

THE LIQUID DEMOCRACY JOURNAL

**ON ELECTRONIC PARTICIPATION,
COLLECTIVE MODERATION, AND
VOTING SYSTEMS**

ISSUE 2

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THE LIQUID DEMOCRACY JOURNAL is dedicated to the idea of Liquid Democracy, which is a democratic principle that uses transitive delegations to unite the best of direct and representative democracy.

But this journal is not just limited to Liquid Democracy; it also covers those topics coming up when implementing it: **ELECTRONIC PARTICIPATION, COLLECTIVE MODERATION, AND VOTING SYSTEMS.**

EDITORIAL

by the Editors, Berlin, October 7, 2014

About half a year ago, we published the first issue of “The Liquid Democracy Journal on electronic participation, collective moderation, and voting systems”. Meanwhile it is available as electronic edition in three different file formats: First, the PDF version with the original layout of the printed edition, secondly a HTML version for better reading on displays, and third a plain text version with Unicode encoding for enhanced accessibility. The archive of the electronic edition is available at the homepage of the journal at:

<http://www.liquid-democracy-journal.org/>

We thank all our readers, the new subscribers, and those who criticized us constructively. With this strong motivation, we finally completed the second issue today and we are very pleased to present seven articles, from which we think that they are worth reading.

Game of Democracy

This issue's main topic is introduced in the first article with the question “LiquidFeedback:

Gamification of Politics?”, asked by Andreas Lange, director of Berlin's museum for computer games. In the following main article “Game of Democracy” and in “How Chaos Protected the Status Quo”, both written by Jan Behrens, we will take a look into game-related aspects of democratic decision-making.

New algorithms

While implementing LiquidFeedback 3.0, two requirements with the need for special algorithms came up. These two topics are covered in “Dividing the Pie” about the visualization of majorities in pie charts, and “Search for a Tie-breaker” about the challenge to find an appropriate mechanism for solving ties.

Real politics

The article “Liquid Democracy Provides No Alternative to the Republic” by Andreas Nitsche explains why LiquidFeedback was not intended to replace the parliamentary republic, but to strengthen political parties.

About one and a half year after the start of the promising participation platform LiquidFriesland in the County of Friesland, Germany, the article “Liquid Democracy for Civic Participation - A View on LiquidFriesland” makes a quantitative analysis of the participation rate of the people of Friesland.

Question and answer

As last section of the journal, we introduce a new series of articles: “Readers of the Journal Asked - LiquidFeedback Developers Answer”. In this series, developers of LiquidFeedback

answer to questions sent in from readers of the journal respectively questions, which are often asked in general.

Feedback

If you have any comments, questions or suggestions, do not hesitate to contact us. Please also feel free to send us your article for publishing, if you think it fits into the journal.

We wish you a pleasant and enlightening time reading this issue.

THE EDITORS

Note: The print version of this issue contained an error in Figure 6 on page 26. In this electronic version, we added the missing unit (360°) to the equation.

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LIQUIDFEEDBACK: GAMIFICATION OF POLITICS?

by Andreas Lange, Berlin, March 14, 2012, translated by the Editors

“I beat the game of LiquidFeedback without losing a life”: LiquidFeedback contains elements of online role-playing games. Those objective is to build up a character in the game and to equip the character with as much power as possible. In LiquidFeedback, it's all about delegation votes.

Since 2009, LiquidFeedback is being developed by the Public Software Group e. V. In 2010, the Berlin branch of the German Pirate Party was the first to adopt the system. The party members can develop motions in the “Liquid” (how the software is called amongst Pirates) that are presented to the executive board of the party and, in case of approval, yielded to the parliament.

In this connection, LiquidFeedback endeavors to unite elements of direct and representative democracy. Every member can make proposals him- or herself, comment on them, and vote on them – or delegate their vote topic-based to another member which is assumed to be qualified in the respective subject area. The more

delegating votes a member gains the greater the weight of his or her vote. A number symbolizes the transferred delegating votes, in fact the power of his or her vote.



Mareike Arno + 12

Figure 1: Display of incoming voting weight

Gamification

Since this reminds (at least superficially) of role-playing games in which the growth of power of the game characters is a key element, one ends up wondering whether LiquidFeedback applies gaming principles to digitalized political processes. The goal is to establish facilities for participation and co-determination that are more pleasurable and effective than our party democracy provided so far. Tweets and comments of LiquidFeedback users corroborate the analogy between LiquidFeedback and computer games:



“With my minority positions, I never make it to level 2!”

“I beat the game of LiquidFeedback without losing a life.”

“I worked again through all proposals => Waiting for the final boss enemy”

“My favorite MMORPGs: Eve Online and Liquid-Feedback”*

**TWEETS AND COMMENTS
ABOUT LIQUIDFEEDBACK [1,2,3,4]**

The trend to apply game elements and operation mechanisms to other (non-gaming) contexts is subsumed under the label of “gamification”. At first, this is about working, learning, or consumption environments; if those are digitalized, then elements are often borrowed from computer games. The users shall be motivated to deal more intensively with a topic or product, or motivated to perform certain activities.

As essential characteristics of LiquidFeedback, Björn Swierczek (programmer with the Public Software Group) states transparency and objective measurability of decision-making processes.



Opposed to the proverbial “backrooms”, all decisions are transparent for everyone.«

BJÖRN SWIERCZEK [5]

* *massively multiplayer online role-playing games*

Along comes a direct feedback to actions of a user. And also this is a key element of games: a transparent set of rules which ensure (a) that constant feedback motivates the participant to keep on playing and (b) that objective criteria yield a final result.

Game and reality

One of the most important game elements is the objective of the game, to which everything else is subordinated. Beside the pure power gain, Alexander Morlang, Pirate and member of the Berlin House of Representatives, sees the appetite and will to change the world as “game objective” of any politics.[6]

But games are particularly characterized by people acting in an artificial, symbolic space, detached from factual consequences. The players know of the game's limitations in space and time; they are aware that they could quit the game at any time.

The junction with real activities changes the game entirely. If we apply game elements to other areas of life, the fun may fall by the wayside. This constitutes the ambivalence of gamification: the apparent assumption that there are no real consequences is applied to areas which have indeed an influence on our life.

Alexander Morlang thinks that LiquidFeedback doesn't replace politics: the challenge of LiquidFeedback lies within writing good texts which then emerge as completed propositions.

Insofar the software serves the Pirates as test space: political ideas are “pulled through the Liquid” in form of propositions. At the end of this process, criticism has been incorporated and opposite views and ideas for improvements have been voted on.[7]

The proposals are considered and checked more extensively – and have a greater chance to be approved by the executive board. Thereby, the backdrop is the democratic character of the proposition creation on the one hand and on the other hand the risk minimization of a “shitstorm”, that is another form of feedback particularly spread amongst Pirates. The critics could have easily participated in the “Liquid”.

The political work that is done with LiquidFeedback is a rather traditional form of work, says Alexander Morlang. Until now, it was the task of political advisers. With LiquidFeedback, however, potentially every member may participate.[8]

Political participation

Currently, digital communication in the area of politics is mostly used for marketing purposes. More interesting, though, is the reverse channel: the possibility to participate. The success of the Pirate Party may certainly also be attributed to new forms of political communication. LiquidFeedback is taking up a central position here, since it systematically aims to

ANDREAS LANGE, author of this article, is Director of the Computerspielemuseum, the first European museum dedicated to computer games. Located in Berlin's center it is just 2 tube stations away from Alexanderplatz. The doors are open for everybody from young to old, for Berlin citizens as well as tourists. The exhibition is suitable for English speaking visitors.

The current permanent exhibition “Computer Games. Evolution of a Medium” consists of more than 300 objects, some of them are rare originals. Unusual for a museum, some of the games and art works are playable by the visitors, including the Pong-Machine, the Nimrod game computer from 1951, the PainStation, and a Giant Joystick. Tours by the staff are available as well as offers for groups.

In addition to the permanent exhibition, other events and special exhibitions related to computer games take place to focus on selected topics from time to time. More information on the current program and the museum in general is available at their website:

<http://www.computerspielemuseum.de/>

Computerspielemuseum
Karl-Marx-Allee 93a, 10243 Berlin, Germany



extend the reverse channel to be a democratic medium for co-determination in politics. Herein, Alexander Morlang sees a stimulus to change the previous practice of our party-democracy in regard of transparency and participation possibilities.[9]

Adapting new techniques (including cultural techniques and patterns of behavior) for our democratic principles eventually contributes to their continuity and fits them to the changed perception and living habits. The newest adaption in the political realm consisted probably of the adjustment to the electronic mass media. In the course of this, the politician as a person took a central role due to the telegenic appeal. A possible consequence of the current adaption process to the digital individual media could be that personal attributes of politicians take a back seat in favor of factual and grassroots-based shaping of politics.

Powerful characters may be born in the digital world of LiquidFeedback, just as in online-games. They gain their power through expertise that is attributed to them by other parti-

cipants and measured by the comments and motions in the system. It is a transparent world whose majority formation process may be objectively followed by every person who knows the rules of the game.

A variation of the above-mentioned tweet might be: "I beat the game of LiquidFeedback, and I gained a better life." Certainly, this is idealistic, but idealism is part of it – in politics as well as gaming.

This text is based on a discussion event at the Berlin Computer Games Museum ("CSM Insider Talk" on February 23, 2012) with Björn Swierczek and Andreas Nitsche, programmers with the Public Software Group e. V., as well as Alexander Morlang, member of the Pirate Party's parliamentary group in the Berlin House of Representatives.

We would like to thank the author Andreas Lange for his permission to translate and publish his article here in English; the article was originally published in German language on March 14, 2012 at <http://www.carta.info/42081/liquidfeedback-gamification-der-politik/>

[1] Original German cite: "Mit meinen Minderheitenmeinungen komme ich nie ins Level 2!", identi.ca user on <http://identi.ca/notice/50309000>

[2] Original German cite: "Ich hab LiquidFeedback durchgespielt, ohne ein Leben zu verlieren." Twitter user 'webrebell' on <https://twitter.com/#!/webrebell/status/141108158939672576>

[3] Original German cite: "Habe mal wieder alle Anträge durchgearbeitet => Warten auf den Endgegner", Twitter user 'flachshaar' on <http://twitoaster.com/country-de/flachshaar/habe-mal-wieder-alle-antrage-durchgearbeitet-warten-auf-den-endgegner-lqfb/>

[4] Original German cite: "Meine liebsten MMORPG: Eve Online und LiquidFeedback", Jens Ohlig (Twitter user 'johl') on <https://twitter.com/#!/johl/status/164730558348410881>

[5] Original German cite: *“Anders als in den sprichwörtlichen Hinterzimmern sind alle Entscheidungsprozesse für alle nachvollziehbar.”*

Björn Swierczek, <http://www.carta.info/42081/liquidfeedback-gamification-der-politik/>

[6] Original German text: *“Eines der wichtigsten Spielelemente ist das Spielziel, dem alles andere untergeordnet ist. Jenseits des reinen Machtgewinns sieht Alexander Morlang, Berliner Abgeordneter der Piratenpartei, ‘die Lust und den Willen, die Welt zu verändern’ als ‘Spielziel’ jeder Politik.”* <http://www.carta.info/42081/liquidfeedback-gamification-der-politik/>

[7] Original German text: *“LiquidFeedback ersetzt Politik nicht, findet Alexander Morlang. Die Herausforderung von LiquidFeedback bestünde darin, gute Texte zu schreiben, die dann bestenfalls als fertige Anträge herauskommen. Insofern dient die Software den Piraten als Testraum: Politische Ideen werden in Form von Anträgen ‘durch das Liquid geschleift’. Am Ende dieses Prozesses sind Kritikpunkte eingebracht, Gegenmeinungen und Verbesserungsvorschläge abgestimmt.”*

<http://www.carta.info/42081/liquidfeedback-gamification-der-politik/>

[8] Original German text: *“Die eigentliche politische Arbeit, die über LiquidFeedback erledigt würde, sei eine recht traditionelle Form, sagt Alexander Morlang. Bisher seien es die Aufgaben von Referenten gewesen, mit LiquidFeedback hingegen kann sich potenziell jedes Mitglied einbringen.”* <http://www.carta.info/42081/liquidfeedback-gamification-der-politik/>

[9] Original German text: *“Digitale Kommunikation im Politikbereich wird zurzeit vor allem für Marketingzwecke eingesetzt, interessanter ist aber der Rückkanal, die Möglichkeit zur Teilhabe. Der Erfolg der Piratenpartei ist sicher auch auf neue Wege politischer Kommunikation zurückzuführen. LiquidFeedback nimmt dabei einen zentralen Platz ein, da es systematisch versucht, den Rückkanal zu einem demokratischen Mitgestaltungsmedium zu erweitern. Alexander Morlang sieht darin einen Impuls zur Veränderung der bisherigen Praxis unserer Parteiendemokratie im Hinblick auf Transparenz und Teilhabemöglichkeiten.”*

<http://www.carta.info/42081/liquidfeedback-gamification-der-politik/>

GAME OF DEMOCRACY

by Jan Behrens, Berlin, October 7, 2014

As discussed in the previous article “Liquid-Feedback: Gamification of Politics?”, Liquid-Feedback has been compared with online games. While we, the developers, didn't intend to incorporate game elements in LiquidFeedback, certain features of the software turned out to give people a game-like incentive to participate. While such incentives obviously can have positive effects on the motivation, thinking of democracy as a game (and of voters as players) should rather be seen ambivalent since in a game we may experiment with different strategies, including very risky ones, as there is no effect on the real world. As explained in the previous article, the effects are normally bound to the game. However, when applying game strategies to real-world politics, the outcome may rule about people's lives.

