

Student Parliament (StuPa)
Seminar Entscheidungsfindung in der Politik und Wirtschaft (EFPW)
Lehrstuhl für Wirtschaftstheorie
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Recommendations on
Using the Third Vote for Elections
of the KIT Student Parliament

Report on the Joint StuPa–ECON Electoral Experiment

September 2019

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Summary

In the 1960s, a new conception of political representation — policy representation — has been introduced. It focuses on how well the parties and the government represent the electorate’s policy preferences. Since 1990, this conception is reflected in VAAs — voting advice applications, e.g. German *Wahl-O-Mat* where users answer questions like ‘Abolish Euro?’—Yes/No; ‘Leave NATO?’—Yes/No, etc., . Those VAAs then advises the best-matching party to vote for. Nevertheless, policy representation is still not supported by the existing election systems, which is based on the conventional voting by party name. Therefore, the Third Vote method is aimed at closing this gap.

Under the Third Vote, the voters are asked about their preferences on policy issues like in VAAs. Then the policy profile of the electorate, balanced with the public opinion, gets determined on every issue. The degree to which the parties match with the individual policy profile of the electorate is expressed by the parties’ representativeness indices of popularity (the average percentage of electors represented concerning all issues combined) and universality (the percentage of issues where a majority is represented). As a result, the parliament seats are distributed among the parties in proportion to their indices. Thereby, the Third Vote refers to the parties’ manifestos, further developing the VAA-approach.

The Third Vote has been tested and improved during the 2016, 2017, 2018 and 2019 elections of the Student Parliament (StuPa) of the Karlsruhe Institute of Technology (KIT), however, with no impact on official elections. The 2019 experiment has been conducted jointly by the StuPa and a team of 20 KIT student activists under the supervision of the KIT Institut für Volkswirtschaftslehre (ECON). All the experiments, as well as the Third Vote hypothetical application to the 2009, 2013 and 2017 Bundestag elections, demonstrate a significant gain in the parliament policy representation. Due to the tests and improvements, the Third Vote is now elaborated up to an election-ready prototype either for separate use or in combinations with the established election methods.

Taking into account methodological advances and encouraging empirical tests, the Third Vote combined with the conventional vote by party name is recommended for the official StuPa elections to ultimately enhance the StuPa policy representation capability.

Keywords: Policy representation, representative democracy, direct democracy, elections, theory of voting.

JEL Classifications: D71—Social Choice, Clubs, Committees, Associations; D72—Political Processes: Rent Seeking, Lobbying, Elections, Legislatures, and Voting Behavior.

Contents

1	Introduction	1
2	The 2019 Official and Experimental Elections of the KIT Student Parliament	4
3	Policy Representation by the Student Parties and the Student Parliament	11
4	Conclusions and Recommendations	18
5	Appendix: 26 Questions Submitted but Rejected by a Formal Criterion	19
6	References	22

1 Introduction

The Third Vote Under the Third Vote election method, the individuals cast no votes for parties but are asked about preferences on policy issues as declared in the party manifestos: ‘Abolish Euro?’—Yes/No; ‘Leave NATO?’—Yes/No, etc. From the voter perspective, it is like using a voting advice application (VAA), e.g. German *Wahl-O-Mat*. The further operation is however different. The VAA finds the party which best matches with the individual answers, prompting the one to vote for. The procedure of voting by party name, count of votes and the rule of distribution of parliament seats remain unchanged. Under the Third Vote, the policy profile of the whole of electorate with the balance of public opinion on every issue is defined. Then the degree to which the parties match with it is expressed by the parties’ indices of popularity (the average percentage of electors represented) and universality (the percentage of issues when a majority is represented), and the parliament seats are distributed among the parties in proportion to their indices.

The Third Vote is introduced within the mathematical theory of democracy developed at the Institut für Wirtschaftstheorie und Operations Research (ECON), Karlsruhe Institute of Technology (KIT) [Tangian 2014, Tangian 2017b]. Since 2016, the KIT Student Parliament (StuPa) authorizes to test the Third Vote during its elections that held every summer. Additionally to the official electoral ballot with party names, the voters are offered the experimental one with both party names and a number of policy issues to be filled in on a voluntary basis. The experimental elections have no impact on the official elections, but their analysis enables to improve the Third Vote implementation.

The Third Vote methodology has been also elaborated due to the public response to the experiments. The most stimulating feedback was from the *World Forum for Democracy*, the Council of Europe, Strasbourg, 2016, where a video documentary on the first experiment has been demonstrated [World Forum for Democracy 2016]. This year, the updated ready-to-use Third Vote method is once again accepted for presentation at the *World Forum for Democracy*, the Council of Europe, 6–8 November 2019.

Historical Roots and the Current Context What is the need in such an election method? The contemporary representative democracy has been conceptualized at the late 18th century during the American and French Revolutions. The founding debates focused primarily on two questions: *Who should be represented?*, i.e. who is entitled to vote (males or also females, with which civil and property status, etc.) and *Who can be a representative?* (sons of the constituency or all trusted citizens, taxpayers of a certain level, etc.). The question *What should be represented?*, i.e. which policies must be pursued on behalf of the electorate and how well the political system should represent the electorate’s policy preferences, was of secondary importance. Indeed, at that time the electorate was concerned with very few political things like taxation or security, topics like foreign affairs or university regulations were for most people of little interest, and many currently debatable matters like social security or environmental protection did not yet exist. Since population’s activities were mainly local and the government operated at a higher level, politicians made decisions with a limited accountability to the electorate.

Now globalization expands beyond national borders and, on the other hand, profoundly affects individual households. The society becomes significantly more advanced and more politicized. The electorate is better educated, comprehensive information is easily available, and political engagement is fueled by numerous medias and social networks. In elections, however, the question *Who?* still outbalances the question *What?*, and voting for candidates or parties by name bears some of the responsibility for that. People often pay more attention to the personal image of politicians than to party manifestos or even ideological platforms and, casting votes that are actually in opposition to their own policy preferences, elect those who do not repre-

sent their interests.¹ Being re-elected, the government continues to pursue unpopular policies, people are dissatisfied and protest, often massively and sometimes violently, against the government elected by themselves [Stuttgart-21, Castor-Transport 2010, Occupy movement 2019, Yellow Vests 2019] — not a theoretical but practical democratic paradox often referred to as ‘democratic deficit’ [European Union 2017, United Nations 2016].

Three Conceptions of Representation — Three Votes Public good, civil virtues, prosperity, will of the people and alike referred to by the founders of the modern democracies were too abstract for specific legislations. Correspondingly, the question *What?* is not articulated in two major historical conceptions of political representation [Pitkin 1967, Manin 1997].

For example, these two conceptions are implemented in the German two-vote system. The descriptive conception — the parliament portrays the society in miniature² — is implemented in the first vote with which local candidates are elected and delegated to the federal parliament. These direct mandate holders from 299 German constituencies fill 299 Bundestag seats.

The agent conception — the parliament is a committee of political experts who are people’s trustees and don’t have to be their countrymen³ — is implemented in the second vote for a party. This vote is used to define the Bundestag faction ratio. For this purpose, another 299 Bundestag seats are allocated and, if necessary, extra seats (overhang mandates) are added.

In the 1960s, academics started to discuss policy representation — how well the party system and government represent policy preferences of the electorate.⁴ In 1989 this idea had been unknowingly used in the Dutch voting advice application *StemWijzer* (= ‘VoteMatch’) first distributed on diskettes and in 1998 launched in internet [Pro demos 2019]. Then its model has been taken over by about 20 countries, including Germany [Garzia and Marschall 2014].

This third conception of representation is still not implemented in elections, and the Third Vote method just aims at filling in this gap. Under the Third Vote, the electors are no longer swayed by politicians’ charisma and their communication skills but are directed to subject matters behind personal images, ideological symbols and gender, cultural or other prejudices. The focus on political and economic implications of choice is supposed to make vote less emotional and superfluous but more rational and responsible.

The Third Vote also contributes to attaining some of the United Nations Sustainable Development Goals [United Nations 2015] that make a special emphasis on social and technical challenges of digitalization [OECD 2017, Van der Velden 2018]. Within digitalization, there are so-called artificial life projects of replacing certain human functions by intelligent robots, e.g. for distant space missions from where signal exchange with the Earth can take hours and which therefore need comprehensive automatic control. The interactions between agents/units in the digital society and artificial life simulate that among people, and when the system size is large,

¹This phenomenon of irrational voting behavior and this type of election failure are analyzed in [Tangian 2013, Tangian 2017a, Tangian 2017e] using as examples the 2013 and 2017 German federal elections, respectively.

²The descriptive conception has been particularly defended in America by John Adams (1735–1826, 2nd President of the US) and in France by Honoré Gabriel de Mirabeau (1749–1791, French Revolution politician).

