Senate, is where in the past a lot of power was concentrated in a non-representative way, in the hands of some privileged elected ones (some of them

with a life mandate).

On the one hand, we can certainly see the persistence of the Senate in our modern democracies as a sign that we are still in a transitional period between a regime of past privileged aristocracies and the power being subsequently placed in the hands of the population, granting equal voting power to all adult citizens. On the other hand, we can also see it as a tentative to maintain a necessary double check safeguard mechanism. To quote Walter Bagehot (Stevas 1965):

> *A formidable sinister interest may always obtain the complete command of a dominant assembly by some chance and for a moment, and it is therefore of great use to have a second chamber of an opposite sort, differently composed, in which that interest in all likelihood will not rule.*

If the double-vote system is able to do what we expect it to do, the presence of a Senate, as a stabilizing force, will no longer be necessary after a sufficient time of application of the new electoral system. Also, we can observe that in certain advanced democracies, like Belgium, the necessity of still having a Senate has already been put into question. This is of course debatable, and rightly so, if we consider that the actual single-vote system remains vulnerable to the rise to power of unbalanced political forces, expressing extreme divisive views.

But let us assume for a moment that we are already in the new phase where the double-vote electoral system has been used for quite some time and that as a result more balanced and consensus seeking political forces are governing with success a country. Should such country, at some point, eliminate the Senate once for all?

Well, not necessarily, as the idea of having more than one house to better represent the different views that are expressed in a country is definitely not a bad one in itself. What is important, however, is that there can be a clear distinction in terms of roles and powers between them.

What could be the role of a second house, in addition to the Parliament, in a double-vote system? A possibility is to have this second house representing all the voices that were too conflictual to gain direct access to power, i.e., those that only obtained negative results at the general elections. In other words, it would collect the

different expressions of displeasure in the country, which certainly also need to be represented and heard.

Of course, one should not give a direct legislative power to this "Jungian shadow house," or "subconscious parliament," but sessions could be foreseen in the course of which the "conscious parliament" (the Parliament *per se*) would have to take the voice of the "subconscious parliament" into account in some way, by a process of rationalization of the fears and angers it expresses.

To conclude, we pleaded for the introduction of a new electoral system based on the addition of a supplementary negative vote, as an antidote to divisiveness and as a facilitator for the creation of governments that are better equipped to take decisions based on consensus.

Much more should be said, and studies must certainly be carried out by experts in democracy and representation to develop deeper theoretical analysis of its true potentiality. And even if one believes that a double-vote system is highly unlikely to be ever implemented, it can still be useful as a thought experiment, helping us to better understand the way our conventional systems work and how they can possibly be fine-tuned. Considering the example of physics, it made significant progress also thanks to thought experiments, and some of them, over time, although initially considered impossible to carried out in practice, were in fact executed with success, and gave rise to real scientific revolutions (this author knows this well, being a quantum physicist).

What is certain is that there is an urgent need to improve and stabilize our democracies, which are today afflicted by numerous challenges, requiring political figures and alliances capable of balancing apparently conflicting demands, like the one of fully preserving the sovereignty of the parliaments of the different countries, which have to deliberate in autonomy for the good of the people they represent, and at the same time address in an efficient and efficacious way, within larger international assemblies, those problems that need to be addressed on a global scale, like pandemics, climate change, biodiversity loss, nuclear proliferation, violation of human rights and poverty, just to cite some of them.

Our hope is that this article will be a small contribution in that direction of progress, so necessary for our still relatively young democratic systems.

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