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## Abstract

Democracy usually is identified by the right to vote. However, in recent times voting procedures have been criticized, as they seemingly do not guarantee that all parts of the population have an adequate voice in the established political process. We suggest invigorating an old but nearly forgotten procedure to overcome this deficit: Aleatoric Democracy based on a combination of voting and random decisions. By using random mechanisms the interests of the whole population are considered. Persons and ideas, being so far disregarded, are taken into account. Democracy becomes vivid and creative, and does not run the danger of being entrenched.

JEL-Codes: B100, D700, D780, H100, N400.

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## ***ALEATORIC DEMOCRACY***

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The nasty American election campaign, the emergence of strong right-wing parties in Europe, and the new forms of political communication have put doubt on parliamentary democracy. The political and economic elites damaged trust by excesses and mistakes. At the same time the discussion about inequality within the rich countries increases. In addition to globalization, the reproach that the political class mainly serves the interests of the rich and super-rich has been given as reason for this unfortunate development. This particularly applies to the United States where the rich are strongly overrepresented among the voters and in the Congress<sup>1</sup>. As a consequence, the political class mainly supports the interests of rich voters, and parliamentary democracy less and less represents the total population.

On the other side, in both the American election and in the referendum on Brexit in the United Kingdom, political communication in the social media has been characterized not only by untrue and undisputed claims and hateful statements but also by “filter bubbles” and opinion manipulations via “social bots”.<sup>2</sup> This development biases the process of opinion formation in a democracy (Howard and Kollanyi 2016).

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<sup>1</sup> The vote participation of the lowest income decile is just one half of that of the top decile; see Milanovic (2016, ch. 5)

<sup>2</sup> Social bots are software algorithms supporting one’s own worldview, producing artificial trends based on previously visited sites. Normally, an observer cannot see whether a contribution is made by a person or a robot.

It is not sufficient to criticize the political and economic elite disregarding the interests of the struggling lower classes in society as well as to blame social media. Rather, *institutional* rules must be introduced. They should enable all citizens to effectively participate in social decisions not only by tweets, likes and dislikes. These rules allow them not to have to rely on the existing, and often non-existing, goodwill of the elite. This contribution seeks to introduce such an institution, *Aleatoric Democracy*.

### ***Learning from Classical Athens***

To counter the present unfortunate developments it may be useful to consider the origins of democracy in Classical Athens. The members of the most important decision board were drawn by lot from the citizens of the city of Athens (women and slaves were excluded).<sup>3</sup> Citizens were by turn governing or governed members of the community.

In medieval Venice a mixed process of election and lot decided political positions, including that of the doge. Other Italian medieval city states such as Florence, Parma or Bologna also used the lot to determine their executive. The same process was used in Spain and in Switzerland. In the 18<sup>th</sup> century the city council of Berne was partly chosen by lot (Buchstein 2009: 187). In the same century, at the University of Basel the chairs were filled by lot from a list of three candidates (Burckhardt 1916, Stolz 1986). From the 16<sup>th</sup> to the 19<sup>th</sup> century in China, at that time the most prominent economic and political power, procedures based on lot played a major role (Sintomer 2011, ch. 3.8).

Random procedures were discussed in the political theories developed by Montesquieu and Rousseau (Manin 1997; Buchstein 2009: 202 et seq). They nevertheless disappeared from politics partly because elitist political movements gained ground, and partly because one wanted to exploit the advantages of the division of labor (Sintomer 2011, ch. 4). Today, decisions by lot are almost forgotten. <sup>4</sup>

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<sup>3</sup> This procedure is extensively described in Manin (1997), Buchstein (2009), Sintomer (2011), Van Reybrouck (2016).

<sup>4</sup> But see Frey (1969); Mueller, Tollison and Willett (1972).

### **Invigorating Aleatoric Democracy**

Recently, aleatoric (derived from the Latin word *alea*, the die) or random decision mechanisms are being reconsidered. This is not only due to a general mistrust vis-à-vis political elite but also to a growing self-confidence of the citizens relative to experts. The Internet encyclopedia Wikipedia demonstrates that the “wisdom of the crowd” (Surowiecki 2004) is not worse than the knowledge of specialists (Frey, Lüthi and Osterloh 2012). The social psychologist Tetlock (2005) showed that experts are not able to make much better predictions than newspaper readers.<sup>5</sup> This is due to various reasons. Firstly, experts often overestimate their capacity to evaluate facts beyond their narrow field of knowledge. Secondly, there exists a useful ignorance of laypersons with respect to the assumptions made by specialists. This fact enables them to be more open to new aspects. The financial sector is a case in point. When in 2008 the Queen of England asked the famous question “Why has nobody noticed that the credit crunch was on its way”, the humiliated professors of the British Academy gave the following answer: The incapacity to predict the timing and extent of the crisis is a “failure of the collective imagination of many bright people both in the country and internationally, to understand the risks to the system as a whole” (Besley and Hennessy 2009:10). Also members of parliament sometimes are surprisingly ill-informed, even with respect to important decisions. When the German Parliament (Deutscher Bundestag) in September 2011 had to vote on the Euro-bailout-fund, many of its members had scant knowledge about the issues involved<sup>6</sup> though this decision was considered as the most important one during the ongoing legislation period. They obviously left it to the experts in the parliamentary commissions to decide instead of forming their own judgment.