³The agent conception has been developed in America by Alexander Hamilton (1755–1804, 1st US Secretary of the Treasury) and James Madison (1751–1836, 4th President of the US) and in France by Emmanuel Sieyès (1748–1836, clergyman and constitutional theorist).

⁴Policy representation is particularly discussed by [Miller and Stokes 1963, Monroe 1979, Bartels 1991, Hartley and Russett 1992, Stimson et al. 1995, Wlezien 1995, Wlezien 1996, Monroe 1998, Miller et al. 1999, Sharpe 1999, Smith 1999, Powell 2000, Budge et al. 2001, Soroka 2003, Wlezien 2004, Klingemann et al. 2006, Budge and McDonald 2007, Cerami 2007, Soroka and Wlezien 2010, Volkens et al. 2013]. To monitor policy representation, a special database is created within the prize-winning *Manifesto* project (Berlin), aimed at ‘quantitative content analysis of parties’ election programs from more than 50 countries covering all free, democratic elections since 1945’ [WZB 2019].

Table 1: Hypothetical application of the Third Vote to Brexit outcomes

Brexit implications	Attitude profiles (readiness to tolerate)			Majority choice	Public profile
	1	2	3		
Immigration restriction	—	+	+	→	+
Closing the Irish border	—	+	—	→	—
Economic difficulties	—	—	+	→	—
	↓	↓	↓		
Votes for Brexit	—	+	+	→	+
Public opinion on Brexit					↓

the democratic organizational principles become highly relevant. The Third Vote approach can help in operationalizing the notion of representation and its hierarchical implementation.

Background Political Philosophy The conventional vote and the Third Vote differ in political philosophy. In conventional elections, each voter aggregates his/her partial judgements and chooses the favorite candidate. Since the election winner is derived from individual choices, this approach implements the liberal philosophy of *individual determination* in the sense of [Locke 1689]. Under the Third Vote, the electorate is considered a single body with a public profile constituted by balances of public opinion on each issue. The election winner is determined by the closeness of his/her profile to this *single* public profile. Thereby, the Third Vote implements the collectivist philosophy of *public determination* in the sense of *general will* of [Rousseau 1762]. It should be noted that VAAs (like the *Wahl-O-Mat*) use the same data structure as the Third Vote but, advising optimal candidates to vote for, follow the philosophy of individual determination.

The conventional vote and the Third Vote can lead to different outcomes. Let us imagine that Brexit is characterized by its three major consequences: Immigration restriction, Closing the Irish border and Economic recession/Pound devaluation, and that three equally large groups of British have the profiles of their attitudes toward these consequences shown in the table below. The first group prefers to keep the current situation, the second and third groups will restrict immigration but differ in what they are ready to pay for it; see Table 1.

Conventional vote operates in the order $\downarrow\downarrow\downarrow \rightarrow$: each individual aggregates his/her opinion profile which consists of partial judgements and makes his/her final choice. Then two of three groups vote for Brexit (+), and Brexit is approved (+). Under the Third Vote, the order of operations is $\Rightarrow \downarrow$. The public profile consists of public attitudes toward each issue: one positive and two negative. After their aggregation, Brexit is not approved (—). Thus, we can assume that the Brexit crisis might be avoided if the Brexit referendum were based on the Third Vote principles instead of direct Yes/No-vote.

Evidence from Politics and Experiments In [Tangian 2013, Tangian 2017a, Tangian 2017d], the Third Vote is hypothetically applied to redistribute seats in the 2009, 2013 and 2017 German Bundestags, respectively, achieving a significant gain in their representativeness. In each study, the electorate’s policy profile is constructed from over 30 public opinion polls preceding the election, and the party positions are taken from the dedicated *Wahl-O-Mat*. Since the public opinion polls differ in the degree of reliability and relevance to the elections, the conclusions — as they are based on imperfect data — can be considered only with reservations.

To judge definitively the advantages of the Third Vote, it has been tested during the 2016–2019 StuPa elections which enabled to reveal and overcome its bottlenecks [Tangian 2016, Tangian 2017c, Tangian 2017e, Tangian 2018, Tangian 2019]. The KIT Third Vote experiments, which involved as many as ca. 30% of the official election voters (Table 2), being statistically representative, completely confirm the hypothetical conclusions for the real politics.

Table 2: The 2016–2019 Third Vote experiment statistics

Year	Official election			Experimental election		
	Eligible voters	Turnout	Invalid votes	Policy issues	Ballots cast	Invalid ballots
	Num	Num/%	Num/%	Num	Num/% of turnout	Num/%
2016	23176	3671/15.8	23/0.6	10	1098/29.9	23/2.1
2017	23715	3126/13.2	12/0.4	25	929/29.7	98/10.5
2018	23118	3512/15.2	16/0.5	30	1225/34.9	87/7.1
2019	22780	3038/13.3	3/0.1	21	897/29.5	323/36.0

The Report Goal Due to these advances, the Third Vote can be considered election-ready prototype of a voting method for using either alone or in combinations with the established election methods. The 2019 experiment, conducted jointly by the StuPa and a team of 20 KIT student activists under the supervision of the KIT Institut für Volkswirtschaftslehre (ECON), is aimed at evaluating the Third Vote as a potential StuPa election method, possibly combined with the conventional vote by party name.

Structure of the Report We explain the operation of the Third Vote using the example of the 2019 experiment and then make recommendations for practical applications.

Section 2, ‘The 2019 Official and Experimental Elections to the KIT Student Parliament’, describes the students’ self-organization in the KIT, introduces student parties and summarizes the outcomes of the 2019 StuPa elections, both official and experimental.

In Section 3, ‘Policy Representation by the Student Parties and the Student Parliament’, the indices of popularity and universality, both of the student parties and the StuPa, are computed from the experiment data. We consider a modification of the Third Vote, Third Vote Plus, and explain how the Third Vote methods are combined with conventional elections by party name.

In Section 4, ‘Conclusions and Recommendations’, the main points of the report are summarized and recommendations on using the Third Vote, as well as VAAs, are formulated.

Section 5 ‘Appendix: 26 Questions Submitted but Rejected by Selection Criterion’, lists the questions submitted by the student parties but not included in the experimental electoral ballot as too little opposing the parties to each other.

2 The 2019 Official and Experimental Elections of the KIT Student Parliament

The 2019 StuPa Election and *StuPa-O-Mat* German student parliaments are university representative bodies established according to the laws of the corresponding German state. In the Karlsruhe Institute of Technology (KIT), the Student Parliament (StuPa) is constituted under the rules of the state of Baden-Württemberg. Its responsibilities include electing officers to the executive organ of the student body, AStA (*Allgemeiner Studierendenausschuss* = General Committee of Students), making decisions about the budget of the student body and participating in the university commissions and councils. During the semester, the StuPa meets bi-weekly and the meetings are open to the public [AStA 2019, StuPa 2019].

Elections to the StuPa are held every summer, and all the KIT students are eligible to vote. The 25 StuPa seats are distributed among student parties in proportion to the number of votes they receive in elections.⁵ The 2019 election held on July 8–12 and the new StuPa members

⁵The integer number of StuPa seats is finally partitioned using the method by [Saint-Liguë 1910], but we always refer to more accurate percentages of votes received by the parties. To avoid overhang mandates, faction members can be assigned not integer-valued but fraction-valued votes — an unconventional

represent eight student parties, most of which are nationwide and some having international affiliations; see Table 3. The Juso, Linke.SDS, LHG, LISTE and GAL are associated with and supported by German political parties. The RCDS is close to the CDU/CSU but declares its independence. The IYSSE is an international Trotskyist youth association of the Fourth International and related national parties. Only the FiPS is completely autonomous, being a local student organization of the KIT. The German student organizations are generally not strictly affiliated with political parties, as they have discrete historical roots. They prefer to call themselves ‘a group’, ‘an alliance’, ‘a list’, ‘an association’ or even ‘a faculty experience’, thereby emphasizing relaxed forms of relations and/or no self-identification as real parties.

In 2019, of the 22,780 students eligible to vote, 3,038 took part in the official election and cast 3,035 valid ballots; 3 were deemed invalid. Thus, the turnout was 13.3%. The votes for parties (excluding a few invalid party votes and 153 abstentions) are displayed in Table 3, and the official report is downloadable from [Endgueltige Wahlergebnisse 2019]. For more information about the StuPa and the 2019 StuPa election see the KIT student journal [Ventil 2019].

The AStA webpage has a link to the *StuPa-O-Mat*, the KIT adaptation of the *Wahl-O-Mat* to the StuPa election. Previously, the *StuPa-O-Mat* questions have been formulated by the election committee. Since 2017, the parties are asked to formulate questions themselves, as well as to answer all of them, including the questions by other parties. In 2019, the parties have submitted 47 questions, and 22 of them have been (heuristically) selected for the *StuPa-O-Mat* by the election committee.

