

## Modeling the German Legal Latitude Principles

Stephan Neumann, Anna Kahlert, Maria Henning, Philipp Richter, Hugo Jonker, Melanie Volkamer

► **To cite this version:**

Stephan Neumann, Anna Kahlert, Maria Henning, Philipp Richter, Hugo Jonker, et al.. Modeling the German Legal Latitude Principles. Maria A. Wimmer; Efthimios Tambouris; Ann Macintosh. 5th International Conference on Electronic Participation (ePart), Sep 2013, Koblenz, Germany. Springer, Lecture Notes in Computer Science, LNCS-8075, pp.49-56, 2013, Electronic Participation. <10.1007/978-3-642-40346-0\_5>. <hal-01491259>

**HAL Id: hal-01491259**

**<https://hal.inria.fr/hal-01491259>**

Submitted on 16 Mar 2017

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



# Modeling the German Legal Latitude Principles

Stephan Neumann<sup>1</sup>, Anna Kahlert<sup>2</sup>, Maria Henning<sup>2</sup>, Philipp Richter<sup>2</sup>,  
Hugo Jonker<sup>3</sup>, and Melanie Volkamer<sup>1</sup>

<sup>1</sup> CASED / Technical University Darmstadt  
Hochschulstraße 10  
64289 Darmstadt, Germany  
{stephan.neumann,melanie.volkamer}@cased.de

<sup>2</sup> University of Kassel  
Pfannkuchstraße 1  
34109 Kassel, Germany  
{a.kahlert,maria.henning,prichter}@uni-kassel.de

<sup>3</sup> University of Luxembourg  
rue Richard Coudenhove-Kalergi 6  
1359 Luxembourg, Luxembourg  
hugo.jonker@uni.lu

**Abstract.** Postal voting was established in Germany in 1956. Based on the legal latitude of the national legislator, the Federal Constitutional Court confirmed the constitutionality of postal voting several times. In contrast, the constitutionality of electronic voting machines, which were used for federal elections from 2002 to 2005, was rejected as the possibility to control the essential steps in the election was not provided to all citizens. These two cases emphasize that the legal system allows to limit realization of election principles to the advantage of other election principles, but that there are limits. In order to introduce new voting systems, in particular Internet voting systems, it is essential to have guidelines on what is and what is not acceptable. This work provides such guidelines. It identifies the principles of the legal latitude in the German constitution, and captures this latitude in a model. This model enables a review of the constitutionality of new voting systems.

## 1 Introduction

Holding regular parliamentary elections is essential for the exercise of popular sovereignty and an expression of the democratic form of government. The fundamental decision for democracy is established in Article 20.1 and 2 of the German Constitution. According to this, the authority of the state originates with the people and is exercised in elections and votes. The Federal Electoral Act was enacted in 1956. At this time, the legislator considered traditional paper-based polling station voting as the main voting channel. Postal voting was only allowed in exceptional cases. However, the number of absentee voters constantly rose in the following years as society became more and more mobile (in the 2009 federal elections 21.4% of the cast votes were postal votes). De facto, postal voting became an alternative to the conventional voting process.

In 1967, the Federal Constitutional Court decided on the constitutionality of postal voting for the first time. In these proceedings, the Constitutional Court declared that the principles of the free and secret elections were not violated [3, Decision: 21, 200:1967]: the increase in election participation offered by postal voting, which translates to an improvement of the principle of the universal elections, is strong enough to offset the impairment of the secret elections, and thus can be accepted. This means, the legislature is entitled to broaden latitude when lending concrete shape to the principles of electoral law within which it must decide whether and to what degree deviations from individual principles of electoral law are justified in the interest of the uniformity of the entire voting system and to ensure the state policy goals which they pursue [3, Decision: 59, 119 (124 f):1981]. However, this latitude has its limitations as the Constitutional Court’s “Election Computers Judgment” [3, Decision: 123, 39, (75):2009] illustrates: Hereafter, the use of the Nedap electronic voting machines in the 2005 federal elections was unconstitutional. This judgment was justified by the lack of any possibility to verify the essential steps in the elections. The Constitutional Court argued [3, Decision: 123, 39, (75):2009]:

“Where the deployment of computer-controlled voting machines aims to rule out inadvertent incorrect markings on voting slips, unwanted invalid ballots, unintentional counting errors or incorrect interpretations of the voter’s intention when votes are counted which repeatedly occur in classical elections with voting slips, this serves the interest of the implementation of the equality of elections under Article 38.1 sentence 1 [...] It certainly does not justify by itself foregoing any type of verifiability of the election act.”