Selection by lot or aleatoric decision is able to complement representative and direct democracies in various ways and thereby reduces the predominance of political and economic elites. “Aleatoric” or “random” is used here in the sense

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<sup>5</sup> See also Kahneman (2011, ch.20), Zambenardi (2015).

<sup>6</sup> <https://www.youtube.com/watch?v=iLLfUIm4sWs>

of a mathematical probability. It has nothing to do with capriciousness but in the contrary applies a strict mathematical rule. For example, a third chamber could be chosen by lot out of all citizens in countries with two chambers of parliament (such as e.g. the United States, the United Kingdom, Germany or France) (Sintomer 2011, ch. 6.2.2). A second chamber, whose members are chosen by lot among all EU-citizens, could be added to the existing European parliament. In this vein, Hubertus Buchstein (2009: 445) in analogy to the “House of Lords” suggested a “House of Lots”. In 2006, the French politician Ségolène Royal proposed that the politicians in charge should regularly be accountable to citizen juries chosen by lot (Sintomer 2011, ch. 1). Zeitoun, Osterloh and Frey (2014) make a suggestion regarding Corporate Governance. In addition to the board of shareholders a second board based on lot could be instituted in which the stakeholders have a say.<sup>7</sup> David Van Reybrouck (2016) even goes so far as to completely abolish elections and to substitute them by aleatoric procedures as well as Bouricius (2013), a former representative in the State of Vermont. The latter proposes joint decisions by six different committees formed by lot. Ireland recently demonstrated that aleatoric procedures combined with parliamentary and direct democracy are feasible for a new formulation of constitutional articles. A committee of 66 citizens chosen by lot, and 33 elected politicians formulated a proposal, which was afterwards approved by the two chambers of parliament and in May 2015 by a referendum (Van Reybrouck 2016, ch. 4).

### **Advantages and Disadvantages of Aleatoric Procedures**

Taking decisions by lot prevents power concentrations of a political elite, which renews itself internally all the time. Personal influence, investment in old boys networks, cronyism and corruption are no longer worthwhile. The power of experts is curtailed and makes sure that ordinary citizens do not lose their political impact, which was of specific importance in the Athenian democracy (Staveley 1972: 55). In particular, the emergence of plutocracy, i.e. the rule of the rich, is impeded. Plutocracy tends to arise when the well-to-do are better able to push through their interests than are the middle- and low-income classes, which

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<sup>7</sup> For an empirical analysis see Eisenkopf and Nuesch (2016).

participate less in elections because they are frustrated (Alber and Kohler 2007).<sup>8</sup>

Selection by aleatoric procedures leads to a precise representation of the underlying population. It prevents discrimination with regard to gender, social background, education, age or race. Quotas are superfluous.<sup>9</sup> Perspectives of the so far neglected and less privileged citizens are taken into account. Their resignation and disinterest towards the political system is reduced because they have possibilities to participate and to be heard. As has been shown for popular referendums, participation in political decisions raises interest as well as the level of information of the voters (Benz and Stutzer 2004).

Persons who are likely to be overlooked, and those who are little inclined to participate in the frustrating sides of party competition, are induced to engage. Persons otherwise averse to competition are induced to apply as candidates. This applies in particular to women (Niederle and Vesterlund 2007) who risk losing sympathy when participating in competitions. Aleatoric procedures are therefore well suited to motivate women to actively participate in the political process (Goodall and Osterloh 2015; Osterloh and Frey 2016).

Aleatoric procedures support new ideas having otherwise little chance in the existing political arenas. Ideas coming from outside often raise creativity due to a useful ignorance of what is considered “dominant knowledge”. This conclusion is supported by a large number of empirical results in the research on innovation and diversity (e.g. Jeppesen and Lakhani 2010, Rost and Osterloh 2010). Random mechanisms are therefore a search machine for new perspectives and talents.