The 2019 Experimental Election During the official 2019 StuPa election, an experimental election was organized. Additionally to the official ballot, each voter was offered an experimental ballot with 21 questions on university policy issues to be filled in on a voluntary basis. The experimental ballot and its English version for foreign students are displayed in Figures 1 and 2. The formatting and scanning the experimental ballots have been done at the KIT Strategic Development and Communication department’s facility for processing questionnaires with teaching course evaluations by students.

As in previous years, the experimental ballot is entitled ‘The Third Vote’ because it complements the German two-vote system with an additional vote in the form of embedded referenda. The preamble to the ballot explains the goal of the experiment — and that it does not impact the official election. For analysis purposes, the ballot’s Question 1.1 asks to indicate the party he/she votes for in the official election, and Question 2.1 specifies the degree to which the *StuPa-O-Mat* influences the choice. Since detailed analysis is beyond the scope of the actual document, the degree of the *StuPa-O-Mat* influence is not taken into account and all experimental votes are processed in one set. The following Questions 3.1–3.21 are selected from the 47 ones submitted by the parties. This is done with respect to a formal party discrimination criterion: on every questions, at least two parties must be positive and at least two parties — negative.

As many as 897 students took part in the experiment. However, some of them started to fill in the ballot but stopped after having answered a few questions, and some equally abstained or equally positively answered to all the 21 questions, which could hardly be considered seriously. Finally, 574 out of 897 experimental ballots (64%) are retained as valid for further processing.

Due to a limited sample, the results of the experimental election have a certain bias, differing from that of the official election. For instance, the official election winner, the GAL, is only the third in the experiment’s vote by party name (not by the Third Vote!). Therefore, the experiment results should not be considered from the viewpoint of the official election but judged independently.

but mathematically natural solution.

Table 3: Results of the 2019 official and experimental elections of the KIT Student Parliament

Party logo	Party description	Official votes		Experimental votes	
		Num	%	Num	%
	GAL (Grün-Alternative Liste — Campusgrün = Green-Alternative List — Green Campus)	712	25.1	100	17.4
	FiPS (Fachschaftserfahrung im Parlament der Studierenden = Faculty Experience in the Parliament of Students)	539	19.0	130	22.6
	Juso (Jung Sozialisten = Young Socialists); the youth wing of the SPD (Social Democratic Party of Germany)	522	18.4	108	18.8
	Die LISTE (Liste für basisdemokratische Initiative, Studium, Tierzucht und Elitenbeförderung = List for Grassroots Democratic Initiatives, Education, Animal Breeding and Promotion of Elites)	348	12.3	78	13.6
	Die Linke:SDS (Die Linke: Sozialistisch-Demokratischer Studierendenverband = The Left: Social Democratic Students' Alliance)	233	8.2	51	8.9
	RCDS (Ring christlich-demokratischer Studenten = Association of Christian Democratic Students)	193	6.8	50	8.7
	LHG (Bundesverband Liberaler Hochschulgruppen = Federal Association of Liberal Student Groups)	174	6.1	37	6.4
	IYSSE Karlsruhe — International Youth and Students for Social Equality	118	4.2	20	3.5
Total valid votes for parties		2839		574	

EvaSys	Experiment - "The Third Vote" 2019	Electric Paper KIT
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Bitte so markieren: ☒ ☐ ☐ ☐ Bitte verwenden Sie einen Kugelschreiber oder nicht zu starken Filzstift. Dieser Fragebogen wird maschinell erfasst.

Korrektur: ☐ ☒ ☒ ☐ Bitte beachten Sie im Interesse einer optimalen Datenerfassung die links gegebenen Hinweise beim Ausfüllen.

Beim Experiment „The Third Vote“ wird die Idee von Prof. Andranik Tangian umgesetzt, eine repräsentative Demokratie basisdemokratischer zu machen. Mit dieser alternativen Wahlmethode wird ein Meinungsbild der Wähler bezüglich bestimmter Themengebiete ermittelt, indem durch eine dritte Stimme konkrete inhaltliche Meinungen abgegeben werden. Die politische Meinung der Wähler wird mit der der Parteien verglichen und soll sich so zukünftig auf das Wahlergebnis auswirken. Dadurch soll irrationales und voreingenommenes Wahlverhalten minimiert werden. Wegen der erfolgreichen Ergebnisse der StuPa Wahl aus dem Jahr 2017 und 2018 wird „the Third Vote“ auch in diesem Jahr bei der StuPa Wahl 2019 implementiert und getestet werden. Die Teilnahme an diesem Experiment ist vollkommen freiwillig, anonym und fließt NICHT in das diesjährige Wahlergebnis ein. Ergebnisse unserer Analyse werden unter www.studienwahl.econ.kit.edu veröffentlicht. Bei Fragen stehen Euch während der Wahl Ansprechpartner an den Urnen gerne zur Verfügung. Vielen Dank für Eure Unterstützung!

1. Parteiliste

1.1 Welche Liste hast du auf deinem eigentlichen Wahlzettel gewählt?

<input type="checkbox"/> FiPs	<input type="checkbox"/> Linke.SDS	<input type="checkbox"/> JuSo
<input type="checkbox"/> LHG	<input type="checkbox"/> Die Liste	<input type="checkbox"/> RCDS
<input type="checkbox"/> IYSSE	<input type="checkbox"/> GAL	

2. StuPA-O-Mat

2.1 Hast du den StuPA-O-Mat verwendet, um dich bei deiner Entscheidung zu beeinflussen?

<input type="checkbox"/> Ja ich habe ihn genutzt, dabei hat er mich bei meiner Wahl beeinflusst .	<input type="checkbox"/> Ja ich habe ihn genutzt, dabei hat er mich bei meiner Wahl wenig beeinflusst .	<input type="checkbox"/> Ja ich habe ihn genutzt, allerdings hat er mich in meiner Wahl nicht beeinflusst .
<input type="checkbox"/> Nein , ich habe ihn nicht genutzt .		

3. Unipolitik

3.1 Es sollten genügend Studienplätze geschaffen werden, sodass sämtliche Zulassungsbeschränkungen abgeschafft werden können.	positiv <input type="checkbox"/>	<input type="checkbox"/> negativ	<input type="checkbox"/> neutral
3.2 Das Studierendenparlament soll dafür kämpfen, dass sich ein Student sein hochschulpolitisches Engagement auf dem Abschlusszeugnis offiziell vermerken lassen kann.	positiv <input type="checkbox"/>	<input type="checkbox"/> negativ	<input type="checkbox"/> neutral
3.3 Werbung von Unternehmen auf dem Campus, die auf qualifizierte Absolventen abzielt, sollte nicht eingeschränkt werden.	positiv <input type="checkbox"/>	<input type="checkbox"/> negativ	<input type="checkbox"/> neutral
3.4 Das Studierendenparlament soll sich dafür einsetzen, dass ein nachgelagertes Studiengebührenmodell eingeführt wird, welches Studierenden aus finanziell schwachen Familien ermöglicht, Studiengebühren erst nach dem Studium zurückzuzahlen (würde zusätzlich zum BAföG eingeführt werden).	positiv <input type="checkbox"/>	<input type="checkbox"/> negativ	<input type="checkbox"/> neutral
3.5 Die kommerzielle Werbung im Mensagebäude soll eingeschränkt werden.	positiv <input type="checkbox"/>	<input type="checkbox"/> negativ	<input type="checkbox"/> neutral
3.6 Es sollen keine Flyer mehr aus Mitteln der Verfassten Studierendenschaft finanziert werden.	positiv <input type="checkbox"/>	<input type="checkbox"/> negativ	<input type="checkbox"/> neutral
3.7 Die Rücklagen der Verfassten Studierendenschaft sollen durch Verringerung des Semesterbeitrags abgebaut werden.	positiv <input type="checkbox"/>	<input type="checkbox"/> negativ	<input type="checkbox"/> neutral
3.8 Die Studiengebühren für ein Zweitstudium sollten abgeschafft werden.	positiv <input type="checkbox"/>	<input type="checkbox"/> negativ	<input type="checkbox"/> neutral
3.9 Klausuren sollen zur Verbesserung der Hörsaalsituation häufiger auch am Samstag stattfinden.	positiv <input type="checkbox"/>	<input type="checkbox"/> negativ	<input type="checkbox"/> neutral

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Figure 1: The 2019 experimental electoral ballot in German (scanner-ready A4-double-sided)