In order to avoid such a debacle with future new voting systems, it is necessary to have clear guidelines on what is and what is not acceptable when balancing legal provisions. Then the compliance of proposed voting systems can be properly analyzed with the legal latitude *before* their use. This is especially pertinent in the case of Internet voting systems – Internet voting systems are already used in various European countries, and the possibility of voting in such a manner seems to enjoy support amongst German constituents [1].

*Contribution.* This work supports an interdisciplinary dialog by constructing a model for comparing newly proposed voting systems, e.g. an Internet voting system, with established voting systems, e.g. postal voting in the German federal election. We therefore identify and model the principles of the legal latitude. The developed model allows to compare voting systems based on the legal latitude. As such, the model helps developers of new voting systems in identifying and mitigating constitutional shortcomings of their systems which ultimately should lead to the identification or construction of a constitutionally compliant (electronic) voting system. The model is meant as a guideline, which allows conceptual design to be carried out in the right direction, but results will still need legal review in case of planned application of voting systems in political environments. While the model is specifically tailored to the German constitution,

we believe the election principles therein to be of a generic nature. As such, adapting the model to another constitution should be straightforward.

## 2 Explanation of Legal Latitude

The election of the representatives is regulated in Article 38 of the German constitution. Correspondingly, the principles of the universal, direct, free, equal, and secret elections established in Article 38.1 sentence 1 are of particular relevance. While the principle of universal elections concerns the eligibility to vote without applying to personal qualities or political, financial or social aspects [3, Decision: 15, 165 (166f):1962. Decision: 36, 139 (141):1973], the principle of equal elections addresses the impact of every valid vote on the election result. That is, every voter needs to have the same number of votes and must be able to cast his or her vote in the same way as any other one [7, § 1, Rn. 43]. Furthermore, all candidates need to be presented equally, so all of them have the same chance to win the election [7, § 1, Rn. 48f]. The principle of direct elections forbids the integration of electoral delegates [3, Decision: 7, 63 (68):1957. Decision: 47, 253 (279):1978] and requires that the representatives get elected through voters only by casting their vote personally [2, Art. 38, Rn. 75] [5, Art. 38, Rn. 101]. The principle of secret elections claims that the voting decision remains secret during and after the election process [9, Art. 38, Rn. 67]. It needs to remain secret whether voters split their votes or cast them based on a single preferred party, whether they spoiled their vote or abstained from voting at all [7, § 1, Rn. 95]. The secrecy of the vote guarantees the principle of free elections which covers the process of opinion making prior to the election as well as the process of vote casting within the election. In formal aspects it ensures the right to choose whether one wants to cast a vote or not. In material regards it provides the freedom to cast a vote for the preferred candidate or party [7, § 1, Rn. 21]. In addition to these principles, another election principle emerging from Article 20.1, 20.2 and 38.1 of the German constitution has been emphasized by the Federal Constitutional Court in 2009 [3, Decision: 123, 39:2009]: The so called public nature of elections requires that all essential steps in the elections are subject to public examinability unless other constitutional interests justify an exception. However, the German constitution only gives the election principles but does not purport a specific voting system. The legislator needs to provide a system that fulfills the illustrated principles as best as possible. This follows from Article 38.3 of the German constitution. After this, a federal act needs to define full particulars regarding the federal elections. Note that this article contains no legal proviso but authorizes and obligates the federal legislator to enact an execution law [8], [2, Art. 38, Rn. 61]. In essence, this article constitutes a regulation that assigns the exclusive law authority to the Federation in order to shape the German electoral law [2, Art. 38, Rn. 125]. Even though all election principles are of equal importance in the context of parliamentary elections [3, Decision: 99, 1 (13):1998], they cannot be fulfilled simultaneously [3, Decision: 59, 119 (124):1981]. Due to the necessity to balance all principles, a legal latitude is

open for the legislator [2, Art. 38, Rn. 62]. Colliding election principles need to be assigned to one another to such an extent that each of them is fulfilled in the best possible way [3, Decision: 59, 119 (124):1981]. Insofar, the legislature is entitled to broad latitude when lending concrete shape to the principles of electoral law within which it must decide if deviations from individual principles of electoral law are justified in the interest of the uniformity of the entire election system and to ensure the state policy goals which they pursue [3, Decision: 123, 39 (71):2009]. Furthermore, while weighing the election principles the convention of the unity of the constitution needs to be respected [2, Art. 38, Rn. 166]. According to this, restrictions of constitutionally required positions are possible only in case a collision with other principles of constitutional status is given and “practical accordance” [4] regarding the restricted principle can be made [2, Art. 38, Rn. 61]. During the necessary consideration, the basic principle of commensurability is of great importance, i.e., a relation of two mutable values that comes as close as possible to the particular optimization, not a relation between a constant purpose and one or more variable instruments [4]. Since all election principles have equal potential [3, Decision: 99, 1 (13):1998], it needs to be decided in each individual case which election principle can be restricted in favor of another one. In case the legislator decides to realize one election principle in the best possible way as it happened with the implementation of postal voting in view of the principle of the universal elections, it is not objectionable from a constitutional point of view as long as this decision does not go along with an exceeding restriction or hazard of other election principles [3, Decision: 59, 119 (125):1981]. The Federal Constitutional Court only reviews whether the legislature has remained within the boundaries of the latitude or whether it has violated a valid constitutional election principle by overstepping these boundaries [3, Decision: 123, 39 (71):2009].