Whether we like game aspects being part of democratic decision-making or not, research in social choice theory and game theory has shown that decision-making can be described as a game. This article shall provide a short in-

roduction to the theoretic aspects behind it, and it shall explain how those aspects have influenced the design of LiquidFeedback.

Gedankenexperiment

As an introduction, let's begin with a gedankenexperiment (thought experiment). Imagine we have an organization planning their annual member meeting. Because the meeting lasts a whole day, a meal shall be served for lunch. The organization has an executive board deciding on such issues. This board consists of 3 people, each of them representing a different wing of the organization. The members of the executive board need a majority (i.e. 2 people) to make a decision. Let's further assume that we have 1 week left until the food supplies must be ordered. Any decision on the menu can also be changed (requiring 2 members of the board), as long as it's done before the deadline. Finally we assume, that the status quo is to serve meat, since that's what has been served last year.

<p>ALICE prefers</p> <p>1. meat over</p> <p>2. vegetarian over</p> <p>3. fish</p>	<p>BOB prefers</p> <p>1. vegetarian over</p> <p>2. fish over</p> <p>3. meat</p>	<p>CHRIS prefers</p> <p>1. fish over</p> <p>2. meat over</p> <p>3. vegetarian</p>
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Figure 1: Preference voting ballots of Alice, Bob, and Chris

The members of the executive board get the following recommendations from the members of their wing: (See Figure 1)

Eventually, “vegetarian” is the new status quo, in which case Alice and Chris may team up in order to change the plan to serve meat (again).

This example is the most simple example for a so-called Condorcet's paradox and has also been given as an example in our book [PLF, p.95].

As easily seen, a cycle may arise: (See Figure 2)

This cycle could be endless, unless there is a deadline like in our thought experiment.

Assuming the status quo is “meat”, then it would be clever of Bob and Chris to team up in order to change the plan to serve fish since both Bob and Chris will please their wing by such a decision.

After such a decision has been made, “fish” will be the new status quo. In this case, however, it would be clever of Alice and Bob to unite against Chris in order to change the plan to serve vegetarian food as both their wings prefer vegetarian food over fish.

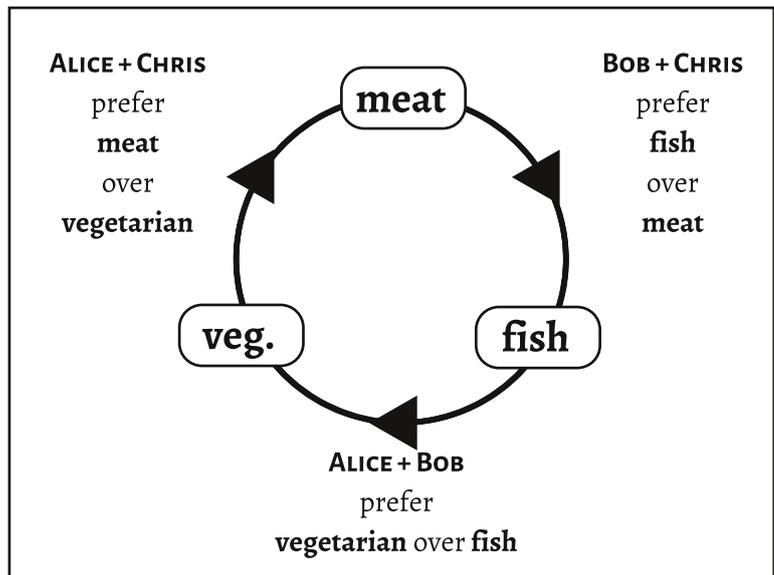


Figure 2: Collective preference cycle

Winner of the game

The outcome of our thought experiment depends on the last approved motion prior the deadline. Therefore, the following factors may influence the success of the participants:

 *the speed of the participants in teaming up and overthrowing a decision,*

 *the willingness to trade a medium result for a better result with the risk to lose it all,*

 *long-term considerations regarding collaboration in future decisions,*

 *the ability to make a good guess regarding the other participant's preferences and their skills in the game.*

Even if our initial goal was a democratic decision of the executive board, in the end we face a system which rather reminds us of games: speed, readiness to assume risk, teams, and the ability to assess other participants' abilities and their preferences and knowledge.

One might assume that this effect only exists when there is a tie between three groups of exactly the same size. But as the following example will show, it is a more general effect:

(See Figure 3)

Also in this case an endless cycle is possible:

(See Figure 4)

GAME SPEED AT STOCK MARKETS

Milliseconds decide about gain or loss

The implications of game theory and related considerations do not only affect democracy, but also e.g. the stock market. Nowadays a huge amount of financial transactions take place at high speed markets. In such market places everything is about speed. To make the 'game' fair, the participants' computers are connected with network cables of exactly the same length to the computer of the stock market. Doing so, no participant gains an advantage of having a computer located closer to the stock markets' computer.

 *Everyone routes through the same set of switches, the same core network, the same local area network, and then [the data] is delivered at the same speed to each colocation customer's top of rack, wherever they are located – no one has an advantage« [IEEE]*

DON BROOK

GLOBAL HEAD OF INFRASTRUCTURE

NEW YORK STOCK EXCHANGE

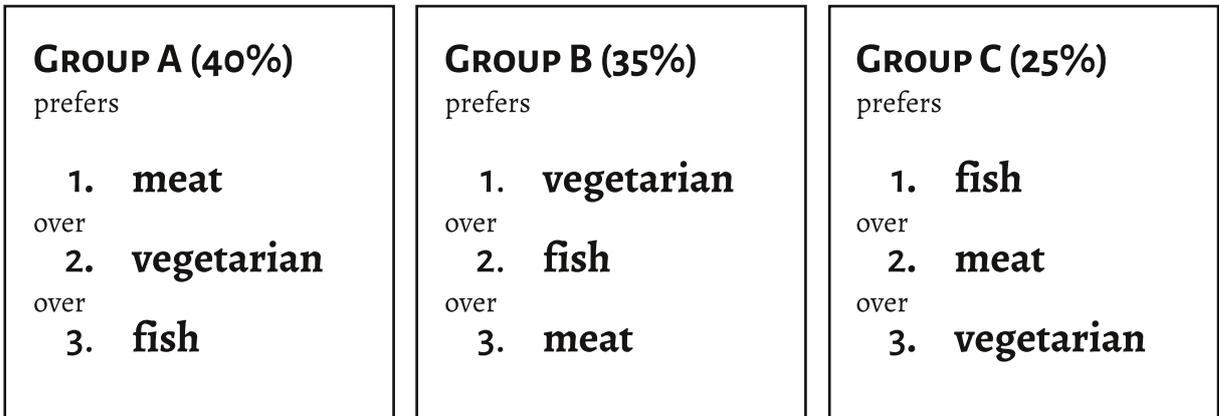


Figure 3: Preference voting ballots of three groups of different size

Therefore, even if the decision is not made by a small number of people and there is no tie (all groups have different sizes), such a cycle may still arise.

Of course, this model is still a simplification of real-world processes, as not every member will recklessly undo a previously made decision just to optimize their personal outcome. Nevertheless, the occurrence of this effect is possible in every system where a majority of eligible voters may overthrow a decision.*

* Even worse: it has been shown that, under certain circumstances, if the number of voting options grows to infinity, the probability that all voting options can be cycled through majority decisions tends towards 100%. For further reading we suggest [McKelvey], [Bell], and [Schofield]. See also [Chaos].

A better approach

In a fair process for decision-making, we do not want the outcome of decision processes to be dependent on deals and tactics; instead we aim for a decision-making process that is based purely on people's opinions and their quantified numbers. Therefore, we decided to

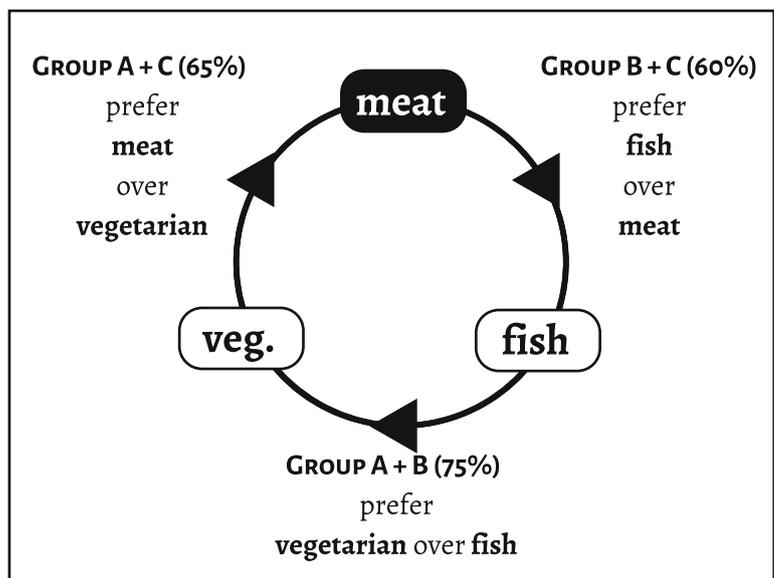


Figure 4: Cycle still exists but is solvable by ignoring the smallest majority

include a preferential voting system when creating LiquidFeedback. Here, voters may state all their preferences, and then, when the voting is closed, all those preferences are counted at once using a preferential voting scheme. In case of LiquidFeedback, the Schulze method is used for that purpose.

Given the example in Figures 3 and 4 and using the Schulze method to count the winner, the majority (B+C=60%) preferring “fish” to “meat” is smallest, thus ignored, and “meat” is declared winner since this result is most stable (the smallest majority is ignored).

This approach doesn't force people to make tactical decisions when casting their ballots. While the voter is not forced to act strategically, it is still possible to cast dishonest prefer-

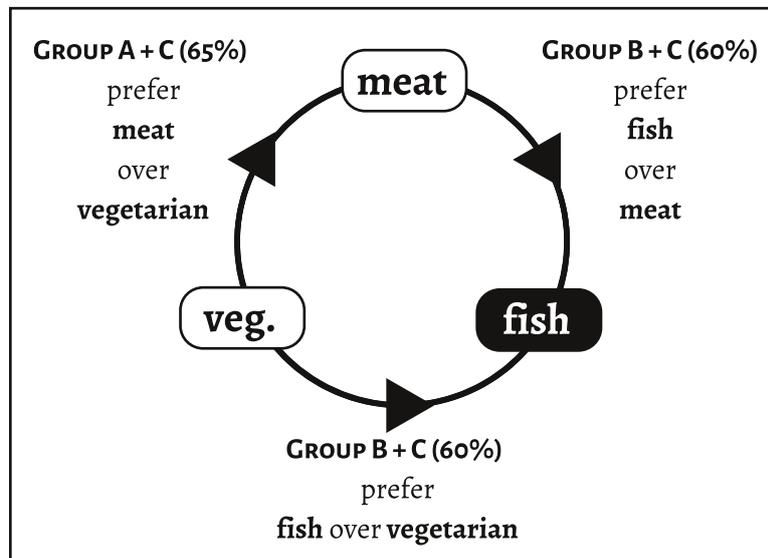


Figure 6: No cycle and different result

ences to overtrump another group and thus increase the individual satisfaction with the results.

(See Figure 5)

<p>GROUP A (40%) prefers</p> <ol style="list-style-type: none"> meat <p>over</p> <ol style="list-style-type: none"> vegetarian <p>over</p> <ol style="list-style-type: none"> fish 	<p>GROUP B (35%) prefers</p> <ol style="list-style-type: none"> <u>fish</u> (dishonest) <p>over</p> <ol style="list-style-type: none"> <u>vegetarian</u> <p>over</p> <ol style="list-style-type: none"> meat 	<p>GROUP C (25%) prefers</p> <ol style="list-style-type: none"> fish <p>over</p> <ol style="list-style-type: none"> meat <p>over</p> <ol style="list-style-type: none"> vegetarian
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Figure 5: The same groups, but group B is using a strategic maneuver by giving dishonest preferences

<p>GROUP A (40%) prefers</p> <ol style="list-style-type: none"> 1. meat <p>over</p> <ol style="list-style-type: none"> 2. vegetarian <p>over</p> <ol style="list-style-type: none"> 3. fish 	<p>GROUP B (35%) prefers</p> <ol style="list-style-type: none"> 1. <u>fish</u> (dishonest) <p>over</p> <ol style="list-style-type: none"> 2. <u>vegetarian</u> <p>over</p> <ol style="list-style-type: none"> 3. meat 	<p>GROUP C (25%) prefers</p> <ol style="list-style-type: none"> 1. fish <p>over</p> <ol style="list-style-type: none"> 2. <u>vegetarian</u> <p>over (change of opinion)</p> <ol style="list-style-type: none"> 3. <u>meat</u>
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Figure 7: The same strategic maneuver but group C has changed their opinion

In this case, there is a majority (B+C=60%) that (according to the cast ballots) prefers “fish” to any other option. “Fish” would win in this case, which is better than “meat” for group B. Thus, group B gained an advantage by casting their ballot dishonestly.

and “vegetarian” over “fish” (A+B=75%). But group B lied regarding their preferences, and thus “fish” is chosen as winner again, even if 75% would have preferred “vegetarian” food in the second year.