EvaSys	Experiment - "The Third Vote" 2019		
3. Unipolitik [Fortsetzung]			
3.10	Es sollen mehr Fahrradstellplätze an Hörsälen und vor der Bibliothek geschaffen werden.	positiv <input type="checkbox"/>	<input type="checkbox"/> negativ <input type="checkbox"/> neutral
3.11	Das Studierendenparlament soll sich für die internationale Angleichung der Semesterzeiten einsetzen.	positiv <input type="checkbox"/>	<input type="checkbox"/> negativ <input type="checkbox"/> neutral
3.12	Bachelor-Studiengänge am KIT sollten weniger Präsenzzeit, lockere Studienordnungen und eine geringere Prüfungsdichte besitzen und damit Studierenden ein selbstbestimmtes, forschungsorientiertes und systemkritisches Studium ermöglichen, da eine schnelle Berufseinführung nicht im Vordergrund stehen sollte.	positiv <input type="checkbox"/>	<input type="checkbox"/> negativ <input type="checkbox"/> neutral
3.13	Die jeweiligen Abgeordneten sollten in mindestens einem Gremium Mitglied sein.	positiv <input type="checkbox"/>	<input type="checkbox"/> negativ <input type="checkbox"/> neutral
3.14	Der Campus soll mehr zur verkehrsberuhigten Zone werden.	positiv <input type="checkbox"/>	<input type="checkbox"/> negativ <input type="checkbox"/> neutral
3.15	Studentisches Ehrenamt in der Hochschulpolitik sollte durch Aufwandsentschädigungen attraktiver gestaltet werden.	positiv <input type="checkbox"/>	<input type="checkbox"/> negativ <input type="checkbox"/> neutral
3.16	Durch ehrenamtliches Engagement soll die Maximalstudiendauer heraufgesetzt werden können.	positiv <input type="checkbox"/>	<input type="checkbox"/> negativ <input type="checkbox"/> neutral
3.17	Das KIT darf keine Zugangshürden für Master-Studiengänge besitzen.	positiv <input type="checkbox"/>	<input type="checkbox"/> negativ <input type="checkbox"/> neutral
3.18	Die Verfasste Studierendenschaft soll eine einheitliche Genderform in allen Dokumenten ausarbeiten und durchsetzen.	positiv <input type="checkbox"/>	<input type="checkbox"/> negativ <input type="checkbox"/> neutral
3.19	Die maximale Anzahl an Semestern sollte abgeschafft werden.	positiv <input type="checkbox"/>	<input type="checkbox"/> negativ <input type="checkbox"/> neutral
3.20	Das Studierendenparlament sollte sich nicht zu allgemeinpolitischen Themen positionieren	positiv <input type="checkbox"/>	<input type="checkbox"/> negativ <input type="checkbox"/> neutral
3.21	Die Kameraüberwachung auf dem Campus sollte verringert werden.	positiv <input type="checkbox"/>	<input type="checkbox"/> negativ <input type="checkbox"/> neutral
----- Vielen Dank für Ihre Mitarbeit!			



Figure 1: **(continued)** The 2019 experimental electoral ballot in German (scanner-ready A4-double-sided)

EvaSys	Experiment - "The Third Vote" 2019	Electric Paper KIT
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Bitte so markieren: ☐ ☒ ☐ ☐ Please use a ball pen or a thin felt-tip pen. This form will be processed automatically.

Korrektur: ☐ ☒ ☐ ☐ Please follow the example shown here to change your answers.

„The Third Vote” is an experiment, in which the idea of Prof. Andranik Tangian is implemented, with the aim of making a representative democracy more direct democratic. With this alternative election method, the electorate’s policy profile is measured using a third election vote, by asking content related questions. The policy profile of the electorate is compared with that of the candidate parties and shall hereby prospective affect the election result. In this way, attempts are made to overcome irrational behavior and voting partiality. Based on successful results of the experiment in year 2017 and 2018 “The Third Vote” will also be implemented and tested in 2019. Participation in the survey is completely voluntary, anonymous and has NO influence on the official election this year. Results of our analysis will be available on www.studierendenwahl.econ.kit.edu. For questions, please do not hesitate to ask the election coordinators at the ballot boxes. Thank you for your support!

1. Party

1.1 Which party did you choose on the main ballot?

<input type="checkbox"/> FiPs	<input type="checkbox"/> Linke.SDS	<input type="checkbox"/> JuSo
<input type="checkbox"/> LHG	<input type="checkbox"/> Die Liste	<input type="checkbox"/> RCDS
<input type="checkbox"/> IYSSE	<input type="checkbox"/> GAL	

2. StuPA-O-Mat

2.1 Did you use the StuPA-O-Mat?

<input type="checkbox"/> Yes he influenced me.	<input type="checkbox"/> Yes he influenced me a little.	<input type="checkbox"/> Yes but he did not influence me.
<input type="checkbox"/> No, I did not use it.		

3. Campus Politics

3.1 Sufficient university places should be created so that all admission restrictions could be abolished.	positive <input type="checkbox"/>	negative <input type="checkbox"/>	neutral <input type="checkbox"/>
3.2 The student parliament should struggle for the recognition of students' engagement in university politics in the graduation diploma.	positive <input type="checkbox"/>	negative <input type="checkbox"/>	neutral <input type="checkbox"/>
3.3 Companies' advertising on campus targeted at qualified graduates should not be restricted.	positive <input type="checkbox"/>	negative <input type="checkbox"/>	neutral <input type="checkbox"/>
3.4 The student parliament should advocate the introduction of a deferred tuition fee model, which would enable students from financially weak families to repay tuition fees only after their studies (should be introduced in addition to BAföG).	positive <input type="checkbox"/>	negative <input type="checkbox"/>	neutral <input type="checkbox"/>
3.5 Commercial advertising in the Mensa building should be limited.	positive <input type="checkbox"/>	negative <input type="checkbox"/>	neutral <input type="checkbox"/>
3.6 No flyer should be financed from the funds of the Constituted Student Body.	positive <input type="checkbox"/>	negative <input type="checkbox"/>	neutral <input type="checkbox"/>
3.7 The financial reserves of the Constituted Student Body should be reduced by lowering the semester fee.	positive <input type="checkbox"/>	negative <input type="checkbox"/>	neutral <input type="checkbox"/>
3.8 Tuition fees for second study cycle should be abolished.	positive <input type="checkbox"/>	negative <input type="checkbox"/>	neutral <input type="checkbox"/>
3.9 To improve the lecture hall situation, exams should more frequently take place on a Saturdays.	positive <input type="checkbox"/>	negative <input type="checkbox"/>	neutral <input type="checkbox"/>
3.10 More bicycle parking spaces should be created at lecture halls and in front of the library.	positive <input type="checkbox"/>	negative <input type="checkbox"/>	neutral <input type="checkbox"/>
3.11 The student parliament should advocate for the international harmonization of semester dates.	positive <input type="checkbox"/>	negative <input type="checkbox"/>	neutral <input type="checkbox"/>

please turn page →

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Figure 2: The 2019 experimental electoral ballot in English (scanner-ready A4-double-sided)


EvaSys	Experiment - "The Third Vote" 2019		
3. Campus Politics [Fortsetzung]			
3.12 Bachelor's programmes at KIT should require less attendance time, relaxed study regulations and a lower density of exams, thus enabling students to pursue a self-determined, research-oriented and system-critical course of study, since a quick introduction to a profession should not be the main focus.	positive <input type="checkbox"/>	<input type="checkbox"/> negative	<input type="checkbox"/> neutral
3.13 Every delegate should be a member of at least one committee.	positive <input type="checkbox"/>	<input type="checkbox"/> negative	<input type="checkbox"/> neutral
3.14 The campus should be a traffic-calmed zone.	positive <input type="checkbox"/>	<input type="checkbox"/> negative	<input type="checkbox"/> neutral
3.15 Student voluntary positions at the university should be made more attractive through expense allowances.	positive <input type="checkbox"/>	<input type="checkbox"/> negative	<input type="checkbox"/> neutral
3.16 The maximum duration of studies should be increased through voluntary commitments.	positive <input type="checkbox"/>	<input type="checkbox"/> negative	<input type="checkbox"/> neutral
3.17 The KIT should not restrict access to Master's programmes.	positive <input type="checkbox"/>	<input type="checkbox"/> negative	<input type="checkbox"/> neutral
3.18 The Constituted Student Body should design and adopt a unified gender form in all documents.	positive <input type="checkbox"/>	<input type="checkbox"/> negative	<input type="checkbox"/> neutral
3.19 The maximum number of semesters should be abolished	positive <input type="checkbox"/>	<input type="checkbox"/> negative	<input type="checkbox"/> neutral
3.20 The student parliament should not position itself on general political issues.	positive <input type="checkbox"/>	<input type="checkbox"/> negative	<input type="checkbox"/> neutral
3.21 Camera surveillance on campus should be reduced.	positive <input type="checkbox"/>	<input type="checkbox"/> negative	<input type="checkbox"/> neutral
.....			
Thank you for your participation!			