From the legal latitude discussed in this section, three principles can be derived: the principle of *minimum degree of fulfillment*, the principle of *necessity*, and the principle of *overall degree of fulfillment*. The general view is that the current voting system fulfills the election principles in an acceptable way, allowing it to be used as the reference system: any new voting system must therefore simultaneously fulfill all three principles with reference to the current voting system.

### 3 Modeling the Legal Latitude Principles

In this section, the three principles of the legal latitude are modeled. Before diving into the modeling process, we shall first provide the reader with conventions used throughout this work.

#### 3.1 Foundations of the Model

The degree to which individual election principles are fulfilled by a specific voting system can be charted by a network diagram, having one axis for each considered

principle (see Figure 1 for a reference system and Figure 2 for a proposed new voting system). On each axis is marked to which degree the election principle is fulfilled by the system under consideration. Higher degrees of fulfillment are plotted further out from the center than lower ones.

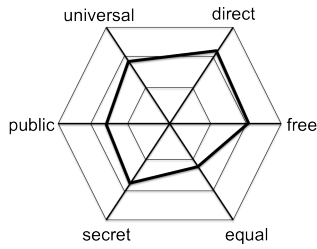


Fig. 1. Reference voting system.

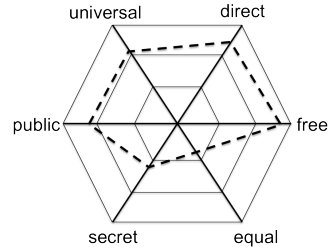


Fig. 2. Proposed new voting system.

### 3.2 The Principle of Minimum Degree of Fulfillment

The principle of *minimum degree of fulfillment* requires that a minimum degree of fulfillment has to be achieved for all election principles. That means that a voting system is tied to the minimum degree of fulfillment of all election principles. For a given minimum degree of fulfillment  $deg_{min}$ , the correlation is modeled as follows:

$$\min_{a \in SEP} (degree_a^{system_{new}}) \geq deg_{min} \quad (1)$$

For an election principle  $a$  from the set of election principles  $SEP$ , the mathematical term  $degree_a^S$  denotes the degree of fulfillment of  $a$  in system  $S$ .

Figure 3 shows the proposed voting system in reference to a potentially prescribed minimum degree of fulfillment. It can be seen that the hypothetical voting system complies with the principle of minimum degree of fulfillment.

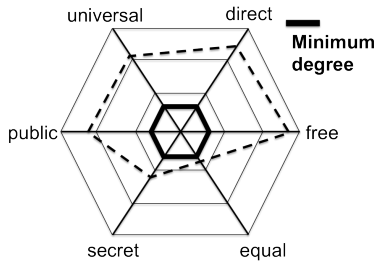


Fig. 3. Minimum degree of fulfillment in new voting system.

### 3.3 The Principle of Necessity

An election principle may be fulfilled to a lesser degree in a proposed voting system than in a reference system if and as far as this is necessary to fulfill another election principle to a higher degree than in the reference system, thus enhancing the reference system with respect to that principle.

Due to the fact that not all possible voting system alternatives are available, it is not possible to prove the satisfaction of the principle of necessity.

### 3.4 The Principle of Overall Degree of Fulfillment

The principle of overall degree of fulfillment is an optional principle, when a proposed system is only meant to enhance a reference system. Then the two principles described before apply strictly and overall degree of fulfillment may be viewed as good practice. However, the principle of overall degree of fulfillment is obligatory, when a proposed voting system is meant to replace a reference system or to be applied equally with a reference system. Compliance with the principle of overall degree of fulfillment is achieved when all election principles are fulfilled at least to an equal degree as in the reference system (refer to Formula (2a)) or when more are fulfilled to a higher degree than to a lesser (refer to Formula (2b)). These alternate correlations are modeled as follows:

$$\forall a \in SEP : (degree_a^{system_{new}} - degree_a^{system_{old}}) \geq 0 \quad (2a)$$