(See Figure 8)

(See Figure 6)

Such strategic maneuvers come with a risk: Let’s assume group C will change their opinion in the following year, but group B keeps doing their trick, not knowing about the change of opinions in group C:

(See Figure 7)

In this case, the tactical move of group B backfires to them: it causes “fish” to win also in the following year, even if there were real majorities to choose “vegetarian” over “meat” (B+C=60%)

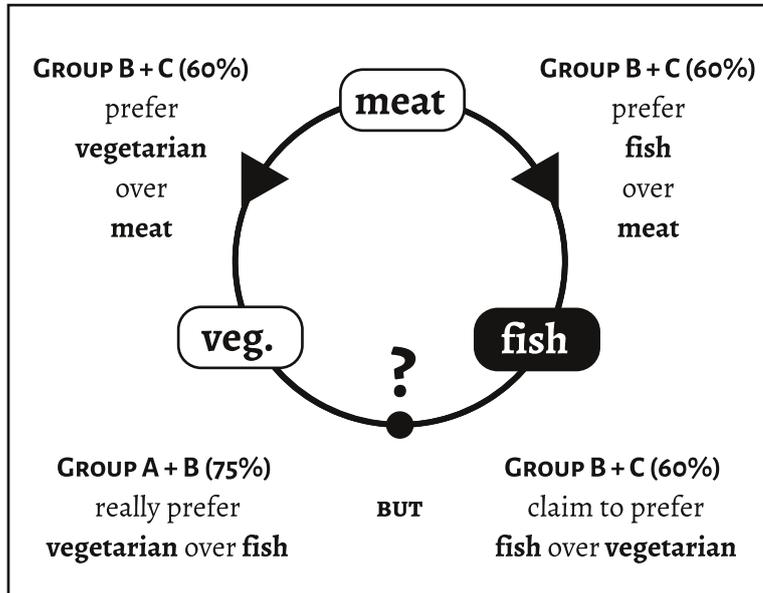


Figure 8: Giving dishonest preferences causing undesired consequences for group B: fish wins while vegetarian food would have won if group B gave honest preferences

The Gibbard–Satterthwaite theorem

In the year 1973 it has been proven with the Gibbard-Satterthwaite theorem that all preferential voting systems are prone to tactical voting.[Gibbard] Even though it's not possible to completely eliminate tactical voting, we tried to minimize tactical advantages in LiquidFeedback. By hiding the preferential ballots until the voting is closed, the voters' behavior is less predictable. Therefore, voting in a tactical manner becomes more risky.

The combination of a preferential voting system along with hiding the ballots until voting is closed, aims to make the voting procedure more fair and less game-like – at least to an extent that is possible given the constraints of the Gibbard–Satterthwaite theorem.

It should be noted that hiding the ballots is a (potential) threat to the fairness of the process: voters who gain prior access to the cast ballots of other voters (e. g. through administrator access or hacking) could use this knowledge to cast a strategically optimized ballot. This undermines the principle that every voter is treated equal, and it may not be noticeable by the participants.

Fortunately, this is only a limited problem. First of all, knowledge of the cast ballots only yields an advantage if there is a Condorcet's paradox, and it may only be used to favor those candidates that are part of this paradox (i. e. an attacker cannot cause an arbitrary motion to win). Secondly, the attacker either has a small voting weight compared to the other parti-

cipants or would need to share the secret knowledge in which case detection of the manipulation is possible.

In order to fix this loophole, we may be tempted to disclose the cast ballots as soon as they are submitted to the system, hoping that this ensures equal chances for every participant. The result, however, would – in the best case – be a situation where some of the voters cast their ballot during the last seconds before the poll is closed, based on the ballots of other voters. This would privilege those voters who are able to sit patiently in front of their computer while the poll ends (a bit like people who give their bid on eBay during the last seconds of an auction). In the worst case, a huge number of voters would create agents (bots) that do the voting in the last second, privileging those with the best internet connection, which is certainly not democratic at all. A game solely played by bots may be academically interesting, but it is certainly nothing to base our democracy on. It should be noted that using a non-preferential voting system like approval voting, score voting, or even plurality voting can't solve the problem either. Also in those cases, depending on who teams up with whom, the system may lead to a different voting result.

Cryptographic protocols could be used to prevent administrators from peeking into ballots prematurely. But also those methods may be circumvented by attackers (e. g. using malware or backdoors in soft- and hardware). We thus have to accept that the Gibbard–Satterthwaite theorem can influence the fairness of electronic voting – fortunately only to a limited extent.

Once upon a time there was a kingdom full of people who were mainly interested in their own advantage. Each year, all the people of the kingdom would meet in an assembly at the Plaza del Pueblo, located in the center of the kingdom's villages. Unfortunately, this place was far away from the King's Court and the king was only growing older and older. So he asked his wisest advisers how his people could be convinced to move the place of the yearly assembly closer to the King's Court. His mathematician came up with a clever plan, suggesting that the king introduce DEMOCRACY into his kingdom, but reserve the RIGHT TO ASK THE QUESTIONS. The king was skeptical at first, unsure how he will benefit from such a plan, but the mathematician explained how such a plan will, in fact, get the king exactly what he wants. All the king must do is ask his people three simple questions, upon which they will vote. Take a look at the following figures showing the mathematician's clever plan and the outcome of the decision about where the assembly shall take place.

FIGURE 9: The Status Quo

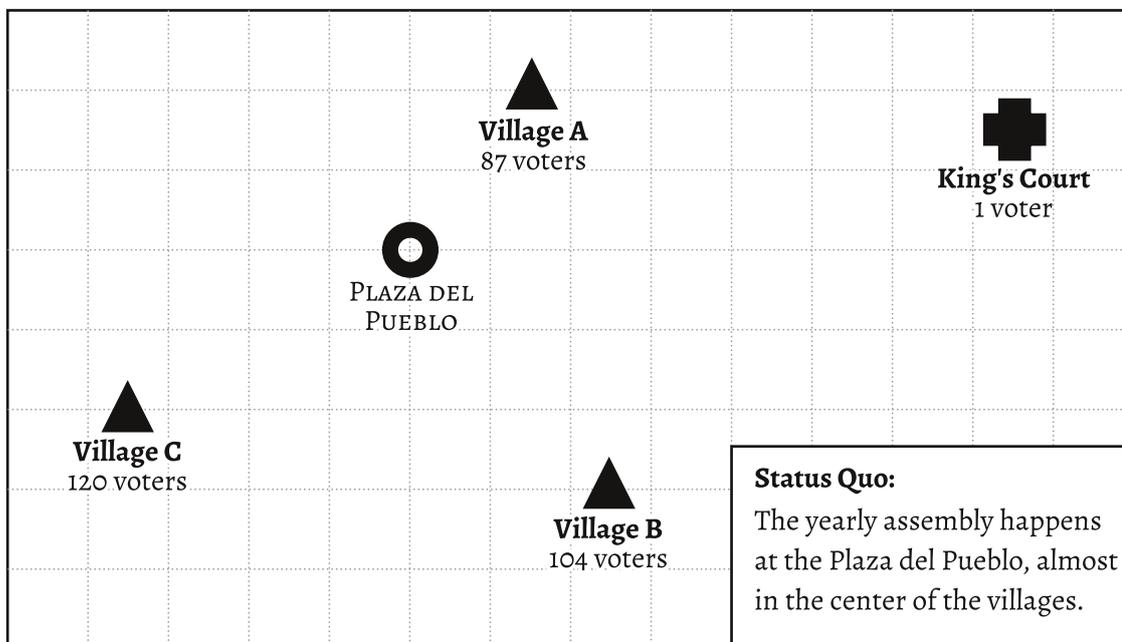


FIGURE 10: The king asked the first question and all people seeing an advantage voted YES and only those having a disadvantage voted NO:

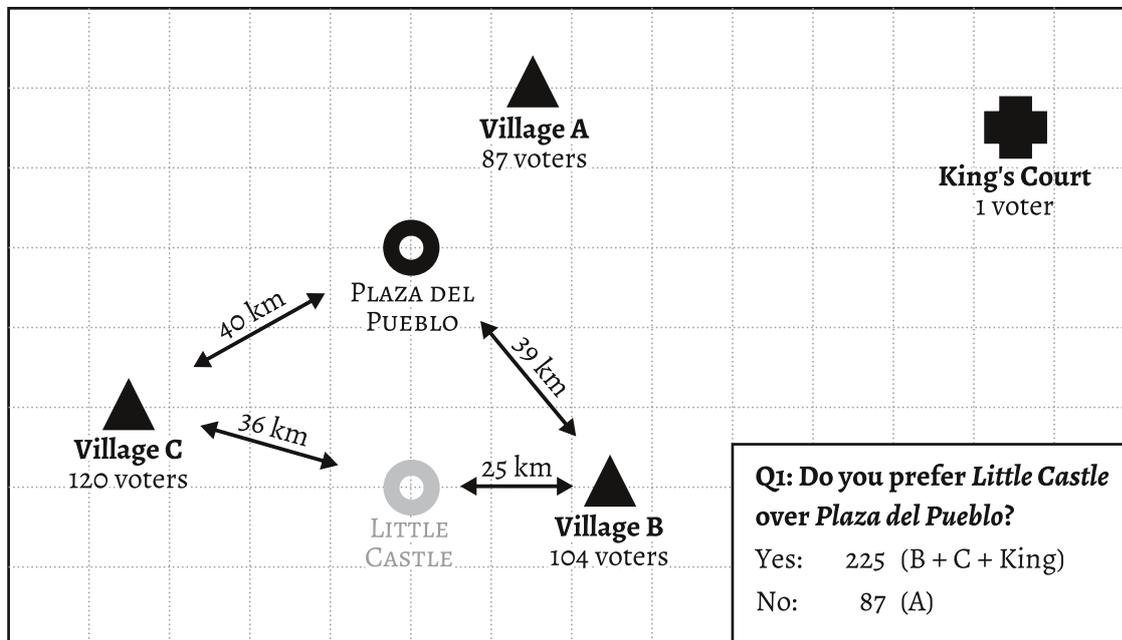


FIGURE 11: A majority wanted to change the location from Plaza del Pueblo to LITTLE CASTLE. So it was decided. But the king asked another question, and something similar happened:

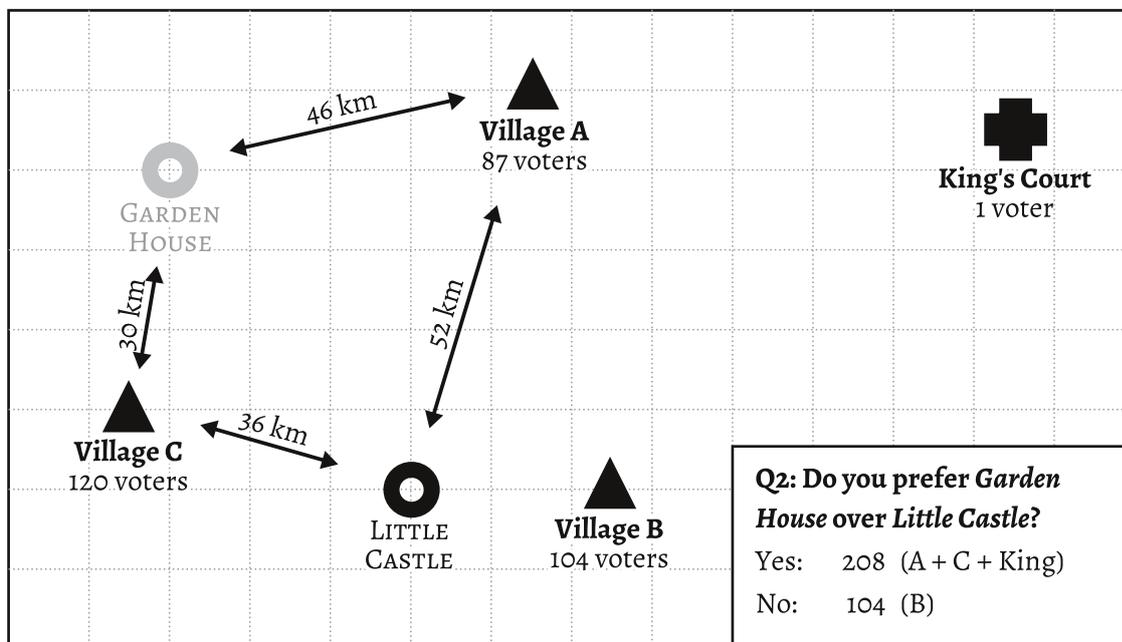


FIGURE 12: A majority voted for GARDEN HOUSE. So it was decided. But the mathematician's plan was not completed yet, so the king asked the last of the three questions:

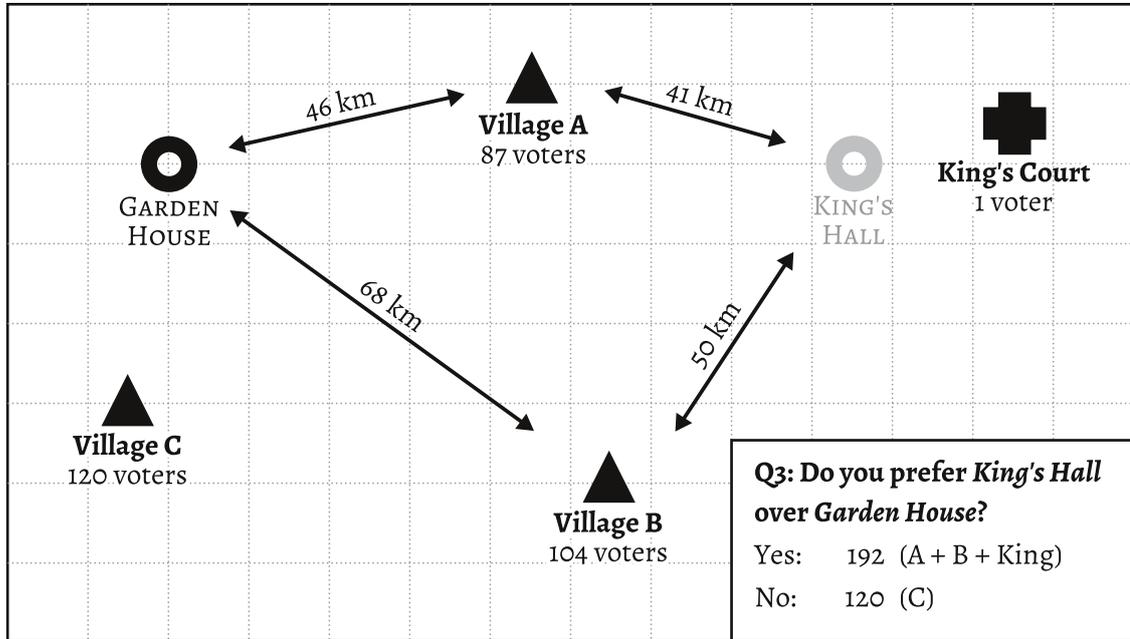
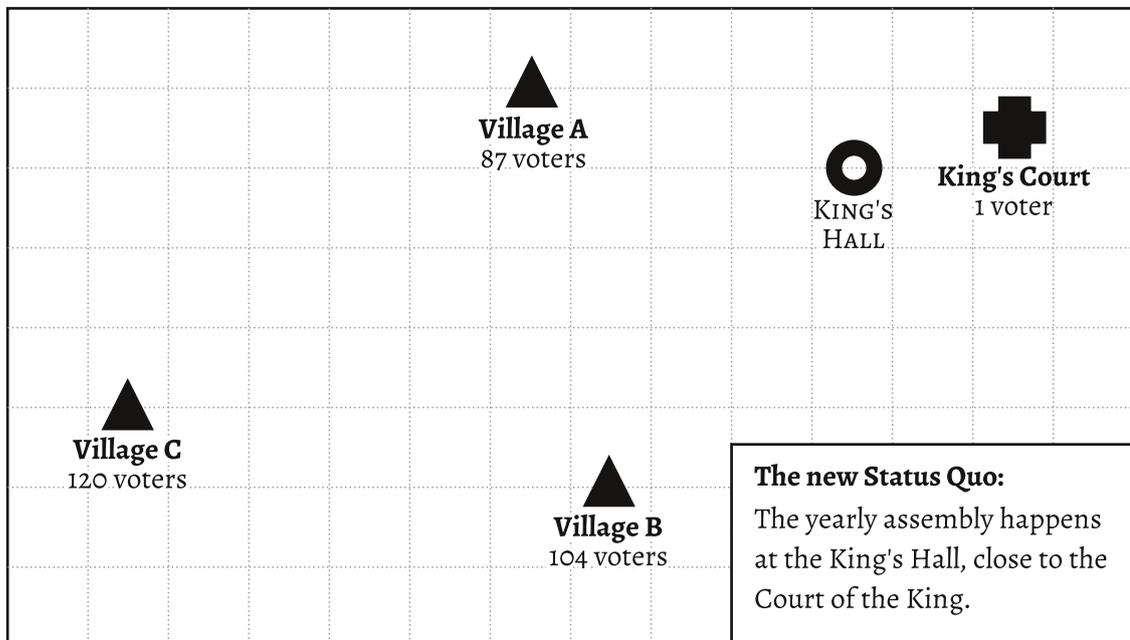


FIGURE 13: The king declared KING'S HALL winner. It was preferred over Garden House, which was preferred over Little Castle, which was preferred over Plaza del Pueblo – each by a majority, argued the king.



The quest for the question

Decision-making is not just about voting: prior voting, either the participants or a request commission or moderator must determine which questions are to be voted on. If this process is not carried out by the participants themselves but by a moderator or request commission, then this moderator or request commission may have a huge influence on the outcome of the decision-making process:

(See Figure 9 through 13)

A moderator who has complete control over the agenda (and who has complete knowledge about the participants' preferences) can possibly manipulate a decision-making process in such way that any outcome is possible. (For further references see [Schofield, p.196].)

LiquidFeedback, however, doesn't rely on a request commission or moderator but utilizes a collective moderation process that consists of a structured discussion where all participants have equal rights and decide on which proposals shall finally be eligible for the final voting procedure. Technically speaking, this procedure is also a (continuous) voting process. Therefore, our previous considerations regarding tactical voting apply to the discussion process as well.

Due to its purpose, it will not be possible to hide users' feedback during the discussion process: participants must be able to see how many other people support their proposals and what change requests those people post, and

they must also be able to see how many people support those change requests. Without such quantification processes, a nondiscriminatory discussion process would not be possible, since noisy minorities would gain an unfair advantage.[PLF, p.84]

Out of this necessity to publish any quantified data during discussion (and with regard to the Gibbard–Satterthwaite theorem), LiquidFeedback is not designed to express preferences amongst competing proposals (called “initiatives”) during discussion. Instead, it is only possible to express support for an initiative without indicating the preference during discussion.

In LiquidFeedback, those initiatives become eligible for final voting which pass a certain supporter quorum. Therefore, the support of initiatives effectively has an influence on the outcome of the final voting, and our previous considerations regarding tactical maneuvers and bots apply during the discussion process as well. The problem, however, is limited because we usually do not demand a majority but only a smaller quorum (e.g. 10%) during discussion. That means, a minority (of e.g. 10%) supporting a group of initiatives will ensure that these initiatives get into final voting regardless of any other participants' tactical maneuvers.

Open ballot vs. secret ballot

In case of LiquidFeedback, also another factor lessens the problem of tactical maneuvers: LiquidFeedback aims only for those application

areas where a recorded vote is intended.[PLF, p.56] Beside dealing with the Wahlcomputer-problem (the problem that electronic voting can't be secret and verifiable at the same time), this brings another advantage about: By connecting every cast ballot or granted supporter vote with the respective participant and by publishing this data, the participants' behavior doesn't just have an impact on the outcome of the voting process, but participants will have to take responsibility for their actions, including those actions where a tactical decision was being made. This has both an effect during discussion as well as during final voting. While it is arguable whether such disclosure really reduces the usage of tactical voting, it is a fact that in a truly secret ballot any strategic behavior can't be traced back to the player, which in turn might seduce participants to apply risky and/or unfair strategies in order to gain an unfair advantage.

Conclusion

Decision-making always incorporates elements of gaming, and advantages through tactical behavior may never be outruled completely. Nevertheless, we should design decision-making processes in such way that the results depend mostly on the participants' views and not on strategic capabilities. While LiquidFeedback contains several elements that may remind of online games, it was designed thoroughly to restrain participants from taking personal advantage through strategic behavior.

Democracy may be seen as a game – or not, but in any case it needs strict rules to stay as fair as possible. Even if in some games it may be entertaining if the “game master” has a huge influence on the course of the game, for democracy this isn't acceptable. Instead, we need a system where everyone is treated equally.

[PLF] Behrens, Kistner, Nitsche, Swierczek: *The Principles of LiquidFeedback*. ISBN 978-3-00-044795-2. Published January 2014 by Interaktive Demokratie e. V., available at <http://principles.liquidfeedback.org/>

[IEEE] David Schneider: *The Microsecond Market*. Published April 30, 2012 on the website of the “IEEE Spectrum Magazine” at <http://spectrum.ieee.org/computing/networks/the-microsecond-market>

[McKelvey] Richard D. McKelvey: *Intransitivities in Multidimensional Voting Models and Some Implications for Agenda Control*. In “*Journal of Economic Theory*, Volume 12, Issue 3” (1976), pp. 472-482. Published by Elsevier.

[Bell] Colin E. Bell: *What happens when majority rule breaks down? : Some Probability Calculations*. In “*Public Choice*, Volume 33, Issue 2” (1978), pp. 121-126. Published by Springer.

[Schofield] Norman Schofield, Bernard Grofman, Scott L. Feld: *The Core and the Stability of Group Choice in Spatial Voting Games*. In the “*American Political Science Review*, Vol. 82, No. 1” (March 1988), pp. 195–211. Published by American Political Science Association (Cambridge University Press).

[Chaos] Jan Behrens: *How Chaos Protected the Status Quo (more than we intended to)*. In “*The Liquid Democracy Journal on electronic participation, collective moderation, and voting systems*, Issue 2” (2014-10-07). ISSN 2198-9532. Published by Interaktive Demokratie e. V.

[Gibbard] Allan Gibbard: *Manipulation of Voting Schemes: A General Result*. In “*Econometrica*, Vol. 41, No. 4” (July 1973), pp. 587–601. Published by the Econometric Society (Wiley-Blackwell).

DIVIDING THE PIE - VISUALIZING QUANTITIES AND QUALITIES OF MAJORITIES IN PIE CHARTS

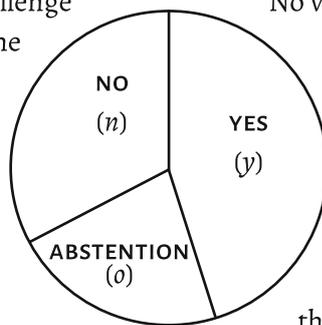
by Björn Swierczek, Berlin, October 7, 2014

When designing electronic participation systems, one minor but important challenge is to not just count votes and show the result in form of numbers but to also facilitate an appropriate, intuitively understandable graphical representation for majorities (and minorities) who voted on an issue.

The easy case: simple majorities and yes/no votings

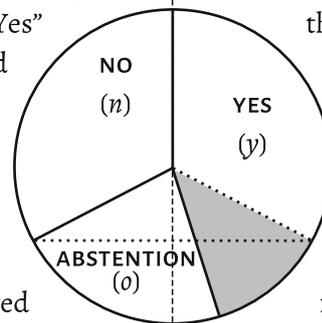
The results of simple yes/no votings on candidates or proposals usually consist of only 3 numbers to visualize: the count of “Yes” votes, the count of “No” votes, and the count of “Abstention” votes. The most interesting facts that should be instantaneously visible by looking at a graphical representation are:

1. Is the candidate/proposal approved or disapproved?



2. How big is the difference between Yes and No votes?

3. How is the relation between Yes/No votes and abstentions? In particular: Is there an absolute majority in favor of the candidate/proposal (i.e. if abstentions were counted as “No”, the candidate/proposal would still win), or is there an absolute majority against the candidate/proposal (i.e. if abstentions were counted as “Yes”, the candidate/proposal would still lose the poll)?



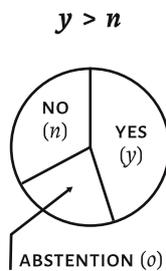
Pie charts allow to immediately recognize the answer to the above stated questions. When, for example, the parts of a pie chart for a voting result are drawn in the sequence 1. Yes, 2. Abstention, 3. No (starting and ending at the top of the circle), it can easily fulfill all three requirements stated before: it is possible to recognize whether the candidate or pro-

Figure 1 (top): A simple majority / Figure 2: Difference between Yes and No

MAJORITIES I

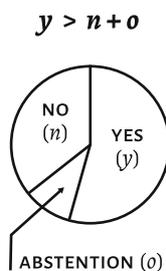
Simple majority

The most commonly required majority in democratic decision-making: If there are more “yes” than “no” votes (independently of the abstentions), then a proposal reached a “simple majority”.