Figure 2: **(continued)** The 2019 experimental electoral ballot in English (scanner-ready A4-double-sided)

3 Policy Representation by the Student Parties and the Student Parliament

Date Structure The party answers to the 21 questions of the experimental ballot and statistics of positive/negative voters' positions are displayed in Table 4. The table is visualized by Figure 3. The grey bars depict the balance of opinions among the experiment participants. For each question, the grey segment to the left of the vertical 0-axis shows the percentage of antagonists (who answer 'No'), and the grey segment on the right hand shows the percentage of protagonists (who answer 'Yes'). To better visualize the majority opinion, the total length of the grey bar is normalized (proportionally extended to 100%) and shown by a box. The majority opinion is on the side where the box surpasses the $\pm 50\%$ limit. For instance, the majority opinion on Question 1 is 'No'. The party positions are shown by the parties' color bars on the left-hand ('No') or right-hand ('Yes') side of the chart. The length of the party bars is equal to the percentage of votes received by the party within this set. For a missing (neutral) party answer, its color bar is also missing.

Popularity and Universality of Student Parties Basing on the data collected, we evaluate the representativeness of student parties. To be specific, let us construct the FiPS' popularity and universality indices for the *participants of the experiment*. For Question 1, 'Es sollten genügend Studienplätze geschaffen werden...' = 'Sufficient university places should be created...', the balance of public opinion with 25% of protagonists and 49% of antagonists in the first line of Table 4 is shown by the upper grey bar in Figure 3. The balance of public opinion is normalized, that is, the grey bar is extended proportionally to 100%, as shown by the framing box. Thereby, we assume that the passive (latent) Yes/No positions of abstaining voters are distributed in the same proportion as the protagonist-to-antagonist ratio. For Question 1, the FiPS represents the actual and 'passive' antagonists, having the normalized *representativeness*

$$r_{\text{FiPS},1} = \frac{49}{25 + 49} \approx 0.66 .$$

We skip Question 2 with no FiPS's opinion, and come to Question 3, 'Werbung von Unternehmen auf dem Campus...' = 'Companies' advertising on campus...'. In this case FiPS represents 44% of protagonists against 28% of antagonists. Taking into account the 'passive' voters, we find the FiPS' normalized representativeness for Question 5:

$$r_{\text{FiPS},3} = \frac{44}{44 + 28} \approx 0.61 ,$$

and so on. The FiPS' popularity index is its representativeness averaged over the questions with the FiPS' definitive positions (there are 17 such questions, and four answers are missing):⁶

$$P_{\text{FiPS}} = \frac{0.66 + 0.44 + \dots}{17} \approx 0.70 \quad (= 70\%) .$$

The FiPS universality index is the percentage of questions on which it represents a majority of the voters. Again, we restrict consideration to the 17 questions with the FiPS' definitive positions. Since the FiPS represents a majority on 13 out of the 17 questions, we obtain

$$U_{\text{FiPS}} = 13/17 \approx 0.76 \quad (= 76\%) .$$

These FiPS' popularity and universality indices are shown at the top-left of Table 5 and visualized by the upper-left block of Figure 4.

⁶Questions are equally weighted because our previous studies show a low sensitivity of popularity and universality indices to reasonably constrained weighting of questions if they are numerous. Of course, individual weights can be taken into account if desired.

Table 4: The KIT student party positions on 21 questions from Section 3 of the 2019 Third Vote electoral ballot (+[1]—Yes, −[1]—No, ?—Neutral or missing) and the balance of public opinion thereon among the participants of the experiment

Questions numbered as in Section 3 of the Third Vote electoral ballot	FiPS	Linke	Juso	LHG	LISTE	RCDS	IYSSE	GAL	Experimental votes	
									Pros	Cons
									%	%
1 Es sollten genügend Studienplätze geschaffen werden, sodass sämtliche Zulassungsbeschränkungen abgeschafft werden können.	−	+	+	+	+	−	+	?	25	49
2 Das Studierendenparlament soll dafür kämpfen, dass sich ein Student sein hochschulpolitisches Engagement auf dem Abschlusszeugnis...	?	+	+	?	−	+	+	−	64	11
3 Werbung von Unternehmen auf dem Campus, die auf qualifizierte Absolventen abzielt, sollte nicht eingeschränkt werden.	+	−	?	+	?	+	−	−	44	28
4 Das Studierendenparlament soll sich dafür einsetzen, dass ein nachgelagertes Studiengebührenmodell eingeführt wird, welches...	−	−	+	−	+	+	−	−	66	10
5 Die kommerzielle Werbung im Mensagebäude soll eingeschränkt werden.	?	+	+	−	−	−	+	+	34	30
6 Es sollen keine Flyer mehr aus Mitteln der Verfassten Studierendenschaft finanziert werden.	+	−	+	?	+	−	−	?	40	22
7 Die Rücklagen der Verfassten Studierendenschaft sollen durch Verringerung des Semesterbeitrags abgebaut werden.	−	−	?	+	?	+	−	−	26	35
8 Die Studiengebühren für ein Zweitstudium sollten abgeschafft werden.	+	+	+	−	−	−	+	+	54	25
9 Klausuren sollen zur Verbesserung der Hörsaalsituation häufiger auch am Samstag stattfinden.	−	?	+	+	−	+	−	−	35	40
10 Es sollen mehr Fahrradstellplätze an Hörsälen und vor der Bibliothek geschaffen werden.	+	+	+	−	−	+	+	+	85	5
11 Das Studierendenparlament soll sich für die internationale Angleichung der Semesterzeiten einsetzen.	?	−	+	−	+	+	?	+	59	13
12 Bachelor-Studiengänge am KIT sollten weniger Präsenzzeit, lockere Studienordnungen und eine geringere Prüfungsdichte besitzen und...	−	+	+	?	?	−	+	+	45	31
13 Die jeweiligen Abgeordneten sollten in mindestens einem Gremium Mitglied sein.	?	+	+	−	?	+	−	+	31	8
14 Der Campus soll mehr zur verkehrsberuhigten Zone werden.	−	?	−	−	−	+	+	−	63	12
15 Studentisches Ehrenamt in der Hochschulpolitik sollte durch Aufwandsentschädigungen attraktiver gestaltet werden.	−	+	−	−	+	+	−	+	34	36
16 Durch ehrenamtliches Engagement soll die Maximalstudiendauer heraufgesetzt werden können.	+	+	+	−	−	+	+	+	75	13
17 Das KIT darf keine Zugangshürden für Master-Studiengänge besitzen.	−	+	−	+	+	−	−	+	30	45
18 Die Verfasste Studierendenschaft soll eine einheitliche Genderform in allen Dokumenten ausarbeiten und durchsetzen.	−	+	+	−	−	−	−	?	21	40
19 Die maximale Anzahl an Semestern sollte abgeschafft werden.	−	+	+	−	+	−	−	+	31	53
20 Das Studierendenparlament sollte sich nicht zu allgemeinpolitischen Themen positionieren.	−	−	−	+	−	+	−	−	27	43
21 Die Kameraüberwachung auf dem Campus sollte verringert werden.	−	+	−	−	+	?	+	+	36	25