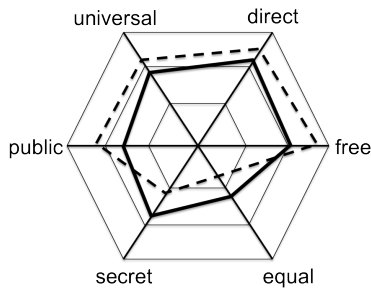
$$\begin{aligned} \exists SEP' \text{ s.t. } |SEP'| > \frac{|SEP|}{2}, \forall a \in SEP' : \\ (degree_a^{system_{new}} - degree_a^{system_{old}}) > 0 \end{aligned} \quad (2b)$$

There may also be cases where one election principle is fulfilled to a very high degree in the proposed system and may balance more than one lesser fulfillment, but these cases may not be appropriately expressed in abstract rules but depend very much on the individual case and must be reviewed legally in any case from the beginning.

Figure 4 shows a comparison of two voting systems (the voting systems depicted by the solid line in Figure 1 and the system depicted by the broken line in Figure 2), where moving from the reference system to the new system adheres to the principle of overall degree of fulfillment as modeled by Formula (2b). This is shown by the fact that four election principles are improved in the new system (public, universal, direct, free), while only two principles are weakened (equal, secret).

### 3.5 Model Compliance

If a system fulfills the two (optionally three) legal latitude principles (where the reference system acts as a baseline for comparison), it can most likely be seen as legally acceptable. If not all principles are fulfilled, this entails an ad hoc decision and it requires an additional interdisciplinary evaluation.



**Fig. 4.** Overall degree of fulfillment in both voting systems.

## 4 Conclusion and Future Work

In the development and usage of voting systems for federal elections, not all constitutional election principles can be deployed in purity and impairments of these principles among each other must be accepted. From the legal point of view the legal latitude enables the legislator to constrain the fulfillment of certain constitutional principles in favor of others. Based on an analysis of the legal latitude, we developed a model capable of comparing voting systems with regard to fulfillment of election principles. To build our model, we decomposed the legal latitude into its basic principles and modeled these principles. The developed model will support technical developers in the creation of new voting systems on a legal basis.

The focus of this work is on the evaluation of voting systems based on election principles. In the context of Internet voting and electronic authentication in the polling station certain additional constitutional rights play an important role: the Right to Informational Self-Determination and Secrecy of Telecommunications. How these two basic rights have to be considered in the procedure described in here is a topic for future research.

In its current state, the model does not specify measures to assess the degree of fulfillment of specific election principles. In order to estimate the degree for abstract election principles, these principles must be refined into more precise requirements. Consequently, in the future, the herein developed reference model will be refined by integrating measures to assess the degree of fulfillment of election principles built upon fine-grained requirements.

To date, the model serves as a reference model for parliamentary elections in Germany. In the future, we plan to apply the developed model to a concrete election scenario and a concrete newly proposed voting system. At this point in time, the authors do not consider any Internet voting system an adequate substitute for postal voting for German federal elections. The most promising scenario in which to consider Internet voting seems the upcoming German social



election<sup>4</sup> in 2017. As outlined by Richter [6], social elections do not demand the public nature principle of elections in its full strength.

*Acknowledgment.* This paper has been partially developed within the projects "ModIWa2" - Juristisch-informatische Modellierung von Internetwahlen, "VerKonWa" - Verfassungskonforme Umsetzung von elektronischen Wahlen, which are funded by the German Science Foundation (DFG), and partially within the project "BoRoVo" - Board Room Voting - which is funded by the German Federal Ministry of Education and Research (BMBF).

## References

1. Forsa survey: Jeder zweite würde online wählen. <http://www.microsoft.com/germany/newsroom/pressemitteilung.msp?id=533684>, 2013. Accessed 31 May, 2013.
2. H. Dreier. *Grundgesetz-Kommentar*. Morlok Siebeck Verlag, 2006.
3. Federal Constitutional Court. Decisions of the Federal Constitutional Court (BVerfGE) referred to in this work.
4. K. Hesse. *Grundzüge des Verfassungsrechts der Bundesrepublik Deutschland*, §2, Rn. 72. C.F. Müller, 1995.
5. T. Maunz and G. Dürig. *Grundgesetz-Kommentare*. 2013.
6. P. Richter. *Wahlen im Internet rechtsgemäß gestalten*. Nomos, 2012.
7. W. Schreiber. *Bundeswahlgesetz-Kommentar*. Carl Heymanns, 2009.
8. H. v. Mangoldt. *Kommentar zum Grundgesetz (Art. 38 GG, Rn. 157)*. Franz Vahlen, 2010.
9. I. von Münch and P. Kunig. *Grundgesetz-Kommentar*. C.H. Beck, 2012.

---

<sup>4</sup> The social election is conducted via postal voting every six years to elect bodies of the social insurances. There are over 40 millions eligible voters.