Absolute majority

A more strict variant: the “yes” count needs to be greater than the sum of abstention and “no” votes. In other words: More than half of all valid votes need to be “yes”.



Blocking majority

If an absolute majority is against a proposal, we have a blocking majority: even if all abstentions were counted as “yes”, there would still be an (absolute) majority against the proposal or candidate. In case of supermajority requirements, there can also be a blocking minority (see Figure 5).

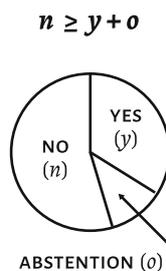


Figure 3: Visual appearance of simple and absolute majorities as well as blocking majorities

posals got a simple majority (see Figures 1 and 3), it can easily be seen how big the difference between Yes and No is (see Figure 2), and the relation between abstentions, Yes, and No votes as well as any existing absolute majorities are visible too.

Preferential voting

As already shown in the article “Game of Democracy”[GoD] in this issue of the journal, simple yes/no votings are no suitable means to create a truly democratic process (see also pages 18 through 20). Therefore, when talking about visualization of vote counts, we need to consider preferential voting as well.

In case of preferential voting, it may happen that there is no majority which favors a particular proposal most, but there is a majority which favors a group of proposals to the status quo. There may or may not be a winner which received a simple or absolute majority of first preference votes. In order to display this information, we can split the “Yes” section of a pie chart into two sub-sections: “Yes, first preference” and “Yes, alternative vote”.

Since there are several competing proposals in a preferential voting, such pie charts could be rendered for each competing proposal. Our experiences with LiquidFeedback 1.x and 2.x, however, taught us that displaying the approval rate of several competing alternatives may cause confusion to the user since not the approval rates but the preferences determine which proposal wins if there are multiple eligible winners.[PLF, p.106-108] While each pro-

positional may have its own pie chart, we recommend to not display them concurrently (if applicable to the medium) but to show visualized preference counts instead. In LiquidFeedback 3.0, these preference counts are displayed as bar graphs to be able to distinguish them easily from the pie chart that is displaying the “Yes, first preference”, “Yes, alternative vote”, “Abstention”, and “No” counts.

Supermajorities

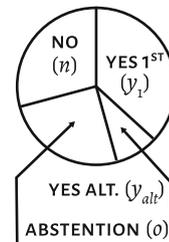
We covered only simple majorities yet. But in some situations, decisions require a supermajority, e.g. a $\frac{2}{3}$ or $\frac{3}{4}$ majority. In these cases, the pie chart as described before loses its ability to fulfill the first requirement (showing if the candidate or proposal was accepted) because it is not easy for a human to visually determine if

MAJORITIES II (PREFERENCES)

Simple first-preference majority

$$y_1 > n$$

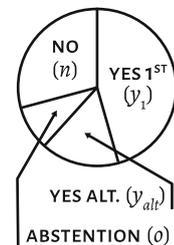
When using preferential voting, the count of votes where a candidate or a proposal was marked as first preference may be of special interest. Similar to the “simple majority”, we may define a “simple first-preference majority”.



Extended first-preference majority

$$y_1 > n + o$$

Whether the first-preference vote count is greater than the sum of “no” votes and abstentions, can be visually determined by looking at the “yes, alternative” section (y_{alt}). If that section is predominantly on the left, then $y_1 > n + o$. Such an “extended first-preference majority” implies both the absolute majority (see Figure 3) and the simple first-preference majority (see above).



Absolute first-preference majority

$$y_1 > y_{alt} + n + o$$

Similar to the absolute majority as displayed in Figure 3, we can define an “absolute first preference-majority” where the number of first-preference votes must be greater than the sum of alternative votes, abstentions, and “no” votes.

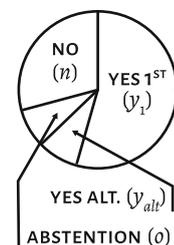


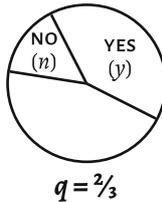
Figure 4: Further qualities of majorities when considering first-preference votes

MAJORITIES III (SUPERMAJORITIES)

Supermajority

$$y/(y+n) \geq q$$

The ratio of “Yes” votes reaches a quorum q (that is higher than 50%, usually $q = 2/3$).

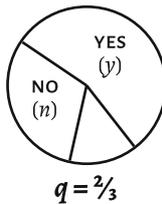


(Non-super) majority

$$y > n$$

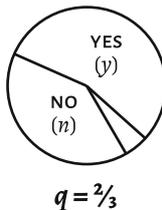
$$y/(y+n) < q$$

An absolute majority doesn't need to be a supermajority and vice-versa. Here, a $2/3$ quorum is failed.



Blocking minority $n/(y+n+o) > 1-q$

A minority greater than $(1-q) \cdot (y+n+o)$ may block any decision.



a $2/3$ majority has been reached. The same holds also for a $3/4$ majority where a 90° angle could only be used as reference if the number of abstentions is zero.

To solve this problem, we introduced the feature of “supermajority pie rotation” in Liquid-Feedback 3.0. Using the supermajority pie rotation formula (see Figure 6) it is possible to rotate the display of a pie chart in such a way, that the lower angles of the Yes and No section are comparable again. If the left (No) part does not reach lower than the right (Yes) part, then the candidate or proposal has reached the supermajority. Otherwise, the proposal is rejected. If the “No” part furthermore reaches into the right side, then a “blocking minority” exists: even if all abstentions were approvals, the candidate may still not win.

[GoD] Jan Behrens: *Game of Democracy*. In *The Liquid Democracy Journal on electronic participation, collective moderation, and voting systems, Issue 2* (2014-10-07). ISSN 2198-9532.

Published by Interaktive Demokratie e. V.

[PLF] Behrens, Kistner, Nitsche, Swierczek: *The Principles of LiquidFeedback*. ISBN 978-3-00-044795-2. Published January 2014 by Interaktive Demokratie e. V., available at <http://principles.liquidfeedback.org/>

$$\frac{\alpha_{\text{pie}}}{360^\circ} = \min \left(\frac{n}{y+n+o} \cdot \frac{\frac{1}{q}-1}{2}, \frac{1-\frac{n}{y+n+o}}{2}, \max \left(\frac{7}{12} - \frac{n}{y+n+o}, 0 \right) \right)$$

Figure 5 (top): Supermajorities / Figure 6: The formula to calculate the pie rotation in case of supermajorities (q is the required supermajority, and $7/12$ is an arbitrary value $> 1/2$ but $\approx 1/2$ to keep the “no” block mostly left)

HOW CHAOS PROTECTED THE STATUS QUO (MORE THAN WE INTENDED TO)

by Jan Behrens, Berlin, October 7, 2014

On Sunday, April 6, a new version of Liquid-Feedback Core (version 3.0.1) was released, which applied changes to the vote counting process if default settings are selected.[PSG] This article shall give information about the background and reasoning regarding these changes in LiquidFeedback.

The status quo as a special candidate

While it is most “democratic” to treat all voting options in a ballot equally, it is often desired to treat the status quo in a special way.[PLF, p.101] Consider the following example, which is also given in our book [PLF, p.102]:

We have 3 options: A, B, and the status quo (SQ).

49% OF THE VOTERS PREFER B TO A TO SQ.
21% OF THE VOTERS PREFER SQ TO B TO A.
19% OF THE VOTERS PREFER SQ TO A TO B.
11% OF THE VOTERS PREFER A TO SQ TO B.

When compared to SQ, then A has a majority:
60% OF THE VOTERS PREFER A TO SQ.

When compared to SQ, then B has no majority:
51% OF THE VOTERS PREFER SQ TO B.

But there is also a majority which prefers B to A:
70% OF THE VOTERS PREFER B TO A.

If we treat all options equally and use the Schulze method (Schwartz Sequential Dropping) to determine a winner, then B is selected as winner, as the defeat of SQ over B is weakest (51%) and thus eliminated. (The Schulze ranking is: B > A > SQ.)

Such voting rule, where B wins, may be considered counterintuitive though, because only a minority (49%) likes to replace the status quo with B.

Markus Schulze's proposal

Markus Schulze proposes in his draft “A New Monotonic, Clone-Independent, Reversal Symmetric, and Condorcet-Consistent Single-Winner Election Method” [Schulze, p.65-66], May 19, 2014 that the candidate with the best

Schulze rank wins which (a) gains a majority in direct comparison with the status quo and (b) has a better Schulze rank than the status quo. If no such candidate exists, then the status quo wins.

His approach, however, has the following drawback: it may select a candidate as winner which would be replaced by another candidate if the ballot was repeated (and all candidates kept their preferences).[PLF, p.102] Thus, requiring a candidate to have a direct majority when compared to the status quo may yield “unstable” results. Such an unstable result won't cycle (as the current status quo is never replaced with a candidate having a worse Schulze rank), but repeating the ballot with the same voters' preferences may still yield another result, thus changing the status quo multiple times before the result gets stable.

In the above example, applying Markus Schulze's proposal results in candidate A being the winner, because it has the best Schulze rank amongst those candidates which have gained a majority in comparison to the status quo. After selecting candidate A as winner, repeating the ballot will cause B to be winner, because if A is the new status quo, then B has a majority in direct comparison to the status quo (and a better Schulze rank than A).

LiquidFeedback's approach until Core version 3.0.0

In some contexts, changes of the status quo shall be minimized as, for example, major efforts have to be taken to implement an ap-

proved motion. In these cases it is undesired to use a voting system that may create “unstable results” as explained above.

For this reason, LiquidFeedback (Core version 2.x and 3.0.0) provided configuration options to disallow such results. One of those configuration options was named “prohibit reverse beat-paths” and this option forbids a candidate to win if there is a beat-path (including ties) to the status quo.[PLF, p.103] In the example above, this causes candidate A to be ineligible as winner, resulting in the status quo as winner (which is a “stable” result).

Supermajority requirements and slightly changing majorities

The feature of prohibiting reverse beat-paths was also intended to be used in combination with supermajority requirements (e.g. a $\frac{2}{3}$ -majority requirement) to avoid a cycling status quo due to slightly changing majorities. Consider the second example that we also gave in our book [PLF, p.105]:

We have 3 options: A, B, and the status quo (SQ), and a $\frac{2}{3}$ -majority is required to change the status quo.

33% OF THE VOTERS PREFER B TO A TO SQ.
33% OF THE VOTERS PREFER SQ TO B TO A.
34% OF THE VOTERS PREFER A TO SQ TO B.

If we simply require a $\frac{2}{3}$ -majority in a pairwise comparison with the current status quo, then, using the Schulze method, candidate A wins. Subsequent repetitions of the ballot (assuming

honest voter behavior) would not change the situation. However, just 1% of the voters with volatile behavior could cause a cycle of the status quo in subsequent repetitions of the ballot, despite the fact that a $\frac{2}{3}$ -majority is required.

Also here, prohibiting reverse beat-paths from the winner to the status quo would have stabilized the situation by enforcing the current status quo to be winner (since a cycle exists).

Chaos theorems

When introducing the feature of prohibiting a winner with reverse beat-paths to the status quo, we were unfortunately not aware that McKelvey and Bell have shown that, under certain assumptions, the probability of beat-paths from any alternative to any other alternative (including the status quo) tends toward 100%. [McKelvey][Bell] These findings have also been referred to as the “chaos theorems”. [Schofield, p.196] The consequences for LiquidFeedback Core version 2.x or 3.0.0, if used with previous default settings, is that any group able to reach the second quorum (initiative quorum) in an issue might (theoretically) be able to give a serious advantage to the status quo by placing initiatives strategically, particularly also in case of honest voting behavior of the participants.

Disallowing a beat-path from a potential winner to the status quo does not just protect the status quo, but under certain circumstances it enables a minority to enforce the status quo as winner. Therefore, we must conclude that due to the findings of McKelvey the drawbacks of

our approach outweigh the advantages. As we became aware of that, we revised the counting of the preferential voting in LiquidFeedback by marking the feature “prohibit reverse beat-paths” as experimental and disabling it by default,[PSG] causing LiquidFeedback to follow Markus Schulze's recommendations[Schulze, p.65-66] instead.

Necessity of advanced tie-breaking

As a consequence of following Markus Schulze's recommendation here, it is possible that a candidate wins which is neither the status quo nor that candidate with the best Schulze rank. The Schulze method, however, sometimes lacks resolvability in regard of the second, third, etc. Schulze rank: the probability that the candidate gaining the second and the candidate gaining the third Schulze rank are tied doesn't tend toward zero as the number of voters increase, and adding a single ballot to a result doesn't always solve ties between candidates.[Schulze, p.38, reference to example 3]

LiquidFeedback Core until version 3.0.1 resolved ties by simply letting that initiative win that was created first in the system.[PLF, p.101] As using randomness is not an option (due to practical considerations and the necessity of verifiability), this has been a reasonable approach as long as ties are an exception. However, disabling the feature “prohibit reverse beat-paths” and thus allowing initiatives to win that do not gain the first Schulze rank but the second, third, etc. increases the chance that such ties can happen.[PLF, p.100][PLF, 2nd footnote on p.103] Therefore, initiatives

that were created earlier than other initiatives would gain an unfair advantage.