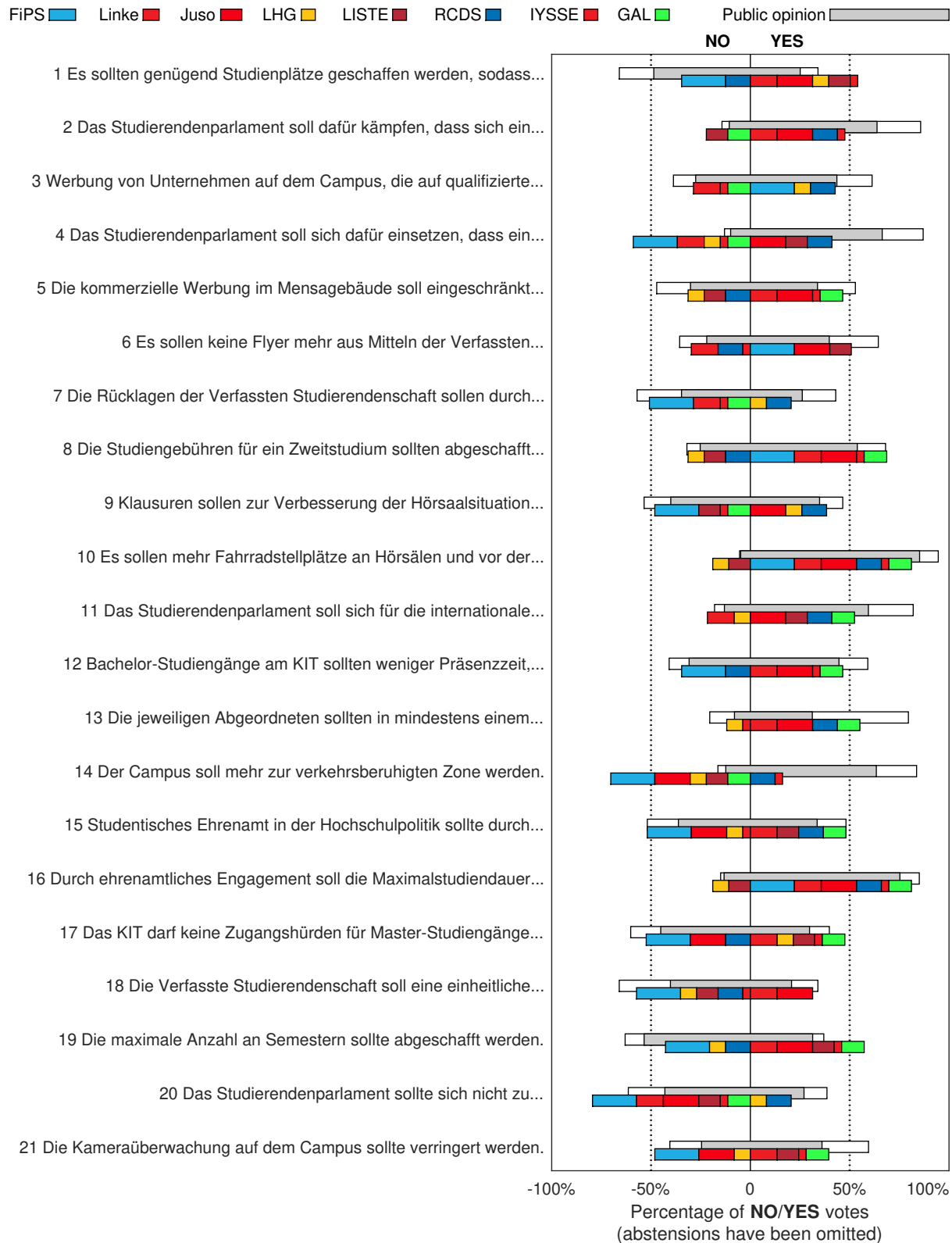


Figure 3: Visualization of Table 4: balance of public opinion on 21 questions (grey—factual, box—normalized) and representation thereof by the 2019 KIT Student Parliament as if elected by party name using the set of experimental votes. The party bar length equals to the party's percentage of experimental votes. The party bar is missing if the party opinion on the question is neutral or unknown.

Table 5: The 2019 indices of the KIT student parties and Student Parliament as if elected using five methods applied to the set of experimental votes

	P	U	Max faction ratio	2nd vote by party name	3rd vote $\frac{P+U}{2}$		3rd vote+ $\frac{P+U}{2} - \frac{1}{2}$		2nd vote/ 3rd vote	2nd vote/ 3rd vote+
	%	%		%	Abs %	Norm %	Abs %	Norm %	%	%
FiPS	57	76		23	67	15	17	27	19	25
Linke	53	53		9	53	12	3	4	11	7
Juso	60	68		19	64	15	14	23	17	21
LHG	36	22		6	29	7	-21	0	7	3
LISTE	45	41		14	43	10	-7	0	12	7
RCDS	62	60		9	61	14	11	18	11	13
IYSSE	55	65		3	60	14	10	16	9	10
GAL	53	61		17	57	13	7	12	15	15
Absolute Maximum	69	100								
StuPa by										
2nd vote	57	71	7.7							
3rd vote	58	76	2.1							
3rd vote+	60	81	6.8							
2nd vote/3rd vote	58	76	2.7							
2nd vote/3rd vote+	57	71	8.3							

StuPa under the Second Vote (by Party Name) Assuming that the StuPa’s position on each question is determined by the StuPa majority, we define the StuPa’s policy profile as follows. Column ‘2nd vote’ of Table 5 reproduces the percentages of votes for the student parties in the experimental vote set, as given in Table 3. These percentages are regarded as the sizes of the StuPa factions.

According to Table 4, the Linke, Juso, LHG, LISTE and IYSSE are positive on Question 1, the FiPS and RCDS are negative and the GAL is neutral. Taking into account their StuPa faction sizes in Column ‘2nd vote’ of Table 5, the five ‘positively minded’ parties constitute the majority of $9 + 19 + 6 + 14 + 3 = 51\%$ StuPa seats and determine its positive position (contrary to the prevailing public opinion). This is well seen in Figure 3, where the five parties’ color bars on the right hand of the central axis surpass the 50% dotted line.

On Question 2, the positively minded Linke, Juso, RCDS and IYSSE with their $9+19+9+3 = 40\%$ of the 2nd votes (= 40% of StuPa seats), overweight the negatively minded LISTE and GAL with their $14 + 17 = 31\%$ of the 2nd votes, so the StuPa is positive regarding Question 2, this time reflecting the positive public opinion.

Continuing this way, we define the StuPa’s policy profile. Then the StuPa’s popularity and universality indices are computed like for a party, taking into account which percentage of the electorate is represented on every question. The StuPa indices of popularity and universality are shown in Row ‘StuPa by 2nd vote’ of Table 5 and are visualized by the bottom-left block of Figure 4.

StuPa under the Third Vote Under the Third Vote, the parliament seats are distributed among the parties in proportion to their indices of representativeness. In our experiment, the reference index is the mean of the parties’ popularity and universality (but it can be agreed in some other way). The means of the parties’ popularity and universality indices are shown in Column ‘3rd vote $\frac{P+U}{2}$ Abs’ (= Absolute value) of Table 5. To distribute the StuPa seats, the parties’ mean indices are normalized — proportionally reduced to the total of 100% — as shown in the next column ‘Norm’.

The new allocation of the StuPa seats changes the faction ratio, affecting the StuPa’s policy

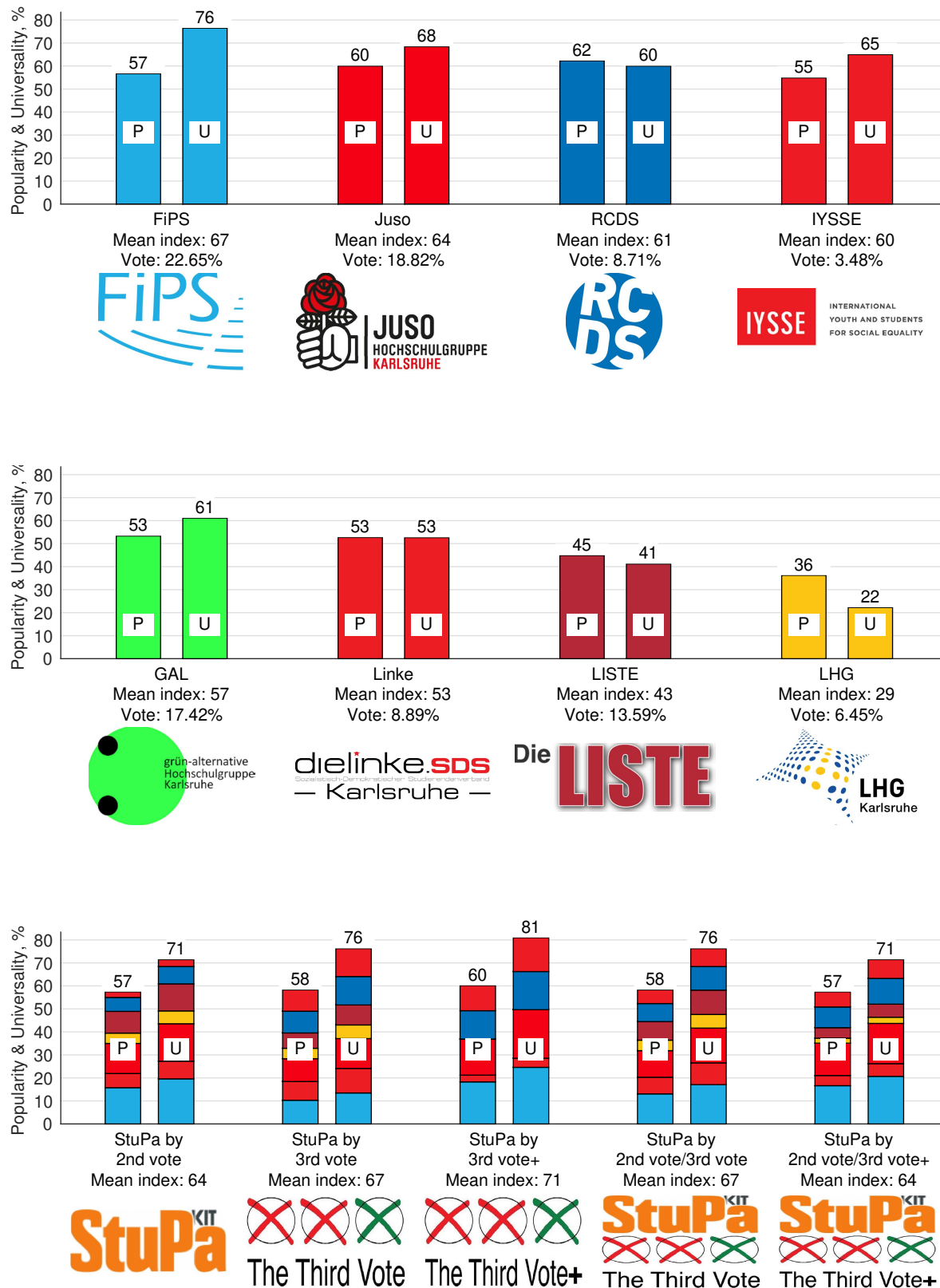


Figure 4: The 2019 popularity (P) and universality (U) indices of the KIT student parties and Student Parliament, the latter as if elected using five election methods applied to the set of experimental votes (visualization of Table 5)