Decisions by lot support stability and continuity in groups with strongly diverging interests. Each of these groups has a chance to win, even if so far the opposing group was in power. The winners are induced to consider the situation

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<sup>8</sup> In the United States only high-income earners can afford to run for a seat in the Congress. To get elected into the Senate already twelve years ago cost about 2.6 million dollars; for the House of Representatives it was \$ 5 million, see Davidson and Oleszek (2006).

<sup>9</sup> Random mechanism has a substantial advantage over the establishment of quotas. Quotas can only be set if the corresponding dimensions (such as gender or age) are considered relevant *ex ante*, see Frey and Steiner (2014).

of the losers because they know that they are likely to be among them in the future (Manin 1997, ch. 1). These aspects played a dominant role in Classical Athens and in the Italian medieval cities. Their survival depended on avoiding political unrest and civil wars (Greif 1995).

In an aleatoric selection the losers do not lose face and self-esteem. The winners are less likely to overestimate themselves (Osterloh and Frey 2016). They are more prone to listen to the arguments by other persons. Both effects raise the willingness to cooperate between the winners and losers, and it prevents exceedingly high incomes of the winners. Empirical research suggests that people act more socially when they know that they were chosen by fate – in this case by random mechanism (Bartlett and DeSteno 2006, Frank 2016). In contrast, hubris induces people to assume that rules apply to other persons only. For example, tax evasion revealed in the Panama Papers affects 143 politicians from all over the world, including many former and current democratic countries' heads of state and government.<sup>10</sup> They obviously believe to be above the law.

Finally, when institutions filled by lot make decisions in a discursive way, supported by moderators and experts, manipulation in the social media by filter bubbles and social bots play a lower role. Rather, there is a deliberative procedure that guards against demagoguery and the suppression of minority views.

There are some disadvantages of aleatoric procedures. The most important is that incompetent persons may come to power. It is not necessarily “the best” that will reign. The lot does not distinguish between the competent and the incompetent. However, as mentioned above, members of parliament and experts are not always competent and foreseeing either. Experts support the work of elected members of parliament and they use the scientific staff of the house. The same can be made available to laypersons selected by lot. In addition, these persons can profit from schooling with respect to the work they are expected to perform. However, it may be the case that laypersons become more dependent on the advice by experts and political employees. Yet, this depends on the self-confidence of politically mature citizens. In classical Athens the

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<sup>10</sup> [https://panamapapers.icij.org/the\\_power\\_players/](https://panamapapers.icij.org/the_power_players/)



candidates for a political office chosen by lot had to pass an examination concerning their ability and character (*Dokimasia*) during which they had to respond to questions and had to defend themselves against objections (Manin, 1997, ch. 1; Buchstein 2009: 36 et seq).

Another possible disadvantage is that the sense of responsibility might be reduced because randomly selected politicians need not be concerned about their re-election. This possible disadvantage can be countered if persons chosen by lot have to publicly account for their decisions after having finished their office, as this was the case in the Athenian Democracy (Manin 1997, ch.1).

Finally, aleatoric procedures are sometimes considered to be “irrational”. However, they are more rational compared to present cronyism and concentration of power on the one side and opinion manipulation by filter bubbles in the social media on the other side. This is the case because they are based on representative political bodies and on deliberative decision processes within these bodies.

Combining aleatoric procedures with traditional voting methods can lessen the disadvantages. It is therefore wrong to dispose of elections and referendums<sup>11</sup>. Combined procedures are well suited to overcome the manipulation of voters by social media as well as political polarization. They give the underprivileged a say and work against the increasing inequality of wealth and political power without giving up meritocratic principles.

## Conclusions

Re-invigorating aleatoric principles in democracy enables to overcome the problems articulated in the current discussion about the dissatisfied silent majority whose interests are not sufficiently taken into account in a representative democracy. The great philosopher Aristotle only considered a political procedure to be democratic if it includes random elements. We should learn from Aristotle.

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<sup>11</sup> Such as Bouricius (2013) and Van Reybrouck (2016) do.

## Literature

Alber, J. & Kohler, U. (2007). Die Ungleichheit der Wahlbeteiligung in Europa und den USA und die politische Integrationskraft des Sozialstaates. *Leviathan*, 35(4): 510- 539.

Bartlett, M. & DeSteno, D. (2006). Gratitude and Prosocial Behavior: Helping When it Costs You. *Psychological Science*, 17(4): 319-325.

Benz, M. & Stutzer, A. (2004). Are voters better informed when they have a larger say in politics? Evidence for the European Union and Switzerland. *Public Choice*, 119(1-2): 31-59.

Besley, T. & Hennessy, P. (2009). The Global Financial Crisis – Why Didn't Anybody notice? *British Academy Review*, 14 (November 2009): 8-10.