For these reasons, LiquidFeedback Core 3.0.2 implements a new form of tie-breaking that has been proposed by Markus Schulze[Schulze, p.58] and which will be explained in the following article.[Tie]

[PSG] Public Software Group e. V.: Release of LiquidFeedback Core 2.2.6 and Core 3.0.1, April 6, 2014.

<http://dev.liquidfeedback.org/pipermail/announce/2014-April/000029.html>

[PLF] Behrens, Kistner, Nitsche, Swierczek: "The Principles of LiquidFeedback". ISBN 978-3-00-044795-2. Published January 2014 by Interaktive Demokratie e. V., available at <http://principles.liquidfeedback.org/>

[Schulze] Markus Schulze: "A New Monotonic, Clone-Independent, Reversal Symmetric, and Condorcet-Consistent Single-Winner Election Method, draft, May 19, 2014". <http://m-schulze.gmail.de/schulze1.pdf>

[McKelvey] Richard D. McKelvey: Intransitivities in Multidimensional Voting Models and Some Implications for Agenda Control. In "Journal of Economic Theory, Volume 12, Issue 3" (1976), pp. 472-482. Published by Elsevier.

[Bell] Colin E. Bell: What happens when majority rule breaks down? : Some Probability Calculations. In "Public Choice, Volume 33, Issue 2" (1978), pp. 121-126. Published by Springer.

[Schofield] Norman Schofield, Bernard Grofman, Scott L. Feld: The Core and the Stability of Group Choice in Spatial Voting Games". In the "American Political Science Review, Vol. 82, No. 1" (March 1988), pp. 195-211. Published by American Political Science Association (Cambridge University Press).

[Tie] Jan Behrens: Search for a Tie-breaker. In "The Liquid Democracy Journal on electronic participation, collective moderation, and voting systems, Issue 2" (2014-10-07). ISSN 2198-9532. Published by Interaktive Demokratie e. V.

SEARCH FOR A TIE-BREAKER

by Jan Behrens, Berlin, October 7, 2014

LiquidFeedback until Core version 3.0.0 (in its default settings) could only select those initiatives as winner that gained the first Schulze rank. Due to the so-called “chaos theorems” and as explained in the previous article [Chaos], LiquidFeedback’s behavior needed to be refined though. Therefore, since LiquidFeedback Core version 3.0.1, initiatives may also win if they gain the second, third, etc. Schulze rank.

As also explained in the previous article [Chaos], ties between those candidates that gain the second, third, etc. Schulze rank may not only arise in corner cases. As a consequence, the approach to solve ties simply by letting that initiative win which was created first (see [PLF, p.101]) must be considered unfair, because initiatives that were created earlier gain an advantage not only in corner cases.

Starting with LiquidFeedback Core 3.0.2, a new mechanism for breaking ties is implemented that considers the order of creation of initiatives only in corner cases. A full description of

voters	12	6	9	15	21
prefer	A	A	B	C	D
over	B	D	C	D	B
over	C	B	D	A	A
over	D	C	A	B	C

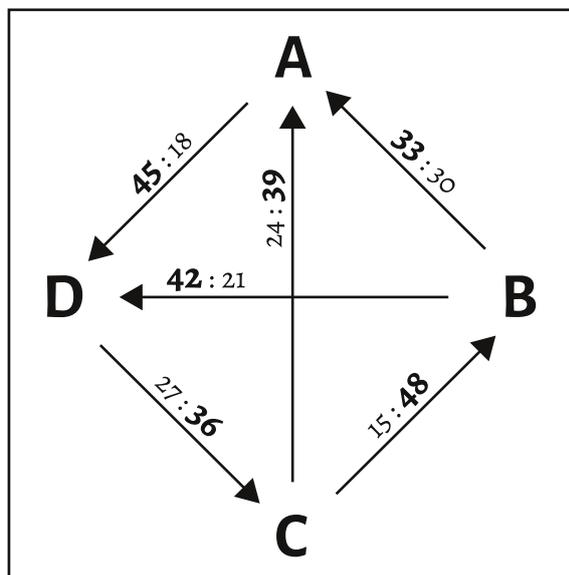


Figure 1: Example given in [Schulze, Example 3] where the Schulze method does not resolve completely: D wins, but A and B are tied in regard of the second rank

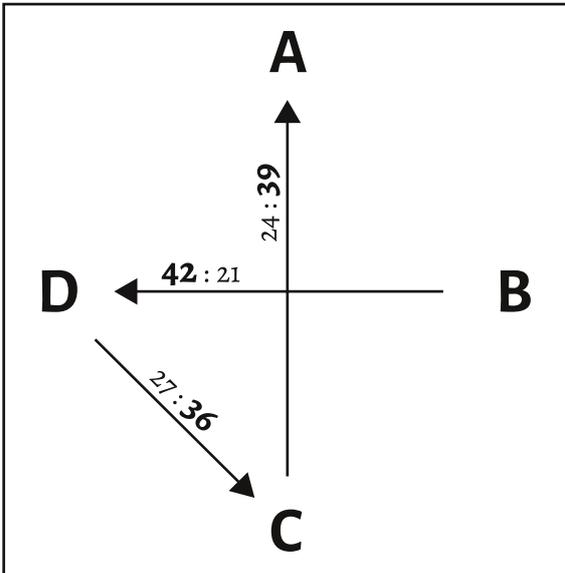


Figure 2: Strongest beat-path from A to B (A beats C, C beats D, D beats B) has a defeat strength of 36, because C's defeat over D is weakest

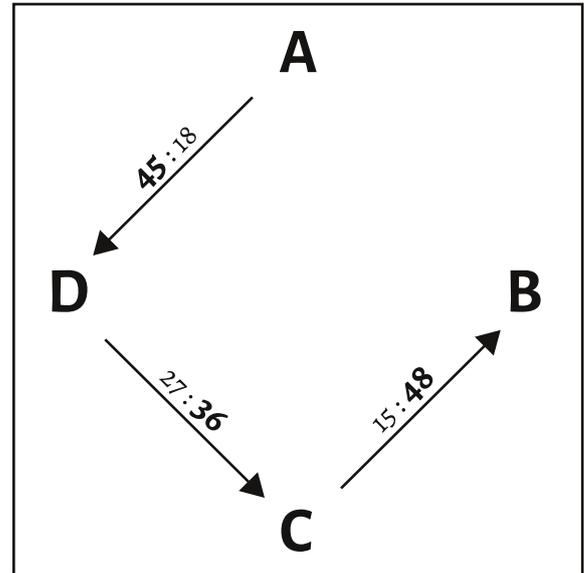


Figure 3: Strongest beat-path from B to A (B beats C, C beats D, D beats A) also has a defeat strength of 36, because C's defeat over D is weakest

the algorithm is available in [Schulze, chapter 5, Tie-Breaking]. LiquidFeedback, however, uses a slightly modified version: the “Tie-Breaking Ranking of the Candidates” (TBRC), which is part of Markus Schulze's algorithm, is performed using the initiative creation time instead of picking random ballots. (Picking random ballots electronically would not be verifiable by the voters.)

A short introduction to the algorithm is given below.

Tie-breaking by forbidding shared links

The Schulze method measures the weakest link in the strongest path from one candidate to another candidate. This weakest link determ-

ines the strength of the defeat of one candidate over the other. It may happen that the strongest path from candidate A to candidate B shares the same weakest link with the strongest path from candidate B to candidate A. While this seems paradoxical at first, it is indeed possible. Markus Schulze gives an example in [Schulze, p.18].

(See Figure 1 through 3)

Unless a tie-breaker is used, the Schulze method considers the two candidates A and B to be tied, even if no vote count is equal to another vote count: all numbers are distinct and a single voter preferring A to B or vice versa added to the list of counted ballots wouldn't even change the situation.

Markus Schulze suggests [Schulze, p.58] that for breaking this tie (and only for breaking this tie), the shared weakest link (here: the link from C to D) shall be declared “forbidden” and the strongest paths from A to B and from B to A should be recalculated, ignoring those paths that contain the forbidden link. In the example above, candidate A would be declared winner over B, because A beats B directly with 33 votes, while there is no beat-path from B to A if the link from C to D is forbidden (B beats C, but C doesn't beat A and the link between C and D is forbidden).

(See Figure 4)

Possible improvements

Unfortunately, Markus Schulze's algorithm requires to create a “tie-breaking ranking of all candidates” (TBRC) [Schulze, p.62] before the algorithm [Schulze, p.58-61] is applied. This tie-breaking ranking of all candidates must be performed regardless of if it has an impact on the result. In the example given in Figure 1, the TBRC has no effect on the winner, but in general it appears difficult to determine whether the TBRC (i.e. the creation order of initiatives in case of LiquidFeedback) has been used to create a unique ranking, or if the final ranking is independent of the TBRC.

Future versions of LiquidFeedback might use an improved algorithm that allows to gather information about whether the creation order of initiatives had an impact on the actual result. Additionally, it might also be better to use directly the creation order of the tied candidates to solve the tie in those cases. Until further mathematical research on this issue is available, LiquidFeedback, however, will default to Markus Schulze's approach as defined in [Schulze, p.58].

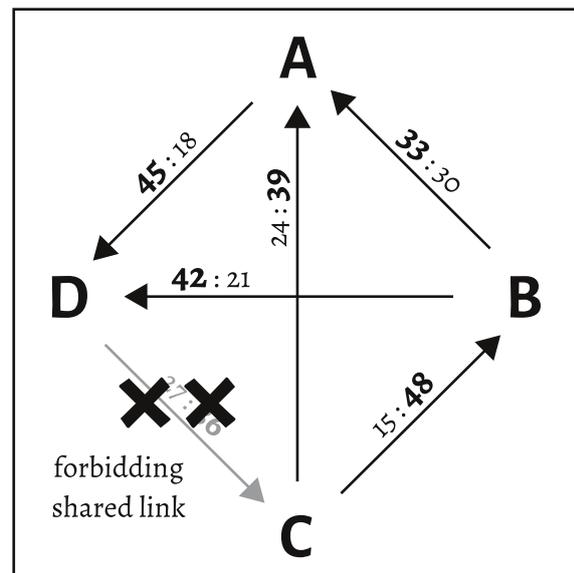


Figure 4: Forbidding the shared link

[Chaos] Jan Behrens: *How Chaos Protected the Status Quo (more than we intended to)*. In “The Liquid Democracy Journal on electronic participation, collective moderation, and voting systems, Issue 2” (2014-10-07). ISSN 2198-9532. Published by Interaktive Demokratie e. V.
 [PLF] Behrens, Kistner, Nitsche, Swierczek: “The Principles of LiquidFeedback”. ISBN 978-3-00-044795-2. Published January 2014 by Interaktive Demokratie e. V., available at <http://principles.liquidfeedback.org/>
 [Schulze] Markus Schulze: “A New Monotonic, Clone-Independent, Reversal Symmetric, and Condorcet-Consistent Single-Winner Election Method, draft, May 19, 2014”. <http://m-schulze.gmail.de/schulze1.pdf>

LIQUID DEMOCRACY PROVIDES NO ALTERNATIVE TO THE REPUBLIC

by Andreas Nitsche, Berlin, April 17, 2013

This is an English translation of a German blog post that was published by Andreas Nitsche at <http://liquidfeedback.org/2013/04/17/liquid-democracy-ist-keine-alternative-zur-parlamentarischen-republik/> on April 17, 2013.

Liquid Democracy as an organizational concept combines elements of direct and representative democracy. Anyone can select their own way ranging from direct democracy to representative democracy by participating in what one is interested in while giving their vote to somebody acting in their interest for all other areas. Using the concept of Liquid Democracy, people can have their interests represented regardless of their ability to spend time or effort on a particular issue. In return, people are not urged to decide on issues where they lack expertise. This way, Liquid Democracy can be scaled up as opposed to direct democracy.

Liquid Democracy, however, can only be successfully practiced using computers. This means secret voting is not possible.[1] Therefore Liquid Democracy comes with a price: The

vote of every participant is recorded and therefore documented. As far as representatives are concerned, accountability is desired. Liquid Democracy, however, doesn't differentiate between voters and representatives. A Liquid Democracy society would need to treat every citizen like a representative in the existing parliamentary systems. Furthermore, the system of checks and balances would need to be completely readjusted.

It would be irresponsible to give up secret elections – a security mechanism to ensure free elections and protect democracy. This is why we do not endorse calls for replacing representative democracy with Liquid Democracy and conclude: Liquid Democracy provides no alternative to the parliamentary constitutional republic, the presidential republic or the parliamentary constitutional monarchy for that matter. It may be used in civic participation as an additional communication channel between citizens and their administration, or in constituency participation for better connecting representatives to their electoral district.[2]

The real potential, however, is revolutionizing decision-making within political parties and thus changing the course of politics. Political parties usually unite citizens interested in politics on a voluntary basis and have some freedom in organizing their decision-making.[3] All decisions in a Liquid Democracy party will either be made by recorded vote or – where required – by casting secret votes outside the Liquid Democracy system. Any attempt to simulate secret voting using pseudonyms or cryptography constitutes an attack

against both secrecy and verifiability of the voting process.[4]

Liquid Democracy parties could become very attractive to citizens; empowering the ordinary members would make these parties more responsive to the demands of society. It would also be an invitation to join a given party. These parties will still compete against parties using other organizational structures and need to convince the general public in secret(!) elections.