profile and its representativeness indices. The latter are given in Row ‘StuPa by 3rd vote’ of Table 5 and visualized by the second bottom-left block of Figure 4. Compared with the StuPa determined by the 2nd votes, a certain gain in representativeness is attained:

$$(P, U) = (57, 71) \rightarrow (58, 76) ,$$

though being still far from the absolute maxima (= the values of popularity and universality if majorities are represented for all questions), as highlighted in Row ‘Absolute Maximum’.

StuPa under the Third Vote+ The maximal faction ratio in the StuPa elected by the 2nd vote (see the corresponding column of Table 5) is equal to

$$\text{2nd vote StuPa's maximal faction ratio} = \text{FiPS} : \text{IYSSE} = 23 : 3 \approx 7.7 .$$

It should be noted that the maximal faction ratio in the StuPa elected by the 3rd vote is much smaller, being equal to

$$\text{3rd vote StuPa's maximal faction ratio} = \text{FiPS} : \text{LHG} = 15 : 7 \approx 2.1 .$$

This so-called equalization effect of the Third Vote is explained as follows. Under conventional elections, parties are voted on by disjoint groups of their adherents of very different sizes, implying corresponding different sizes of party factions in the parliament. Under the Third Vote, the factions are proportional to the party popularity and universality indices. These indices take into account the size of groups represented by parties on each issue. Instead of many groups of party adherents, on every issue there are only ‘Yes’-group and ‘No’-group (not to count those who abstain) which are generally quite numerous. Since the groups of party adherents join (differently on each issue), they provide a larger support for weak parties. In other words, the indices reflect the full representativeness of the parties and cannot be therefore considered inadequate, although the equalization of factions looks unusual.

The equalization effect can be tackled by a modification of the Third Vote, called the Third Vote Plus or simply ‘3rd vote+’. Since the indices of representativeness below 50% mean that minorities are represented rather than majorities, we consider only the ‘positive representativeness’, i.e. the segments of the party indices above the threshold of 50% (if this segment is empty, the new index is nullified). These index segments are shown in Column ‘3rd vote+ Abs’ of Table 5. To allocate the StuPa seats, these party indices are normalized, as shown in the next Column ‘Norm’. Now the maximal faction ratio (for all experimental votes)

$$\text{3rd vote+ StuPa's maximal faction ratio} = \text{FiPS} : \text{Linke} = 24 : 4 \approx 6.0 ,$$

approaching the faction ratio under the 2nd vote.

The popularity and universality of the StuPa under the 3rd vote+ is shown in Row ‘StuPa by 3rd vote+’ of Table 5 and the bottom-central block of Figure 4. Compared with the 3rd vote, the 3rd vote+ results in a further increase in the StuPa’s representativeness:

$$(P, U) = (57, 71) \rightarrow (58, 76) \rightarrow (60, 81) .$$

The 3rd vote+ strongly reduces or even eliminates the impact of non-representative parties and boosts the impact of representative ones. In our case, the rather non-representative than representative LHG and LISTE (see Table 5) are eliminated completely. The faction size and, correspondingly, the impact of the low representative Linke is reduced from 12% under the 3rd vote to 4% under the 3rd vote+. The impact of other parties is increased, e.g. the most representative FiPS gets 27% of the StuPa seats instead of 15%.

StuPa under a Combination of the 2nd and 3rd votes Since many voters identify themselves with certain parties, they can wish not only to express their policy preferences but also vote by party name. To combine two election methods, we join two indices with which the parliament seats are allocated. In our case, they are the parties' percentages of 2nd votes and normalized indices of representativeness (the percentages are obviously normalized).

To combine the 2nd vote by party name with the Third Vote, we take the mean of Columns '2nd vote' and '3rd vote/Norm' of Table 5. The joint index (used to define the size of the StuPa factions) is shown in Column '2nd vote/3rd vote', and the popularity and universality indices of the StuPa allocated in proportion to it are given in Row 'StuPa by 2nd vote/3rd vote'. Now the StuPa's popularity and universality (for all experimental votes) are as under the 3rd vote alone

$$(P, U) = (58, 76) ,$$

and the maximal faction ratio (for all experimental votes) is

$$\text{2nd vote \& 3rd vote StuPa's maximal faction ratio} = \text{FiPS : LHG} = 19 : 7 \approx 2.7 .$$

The combination of the 2nd vote and the 3rd vote+ is analogous. The corresponding StuPa allocation index shown in Column '2nd vote/3rd vote+' of Table 5 is the mean of Columns '2nd vote' and '3rd vote+/Norm'. The popularity and universality of the StuPa allocated in proportion to this index are given in Row 'StuPa by 2nd vote/3rd vote+'. As one can see, the maximal faction ratio is equal to

$$\text{2nd vote \& 3rd vote+ StuPa's maximal faction ratio} = \text{FiPS : LHG} = 25 : 3 \approx 8.3 .$$

As expected, the popularity and universality indices of the StuPa allocated this way are much lower than under the 3rd vote+ alone.

4 Conclusions and Recommendations

Supporting the Recent Conception of Policy Representation The recent conception of policy representation focuses on how well the party system and the government reflect the electorate’s policy preferences. It is implemented in voting advice applications (VAAs), e.g. *Wahl-O-Mat*, but not in the electoral systems based on conventional voting by party name. The Third Vote method is just aimed at filling in this gap.

Consistency with the *Wahl-O-Mat/StuPa-O-Mat* Approach Under the Third Vote, the voters are asked about their preferences on policy issues like in *Wahl-O-Mat*. Then the policy profile of the electorate with the balance of public opinion on every issue is defined. The degree to which the parties match with it is expressed by the parties’ representativeness indices which are used to allocate parliament seats. Thereby, the Third Vote refers to the parties’ manifestos, extending and further developing the VAA-approach.

Gain in Policy Representation The electoral experiments during the 2016–2019 elections of the KIT Student Parliament, as well as hypothetical applications of the Third Vote to the 2009, 2013 and 2017 Bundestag elections provide a comprehensive theoretical and empirical evidence that the Third Vote can improve the parliament policy representation by ca. 10–15% if used alone, or by 5–7% if combined with the conventional vote by party name.

Making the Third Vote Non-Manipulable The questions in the Third Vote ballot can be favorable for one party and unfavorable for another, making elections manipulable. To avoid impartiality, the competing parties are recommended to formulate the questions themselves on their own responsibility within the electoral campaign. After the parties answer all them, including the ones submitted by others, an optimization model ‘objectively’ selects the questions which maximally contrast between the party policy profiles [Tangian 2017e, Tangian 2018]. Thereby, the risks of election manipulability are avoided and the questionnaire’s length is restricted.

Tackling the Equalization Effect As already explained, a small ratio of the parliament faction sizes under the Third Vote is not harmful but non-habitual. If desired, it can be tackled by taking into account the parties’ ‘positive representativeness’ only, that is, considering the segments of party indices above the threshold of 50% — between the values that characterize rather representative and rather non-representative cases. This method modification, called the Third Vote Plus, increases the sizes of most representative parties, reduces the sizes of little representative parties, and rejects non-representative parties.

Combining the Third Vote with the Conventional Vote If desired, the Third Vote can be combined with the conventional vote by party name. Under conventional elections, the seats are distributed in proportion to the index ‘percentage of votes’. The Third Vote operates with the indices of representativeness in the same way. To make both indices commensurable, the parties’ representativeness indices are normalized, i.e. proportionally reduced to the total of 100%. Then the (weighted) mean of the percentage of votes and the normalized index of representativeness is used to allocate the parliament seats.