Bouricius, T. G. (2013). Democracy Through Multi-Body Sortition: Athenian Lessons for the Modern Day. *Journal of Public Deliberation*, 9(1), Article 11.

Buchstein, H. (2009). *Demokratie und Lotterie*. Frankfurt am Main: Campus Verlag.

Burckhardt, A. (1916). Ueber die Wahlart der Basler Professoren, besonders im 18. Jahrhundert. *Basler Zeitschrift für Geschichte und Altertumskunde*, 15: 28-46.

Davidson, R. H. & Oleszek, W. J. (2006). *Congress and Its Members*. 10th Edition. Washington, D.C.: Congressional Quarterly Inc.

Eisenkopf, G. & Nuesch, St. (2016). Third Parties and Specific Investments. *Schmalenbach Business Review*, 17(2): 151-172.

Frank, R. H. (2016). *Success and Luck: Good Fortune and the Myth of Meritocracy*. Princeton: Princeton University Press.

Frey, B. S. (1969). Wahrscheinlichkeiten als gesellschaftliche Entscheidungsregel. *Wirtschaft und Recht*, 21: 3-15.

Frey, B. S., Lüthi, R. & Osterloh, M. (2012). Community Enterprises – An Institutional Innovation. *Managerial and Decision Economics*, Special Issue: Emergent Nature of Organization, Markets and Wisdom of Crowds, 33(5-6): 427-439.

Frey, B. S. & Steiner, L. (2014). Random Selection in Politics, Science and Society: Applications and Institutional Embeddedness. CREMA Working Paper No. 2014-09. <http://www.crema-research.ch/papers/papers14.htm>

Goodall, A. & Osterloh, M. (2015). Room at the top. *Times Higher Education*, 14. May 2015: 35-39.

Greif, A. (1995). Political Organizations, Social Structure, and Institutional Success: Reflections From Genoa and Venice During the Commercial Revolution. *Journal of Institutional and Theoretical Economics* (JITE), 151(4): 734-740.

Howard, P. N. & Kollanyi, B. (2016). Bots, #Strongerin, and #Brexit: Computational Propaganda during the UK-EU Referendum. *COMPROP Research Note* 2016.1

Jeppesen, L. B. & Lakhani, K. R. (2010). Marginality and problem-solving effectiveness in broadcast search. *Organization Science*, 21(5): 1016-1033.

Kahneman, D. (2011). *Thinking fast and slow*. New York: Farrar, Straus and Giroux.

Manin, B. (1997). *The principles of representative government*. Cambridge: Cambridge University Press.

Milanovic, B. (2016). *Global Inequality. A new Approach for the Age of Globalization*. Cambridge/Mass. and London: Harvard University Press.

Mueller, D, Tollison, R. D. & Willett, T. D. (1972). Representative Democracy via Random Selection. *Public Choice*, 12: 57-68.

Niederle, M. & Vesterlund, L. (2007). Do Women Shy Away from Competition? Do Men Compete Too Much? *Quarterly Journal of Economics*, 122(3): 1067-1101.

Osterloh, M. & Frey, B. S. (2016). Chef per Zufall. *WirtschaftsWoche*, 47, 11.11.2016: 111-113.

Rost, K. & Osterloh, M. (2010). Opening the Black Box of Upper Echelons: Expertise and Gender as Drivers of Poor Information Processing. *Corporate Governance. An International Review*. 18(3): 212-233.

Sintomer, Y. (2011). *Petite histoire de l'expérimentation démocratique. Tirage au sort et politique d'Athènes à nos jours*. Paris: Éditions La Découverte.

Staveley, E. S. (1972). *Greek and Roman Voting and Elections*. London: Thames & Hudson.

Stolz, P. (1986). Parteienwettbewerb, politisches Kartell und Tausch zwischen sozioökonomischen Gruppen. *Schweizerische Zeitschrift für Volkswirtschaft und Statistik*, 122: 657-675.

Surowiecki, J. (2004). *The Wisdom of the Crowds. Why the Many are Smarter than the Few and How Collective Wisdom Shapes Business, Economies, Societies, and Nations*. New York: Doubleday.

Tetlock, P. E. (2005). *Expert Political Judgment: How Good Is It? How Can We Know?* Princeton and Oxford: Princeton University Press.

Van Reybrouck, D. (2016). *Against Elections. The Case for Democracy*. London: Penguin Random House.

Zeitoun, H., Osterloh, M. & Frey, B. S. (2014). Learning from Ancient Athens: Demarchy and corporate governance. *Academy of Management Perspectives*, 28(1): 1-14.

Zamernardi, L. 2015. Politics is too important to be left to political scientists: A critique of the theory-policy nexus in International Relations. *European Journal of International Relations*: 1-21.