[1] <http://liquidfeedback.org/2011/09/15/ueberpruefbarkeit-demokratischer-prozesse-teil-2/>

[2] <http://liquidfeedback.org/2012/05/02/burgerbeteiligung-mit-liquidfeedback/>

[3] <http://liquidlabs.org/post/44446770290/es-ist-soweit-der-erste-satzungsentwurf>

[4] <http://blog.fefe.de/?ts=b23f68fa>

LIQUID DEMOCRACY FOR CIVIC PARTICIPATION - A VIEW ON LIQUIDFRIESLAND

by Jan Behrens, Berlin, July 7, 2014

Despite the widespread dream of replacing representative democracy with some form of Liquid Democracy on a state level, LiquidFeedback has been developed for usage within political parties and not for direct use through any citizen. As inventors of the software, we have often been very reluctant when we heard about proposals to facilitate LiquidFeedback for civic participation.[Kistner2012] Nevertheless, a county in the north of Germany, the county of Friesland (Landkreis Friesland), came up with a promising plan to facilitate LiquidFeedback for a new form of civic participation. Their project carries the name “Liquid-Friesland” and has been put to practice since November 2012.

There have been debates about whether LiquidFriesland shall be considered a success or not. While there was an unanimous decision in Friesland's county council to launch the system,[Kreistag2012] from the opposition it was claimed that at least 100 continuously engaging citizens should be the benchmark for measuring LiquidFriesland's success.[Dreh-

kopf2012] But how big is the participation quota of LiquidFriesland in reality? And how big must the participation quota be in order to call a civic participation project being “successful”? Before these questions can be answered, we should take a look at the goals of LiquidFriesland.

Additional channel

LiquidFriesland was meant as an additional channel to give citizens the opportunity to be heard in the political process.[Press-Release][Leaflet] While LiquidFeedback would allow binding decisions of its participants, the results of LiquidFriesland are not meant as binding decision but as input to the county council.[Projekt] Binding decisions where all citizens are represented were neither intended nor necessary for this level of citizen participation. Anyone who is not able or not willing to engage in the online discourse may still revert to old-style signature lists as a petition to the politicians. Also here, a representative quantification is neither intended nor necessary.

Representation, quantification – it's complicated

LiquidFeedback's voting and quantification mechanisms are, in case of LiquidFriesland, only suitable to give qualitative feedback (e. g. "there have been some opposing voices") instead of quantitative feedback (e. g. "a majority of our citizens is opposing this proposal") in regard of the county's whole population.* The quantification process of LiquidFeedback, however, is still meaningful. LiquidFeedback's vote and support counting mechanisms and its algorithms for minority protection (Harmonic Weighting and Proportional Runoff) ensure that a group inside the system may not appear bigger by posting more often. The representation of people solely depends on whether they participate or not, and not on their degree of "noisiness".[PLF, section 4.10] This is a major advantage when comparing LiquidFriesland to other online discussion systems.

Since it is ensured that only eligible participants may get one account (and not more than one account), the feedback for the politicians is quantitative in such way that politicians get an absolute count of verified identities of people who are in favor of a proposal and an absolute count of verified identities of people who are against a proposal. Not only a single group of citizens is heard, but also those citizens who are against a proposal or who suggest alternative proposals.

* Of course, LiquidFeedback still produces quantitative feedback, but due to the expected selective participation these results only give a limited inference on the citizens' opinion.

Data hunting

Even if the number of participants may not be the right benchmark for evaluating a civic participation system,[PLF, subsection 6.1.5] and even if the sole existence of such a system can change the attitude of both citizens and politicians independently of the actual usage of the system,[PLF, p.136] we want to take a closer look at the number of participants in LiquidFriesland.

Unfortunately, the access to raw data is limited due to Friesland's decision to not publish the ballots of their participants (the ballots are only visible for registered participants from Friesland). We will thus have a look at the publicly available information, which is (a) the aggregated voter counts in the system itself [LFrSystem], and (b) statistics published by the county [Evaluation].

Gathering the publicly available information at <https://www.liquid-friesland.de/lf/index/index.html?tab=closed> we find the following vote counts:

(See Figure 1)

We can consider approvals, disapprovals, and explicit abstentions as active participation in the system. In case of issues that didn't enter voting, we could still count supporters and potential supporters as active participation, but these numbers are misleading because people

2012-11-30	Verwaltungsverfahren #13 with 7 approvals, 0 disapprovals, 0 explicit abstentions;
2012-12-07	Verwaltungsverfahren #8 with 18 approvals, 7 disapprovals, 1 explicit abstention;
2012-12-07	Verwaltungsverfahren #18 with 11 approvals, 2 disapprovals, 1 explicit abstention;
2012-12-07	Verwaltungsverfahren #6 with 10 approvals, 5 disapprovals, 1 explicit abstention;
2012-12-08	Verwaltungsverfahren #1 with 24 approvals, 18 disapprovals, 6 explicit abstentions for the preferred initiative;
2012-12-11	Bürgerverfahren #2 with 4 approvals, 20 disapprovals, 3 explicit abstentions;
2012-12-11	Bürgerverfahren #3 with 8 approvals, 4 disapprovals, 4 explicit abstentions for the preferred initiative;
2012-12-11	Bürgerverfahren #4 with 22 approvals, 6 disapprovals, 9 explicit abstentions for the preferred initiative;
2012-12-11	Bürgerverfahren #5 with 12 approvals, 3 disapprovals, 4 explicit abstentions;
2012-12-15	Bürgerverfahren #9 with 20 approvals, 20 disapprovals, 10 explicit abstentions for the preferred initiative;
2012-12-15	Bürgerverfahren #10 with 10 approvals, 4 disapprovals, 1 explicit abstention;
2012-12-16	Bürgerverfahren #11 with 19 approvals, 4 disapprovals, 2 explicit abstentions;
2012-12-16	Bürgerverfahren #12 with 12 approvals, 2 disapprovals, 2 explicit abstentions;
2012-12-26	Bürgerverfahren #14 with 10 approvals, 3 disapprovals, 1 explicit abstention;
2012-12-27	Bürgerverfahren #15 with 18 approvals, 2 disapprovals, 2 explicit abstentions;
2012-12-29	Bürgerverfahren #16 with 14 approvals, 3 disapprovals, 3 explicit abstentions;
2013-01-02	Bürgerverfahren #17 with 14 approvals, 13 disapprovals, 4 explicit abstentions;
2013-01-15	Bürgerverfahren #19 with 2 supporters, 0 potential supporters, 39 non-supporters in reference population;
2013-02-10	Bürgerverfahren #26 with 4 supporters, 0 potential supporters, 48 non-supporters in reference population;
2013-02-12	Bürgerverfahren #27 with 3 supporters, 0 potential supporters, 50 non-supporters in reference population;
2013-02-15	Bürgerverfahren #20 with 18 approvals, 2 disapprovals, 1 explicit abstention;
2013-03-01	Verwaltungsverfahren #21 with 33 approvals, 2 disapprovals, 1 explicit abstention;
2013-03-07	Bürgerverfahren #22 with 16 approvals, 1 disapproval, 3 explicit abstentions;
2013-03-08	Bürgerverfahren #24 with 24 approvals, 0 disapprovals, 4 explicit abstentions;
2013-03-09	Bürgerverfahren #23 with 12 approvals, 3 disapprovals, 2 explicit abstentions;
2013-03-09	Bürgerverfahren #25 with 12 approvals, 1 disapproval, 3 explicit abstentions;
2013-03-13	Bürgerverfahren #28 with 3 approvals, 0 disapprovals, 2 explicit abstentions;
2013-03-16	Bürgerverfahren #30 with 12 approvals, 2 disapprovals, 1 explicit abstention;
2013-03-17	Bürgerverfahren #31 with 23 approvals, 0 disapprovals, 2 explicit abstentions;
2013-03-17	Bürgerverfahren #29 with 7 approvals, 5 disapprovals, 0 explicit abstentions;
2013-03-19	Bürgerverfahren #32 with 13 approvals, 0 disapprovals, 2 explicit abstentions;
2013-03-22	Bürgerverfahren #36 with 5 supporters, 0 potential supporters, 54 non-supporters in reference population;
2013-03-27	Bürgerverfahren #38 with 4 supporters, 0 potential supporters, 47 non-supporters in reference population;
2013-04-04	Bürgerverfahren #33 with 13 approvals, 0 disapprovals, 1 explicit abstention;
2013-04-11	Bürgerverfahren #40 revoked by initiator;
2013-04-16	Bürgerverfahren #34 with 7 approvals, 3 disapprovals, 0 explicit abstentions;
2013-04-16	Bürgerverfahren #35 with 7 approvals, 1 disapproval, 3 explicit abstentions;
2013-04-18	Bürgerverfahren #41 with 3 supporters, 0 potential supporters, 58 non-supporters in reference population;

Figure 1 (part 1 of 2): Finished/closed issues in LiquidFriesland and their vote counts (considering issues closed until end of June 2014)

2013-04-23	Bürgerverfahren #42 with 1 supporter, 0 potential supporters, 61 non-supporters in reference population;
2013-04-24	Bürgerverfahren #37 with 8 approvals, 1 disapproval, 5 explicit abstentions;
2013-05-14	Bürgerverfahren #39 with 13 approvals, 0 disapprovals, 3 explicit abstentions;
2013-06-09	Bürgerverfahren #43 with 30 approvals, 1 disapproval, 6 explicit abstentions;
2013-06-13	Bürgerverfahren #44 with 15 approvals, 3 disapprovals, 1 explicit abstention;
2013-06-14	Bürgerverfahren #48 with 5 supporters, 0 potential supporters, 49 non-supporters in reference population;
2013-06-17	Verwaltungsverfahren #45 with 8 approvals, 1 disapproval, 2 explicit abstentions for the preferred initiative;
2013-06-17	Verwaltungsverfahren #46 with 33 approvals, 1 disapproval, 6 explicit abstentions;
2013-06-29	Bürgerverfahren #53 revoked by initiator;
2013-06-29	Bürgerverfahren #54 revoked by initiator;
2013-07-05	Bürgerverfahren #52 revoked by initiators;
2013-07-09	Bürgerverfahren #47 with 19 approvals, 1 disapproval, 3 explicit abstentions;
2013-07-27	Bürgerverfahren #49 with 5 approvals, 3 disapprovals, 1 explicit abstentions;
2013-07-29	Bürgerverfahren #51 with 21 approvals, 3 disapprovals, 1 explicit abstention;
2013-07-31	Verwaltungsverfahren #50 with 21 approvals, 5 disapprovals, 8 explicit abstentions;
2013-08-04	Bürgerverfahren #55 with 17 approvals, 0 disapprovals, 1 explicit abstention;
2013-08-10	Bürgerverfahren #56 canceled by administrative intervention;
2013-08-16	Bürgerverfahren #59 revoked by initiator;
2013-09-11	Bürgerverfahren #58 with 17 approvals, 0 disapprovals, 1 explicit abstention;
2013-09-18	Bürgerverfahren #57 with 17 approvals, 0 disapprovals, 1 explicit abstention for the preferred initiative;
2013-09-24	Bürgerverfahren #61 with 24 approvals, 0 disapprovals, 3 explicit abstentions;
2013-09-24	Bürgerverfahren #60 with 13 approvals, 2 disapprovals, 2 explicit abstentions;
2013-10-10	Bürgerverfahren #64 with 4 supporters, 1 potential supporter, 65 non-supporters in reference population;
2013-10-12	Bürgerverfahren #65 with 5 supporters, 0 potential supporters, 53 non-supporters in reference population for most supported initiative;
2013-10-16	Bürgerverfahren #63 with 11 approvals, 0 disapprovals, 1 explicit abstention;
2013-10-30	Verwaltungsverfahren #62 with 8 approvals, 6 disapprovals, 5 explicit abstentions;
2013-11-07	Bürgerverfahren #66 with 5 approvals, 12 disapprovals, 0 explicit abstentions;
2013-11-08	Bürgerverfahren #67 with 13 approvals, 1 disapproval, 2 explicit abstentions;
2013-12-11	Verwaltungsverfahren #69 with 68 approvals, 12 disapprovals, 24 explicit abstentions;
2013-12-26	Bürgerverfahren #68 with 18 approvals, 2 disapprovals, 1 explicit abstention;
2014-01-08	Bürgerverfahren #71 revoked by initiator;
2014-01-14	Bürgerverfahren #70 with 26 approvals, 4 disapprovals, 2 explicit abstentions;
2014-02-16	Bürgerverfahren #72 with 9 approvals, 3 disapprovals, 2 explicit abstentions;
2014-02-16	Bürgerverfahren #73 with 7 approvals, 5 disapprovals, 1 explicit abstention;
2014-02-20	Verwaltungsverfahren #74 with 9 approvals, 3 disapprovals, 2 explicit abstentions for the preferred initiative;
2014-03-08	Bürgerverfahren #75 with 12 approvals, 4 disapprovals, 2 explicit abstentions;
2014-04-22	Bürgerverfahren #76 with 4 approvals, 0 disapprovals, 0 explicit abstentions;
2014-05-30	Bürgerverfahren #77 with 3 supporters, 0 potential supporters, 66 non-supporters in reference population;
2014-06-22	Bürgerverfahren #79 with 18 approvals, 0 disapprovals, 1 explicit abstention;
2014-06-23	Bürgerverfahren #78 with 13 approvals, 1 disapproval, 0 explicit abstentions.