Recommendation for Updating the StuPa election system Taking into account the recent advances in political science, current VAA-practices, and encouraging electoral experiments, the StuPa election system should be refined to ultimately achieve the most representative composition of the student parliament. To keep the established traditions, it is recommended to combine the conventional vote by party name with the Third Vote as described in the report. This way a greater acceptance of the updated system can be reached while considerably

improving the democratic representation of the election. Therefore, the policy representation conception, already implemented in the StuPa-O-Mat, will be also implemented in the StuPa election system, making both complementary and well consistent.

5 Appendix: 26 Questions Submitted but Rejected by a Formal Criterion

The following Table 6 and its English version Table 7 display the 26 questions submitted by the student parties which are not included in the experimental electoral ballot. They are either so trivial that all the eight parties answer equally, or only one party definitively opposes all others, or too many parties abstain. The formal selection criterion requires that, on every question, at least two parties are positive and two are negative. As one can see, no question from these tables satisfies this condition.

Table 6: The 2019 KIT student party positions on 26 SORTED OUT questions in German: +[1]—Yes, −[1]—No, ?—Neutral or missing

Questions sorted out	FIPS	Linke	Juso	LHG	LISTE	RCDS	IYSSE	GAL
Die Abgeordneten sollen regelmäßig anwesend sein und aktiv Anträge zur Verbesserung der Verfassten Studierendenschaft einreichen und bei regelmäßigem Fehlen ihr Amt verlieren.	+	+	+	+	+	+	−	+
Das Studierendenparlament sollte eine Initiative starten, mit den Studierendenvertretungen anderer Hochschulen aufzuzeigen, dass der aktuelle BAföG-Satz nicht ausreichend ist.	+	+	+	−	+	+	+	?
Die Verfasste Studierendenschaft soll einen Vertrag zur Nutzung der Nextbikes abschließen.	?	+	+	−	+	+	?	+
Der Studenausweis soll als KVV-Bescheinigung genügen und nicht noch einen zusätzlichen Ausdruck benötigen.	+	+	+	+	+	+	+	+
Es sollten vermehrt system- und gesellschaftskritische Seminare angeboten werden.	?	+	?	?	?	−	+	+
Auf dem Campus sollten mehr Lernplätze ausgewiesen werden.	+	+	+	+	+	+	+	+
Die Verfasste Studierendenschaft sollte sich mehr für Studierende engagieren, die ein Semester im Ausland studieren wollen, dies fördern und hierfür ein passendes Konzept ausarbeiten.	+	+	+	+	+	+	+	?
Es soll mehr öffentliche Wasserspender geben.	+	+	+	+	+	+	+	+
Es soll ein verpflichtendes Fach Ethik in den Ingenieurwissenschaften angeboten werden.	−	+	−	−	−	−	?	?
Die Kunststoffverwendung in der Cafeteria soll minimiert werden.	+	+	+	+	−	+	+	+
Die einheitliche Nutzung von Ilias soll verpflichtend sein und somit die Online-Zugänglichkeit von Vorlesungen und anderen Veranstaltungen verbessert werden.	+	+	+	+	+	+	?	+
Der Forumsrasen soll geschützt werden, indem Veranstaltungen auf dem Forum begrenzt werden und Veranstalter für die Wiederherstellung des Rasens nach einer Veranstaltung sorgen.	+	+	+	+	+	+	+	+
Fakultätsbibliotheken sollen während der Klausurenphase auch am Wochenende geöffnet werden, um die Lernplatzsituation zu entspannen.	+	?	+	+	+	+	+	+
Studiengänge sollten weniger auf die Interessen der Industrie ausgerichtet werden.	−	+	?	?	+	?	+	?
Es soll ein Haus der Studierendenschaft entstehen.	+	+	+	−	?	?	?	+
Das KIT soll aktiv studentische Veranstaltungen durch organisierte Hallen und weniger Bürokratie unterstützen.	+	+	+	+	+	+	+	+
Das Studierendenparlament sollte in seiner Position als Studierendenvertretung mehr Druck auf die kommunale Politik ausüben, aktiv gegen die Wohnungsnot vorzugehen.	+	+	+	?	+	?	+	+
In den Wohnheimen sollen Biotonnen bereitgestellt werden.	+	+	+	+	+	+	+	+
Die Verfasste Studierendenschaft soll sich klar gegen sämtliche Formen von Faschismus, Fremdenfeindlichkeit, Extremismus und Diskriminierung positionieren.	+	+	+	+	+	+	+	+
Zugangsbedingungen am KIT sollten verschärft werden, um für ein Studium nicht qualifizierte Leute, eine Zeitverschwendung zu ersparen, die hohen Durchfallquoten zu senken und den Hochschulhaushalt zu entlasten.	−	−	−	−	−	−	−	−
Das Studierendenparlament soll sich einsetzen, dass christliche Feste wie Weihnachten oder Ostern an der Universität stärker zelebriert werden, zum Beispiel durch studentisch organisierte Gottesdienste.	−	−	−	+	−	−	−	−
Das KIT soll eine flächendeckende Mitarbeiterinnenquote einführen.	?	+	?	?	−	−	?	?
Rüstungsunternehmen sollen nicht auf dem Campus werben dürfen.	?	+	+	?	+	−	?	?
Klausuren am KIT sollen anonymisiert geschrieben werden, um Diskriminierung vorzubeugen.	?	+	+	?	−	?	?	?
Das KIT braucht eine gesamtheitliche Zivilklausel, die militärische Forschung verhindert.	?	+	?	?	−	−	?	?
In den Mensen und Cafeterien soll das Angebot an veganen und nachhaltigen Speisen ausgebaut werden.	?	+	+	?	?	?	?	?

Table 7: The 2019 KIT student party positions on 26 SORTED OUT questions in English: +[1]—Yes, −[1]—No, ?—Neutral or missing

Questions sorted out	FIPS	Linke	Juso	LHG	LISTE	RCDS	IYSSE	GAL
Deputies should attend StuPa sessions and actively submit proposals to improve the composition of the student body and, if they are regularly absent, lose their mandate	+	+	+	+	+	+	−	+
The StuPa, in cooperation with the student representatives of other universities, should start an initiative to show, that the current BAföG amount is not sufficient.	+	+	+	−	+	+	+	?
The student body shall close a contract for the use of Nextbikes.	?	+	+	−	+	+	?	+
The student ID card should suffice as a KVV certificate and not require an additional printout.	+	+	+	+	+	+	+	+
More seminars critical of system and society should be offered.	?	+	?	?	?	−	+	+
More learning places should be designated on campus.	+	+	+	+	+	+	+	+
The student body should be more committed to students who want to study abroad for a semester, promote it and develop a suitable concept for it.	+	+	+	+	+	+	+	?
There should be more public water dispensers.	+	+	+	+	+	+	+	+
In Engineering Studies there shall be offered a mandatory Ethics class.	−	+	−	−	−	−	?	?
The use of plastics in the cafeteria should be minimized.	+	+	+	+	−	+	+	+
The consistent use of the Ilias System should be mandatory and thus the online accessibility of lectures and other events will be improved.	+	+	+	+	+	+	?	+
The Forum lawn shall be protected by limiting events on the Forum and by the organizers ensuring the restoration of the lawn after an event.	+	+	+	+	+	+	+	+
Faculty libraries are to be opened during the exam period also on weekends in order to relax the learning place situation.	+	?	+	+	+	+	+	+
Degree courses should be less focused on the interests of industry.	−	+	?	?	+	?	+	?
A student body house is to be built.	+	+	+	−	?	?	?	+
The KIT should actively support student events through organized halls and less bureaucracy.	+	+	+	+	+	+	+	+
In its position as student representation, the student parliament should exert more pressure on local politicians to take active action against the housing shortage.	+	+	+	?	+	?	+	+
Organic bins should be provided in the dormitories	+	+	+	+	+	+	+	+
The student body should clearly position itself against all forms of fascism, xenophobia, extremism and discrimination.	+	+	+	+	+	+	+	+
Admission requirements at the KIT should be tightened in order to save unqualified people a waste of time, reduce the high failure quotas and relieve the university budget	−	−	−	−	−	−	−	−
The student parliament should make an effort to ensure that Christian events such as Christmas or Eastern are celebrated more strongly at the university, for example through student organised church services.	−	−	−	+	−	−	−	−
The KIT should introduce a women’s quota for employees.	?	+	?	?	−	−	?	?
Arms manufacturers should not be allowed to advertise on campus.	?	+	+	?	+	−	?	?
Exams at the KIT should be written anonymously in order to prevent discrimination.	?	+	+	?	−	?	?	?
The KIT needs a holistic civil clause that prevents military research.	?	+	?	?	−	−	?	?
In the canteens and cafeterias, the range of vegan and sustainable food should be expanded.	?	+	+	?	?	?	?	?

6 References

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