Figure 1 (part 2 of 2): Finished/closed issues in LiquidFriesland and their vote counts (considering issues closed until end of June 2014)

#13 on 2012-11-30: 7 participants	#35 on 2013-04-16: 11 participants
#8 on 2012-12-07: 26 participants	#37 on 2013-04-24: 14 participants
#18 on 2012-12-07: 14 participants	#39 on 2013-05-14: 16 participants
#6 on 2012-12-07: 16 participants	#43 on 2013-06-09: 37 participants
#1 on 2012-12-08: 48 participants	#44 on 2013-06-13: 19 participants
#2 on 2012-12-11: 27 participants	#45 on 2013-06-17: 11 participants
#3 on 2012-12-11: 16 participants	#46 on 2013-06-17: 40 participants
#4 on 2012-12-11: 37 participants	#47 on 2013-07-09: 23 participants
#5 on 2012-12-11: 19 participants	#49 on 2013-07-27: 9 participants
#9 on 2012-12-15: 50 participants	#51 on 2013-07-29: 25 participants
#10 on 2012-12-15: 15 participants	#50 on 2013-07-31: 34 participants
#11 on 2012-12-16: 25 participants	#55 on 2013-08-04: 18 participants
#12 on 2012-12-16: 16 participants	#58 on 2013-09-11: 18 participants
#14 on 2012-12-26: 14 participants	#57 on 2013-09-18: 18 participants
#15 on 2012-12-27: 22 participants	#61 on 2013-09-24: 27 participants
#16 on 2012-12-29: 20 participants	#60 on 2013-09-24: 17 participants
#17 on 2013-01-02: 31 participants	#63 on 2013-10-16: 12 participants
#20 on 2013-02-15: 21 participants	#62 on 2013-10-30: 19 participants
#21 on 2013-03-01: 36 participants	#66 on 2013-11-07: 17 participants
#22 on 2013-03-07: 20 participants	#67 on 2013-11-08: 16 participants
#24 on 2013-03-08: 28 participants	#69 on 2013-12-11: 104 participants
#23 on 2013-03-09: 17 participants	#68 on 2013-12-26: 21 participants
#25 on 2013-03-09: 16 participants	#70 on 2014-01-14: 32 participants
#28 on 2013-03-13: 5 participants	#72 on 2014-02-16: 14 participants
#30 on 2013-03-16: 15 participants	#73 on 2014-02-16: 13 participants
#31 on 2013-03-17: 25 participants	#74 on 2014-02-20: 14 participants
#29 on 2013-03-17: 12 participants	#75 on 2014-03-08: 18 participants
#32 on 2013-03-19: 15 participants	#76 on 2014-04-22: 4 participants
#33 on 2013-04-04: 14 participants	#79 on 2014-06-22: 19 participants
#34 on 2013-04-16: 10 participants	#78 on 2014-06-23: 14 participants.

Figure 2: Active participants in voting phase

opposing all initiatives are missing here (the reference population also contains participants subscribed to a subject area [PLF, section 4.9] who are not actively participating). Therefore, we only consider that issues where at least one initiative passed the second supporter quorum (i. e. where at least one initiative entered the final voting procedure), and we add approvals, disapprovals, and explicit abstentions to determine the count of active participants during voting. We should note that the actual count of participants may be higher, as people could have engaged in the discussion process but refrained from voting.

(See Figure 2)

Method A: average participants per issue

There are different ways to interpret participation numbers. The first idea coming to one's mind is to calculate the average number of participants per issue for a given time frame. While this method seems to be suggesting itself, it is not suitable as a general indicator of participation: additional issues (hence extra participation) could lower the average value.

Method B: maximum number of participants per issue

A more useful value might be the maximum number of participants per issue within a given time frame (see Figure 3). But this value still suffers another problem: the more people are interested in the same issue, the higher the number gets. To give an example: assuming there are 100 people participating per quarter of

the year, then the maximum number of participants per issue during that quarter could be 100, but it could also be 10 if all participants split up into disjoint groups of 10 persons each, who are engaging in different issues. Thus, neither the maximum number of participants per issue in a given time frame is suitable as a general indicator for the total amount of participation.

4 th quarter 2012:	50 participants
1 st quarter 2013:	36 participants
2 nd quarter 2013:	40 participants
3 rd quarter 2013:	34 participants
4 th quarter 2013:	104 participants
1 st quarter 2014:	18 participants
2 nd quarter 2014:	19 participants

Figure 3: Maximum number of voters in a single issue per quarter

Method C: counting every active participant

Arguably the best measurement for participation quota is the number of people showing activities within a given time frame independently of the particular issues they deal with. Unfortunately, the values in Figure 2 are not containing enough information to deduce that numbers. Just by counting the participation of each issue independently, we have no idea about the disjointness of the participants involved in each issue. The county of Friesland only published numbers aggregated over the whole run time of the system: 458 participants were active in at least one issue since startup of the system, 183 participants were active in at

least two issues, and 116 participants were active in at least three issues.[Evaluation] The evaluation report where these numbers are published unfortunately doesn't say anything about the development of these numbers over time (e. g. participants during a month or during the quarter of a year).

Method D: total number of votes

Another number that may be of interest is the sum of cast votes for a given time frame (see Figure 4). Here, not only the number of participants is taken into account, but also the intensity of each person's engagement.

4 th quarter 2012:	372 ballots
1 st quarter 2013:	241 ballots
2 nd quarter 2013:	172 ballots
3 rd quarter 2013:	171 ballots
4 th quarter 2013:	189 ballots
1 st quarter 2014:	91 ballots
2 nd quarter 2014:	37 ballots

Figure 4: Sum of cast ballots per issue per quarter. For each issue, each participant is counted (i.e. possibly counted multiple times, independent of participation in other issues).

0.1 percent

Keeping the limitations of these numbers in mind, we may still deduce that in the 4th quarter of 2013 at least 104 participants were active in the system (see Figure 3), and in the 2nd quarter 2014 at most 37 participants were actively voting in the system (see Figure 4).

Nevertheless, considering the last year, more than 100 participants used the system. Given Friesland's population of approximately 100,000 inhabitants, this is about 0.1% of the total population.

While this number looks pretty small, let's compare it with another citizen participation system in Germany on the federal level: the e-petition system of the German Federal Parliament (Deutscher Bundestag).[ePetition] The German Parliament requires a quorum of 50,000 supporter votes for a petition to be discussed in the petition committee.[ePetition-Quorum] A quorum of 50,000 is approximately 0.062% of the total population. According to the published list of petitions within the system, only 18 petitions have passed this quorum.[ePetitionList]

With this considered, the participation quota in LiquidFriesland is at least in the same order of magnitude as the e-petition system of the German Federal Parliament. Does that mean LiquidFriesland is just another electronic petition system?

LiquidFriesland vs. e-petition systems

There are a number of differences between LiquidFriesland and, for example, the e-petition system of the German Federal Parliament. First of all, LiquidFriesland allows development of multiple competing initiatives. Each participant may freely post any initiative without having it reviewed or merged by a commission, while this is the case in the e-petition system of the German Federal Parliament.

»» *Der Ausschuss behält sich vor, gleichgerichtete Petitionen zusammenzufassen und den Hauptpetenten zu bestimmen. Die weiteren Petenten werden als Unterstützer behandelt.*«

[EPETITIONRICHTLINIE]

Contrary to the e-petition system, in LiquidFeedback (and thus in LiquidFriesland) it is always possible to post alternative proposals and counter arguments independently of a request commission or petition committee. Those proposals and arguments are quantified in regard of their supporters and presented in a way that minorities may present their point of view in an adequate way.[PLF, chapter 4]

Utilizing LiquidFeedback's design principles, LiquidFriesland has a lot of desirable properties that classical petition processes cannot offer. It's potential, however, is by far not used yet.

Degree of bindingness

The county council in Friesland (Kreistag) has committed itself to put every successful initiative in LiquidFriesland to their agenda. In most cases this is, by now, the maximum possible extent of bindingness achievable. For a truly citizen driven democracy, it may be also thinkable though, that the participants of a LiquidFeedback system prepare a binding referendum (which is then decided using a secret ballot).[PLF, subsection 6.3.4]

The administration

Despite the question of improving a system's bindingness, another huge factor for the success of a participation system is the involvement of the political administration. In case of LiquidFriesland, the political administration tracks initiatives after being approved by a majority of participants and thus gives participants a feedback what happened with their initiatives in the political process.[LFrTracking]

A possible improvement here would be to open a dialogue with the participants already before the final voting ends: in case of unfeasible proposals, the administration could communicate with the participants during the discussion process and could work towards feasible and realistic proposals. The involvement of the administration should be just on an informative level: due to LiquidFeedback's collective moderation system with proportional representation, individual proposals of the citizens do not need to be filtered or merged against the will of the respective initiators.[PLE, chapter 4] Notwithstanding, the political administration should engage in the debate early enough. Letting citizens vote first and telling them later (i. e. when the citizens' vote is over) that their proposal won't be put into practice can have a devastating effect on the participants' motivation.*

* An example where Friesland's administration failed to communicate the nonfeasibility of a proposal early enough can be found at [ShredLF], [ShredKT].

The politicians

But not just the political administration could participate more actively in the process: the same holds for politicians. If politicians entered the system, the discussion process would be enriched with a lot of political expertise. The politicians in Friesland, however (at least those that are in the county council), have deliberately decided to not participate in the system.[Projekt, page 8] They want to grant “ordinary citizens” a pole position in the discussion process. While this may appear noble at first, it also relieves politicians from facing their citizens in a fair discussion process: the citizens debate on their own, and in the end the politicians either approve it, or they bring up arguments why the citizens' proposals are unfeasible (after the discussion of the citizens has ended).

A better approach would be to carry the parliamentary processes into the participation system itself. Proposals that are debated on in the parliament (or county council) should be posted in the LiquidFeedback system in due time (e. g. at least a month before a decision has to be made) to give citizens enough time to evaluate them, optionally publish counterproposals and to discuss pro- and contra arguments by posting their own initiatives. Politicians and citizens would debate at eye level.

Conclusion

For now, these ideas are just dreams. Liquid-Friesland has made the first steps and is certainly a success regarding previous experiences with citizen participation. But it is important to move forward and take further steps to empower all human beings to have a more direct way of influencing politics in a fair and transparent process.

This article has been published both in German and in English language. The German publication can be found at: <http://blog.liquidfeedback.org/2014/07/07/liquid-democracy-in-der-buergerbeteiligung-eine-analyse-zu-liquidfriesland/>

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READERS OF THE JOURNAL ASKED - LIQUIDFEEDBACK DEVELOPERS ANSWER (#1)

by the developers of LiquidFeedback, Berlin, October 7, 2014

Q1: *Why did you decide to create a Liquid Democracy solution for parties? Which parties did you have in mind?*

Back in 2009, politics looked at the dangers but not so much the chances of the internet. The potential of the internet for the enhancement of democracy had yet to be discovered by the political class. We observed a discrepancy between what seemed to be the will of the members of main stream political parties and the actions their leaders took. To a certain extent this is expectable but we got the impression of a more general detachment rather than exceptions. Transitive proxy voting – also referred to as Liquid Democracy – looked like a very powerful way to allow proportional representation of all members of a given political party.

The Berlin Pirate Party was already looking for ways to avoid a classic delegates system by applying Liquid Democracy.

Apart from this existing demand, LiquidFeedback has always been intended as an offer for

every (democratic) political party: conservative, liberal, or progressive. All these parties have a function and represent parts of the population and would ideally strive for the best solutions for the entire society from their specific perspective.

“[...] political parties have the ambition to govern states, but they are often poorly governed themselves.”[SPPP2013] say Hans Bruning [Bruning] and Vidar Helgesen[Helgesen]. We hope LiquidFeedback can be part of the solution as it allows for a dynamic division of labor based on individual choice.

Q2: *What do you think about application fields other than political parties?*

Meanwhile LiquidFeedback has also been used in other contexts such as civic, constituency, and corporate participation. We didn't expect this development but welcome and support it as long as the operators of these instances are clear on the purpose and the limitations of the specific use case to avoid false expectations

and care about verifiability to create somewhat meaningful results. For a closer look at a civic participation project, check the article on LiquidFriesland by Jan Behrens in this issue of the Liquid Democracy Journal.[Friesland]

Q3: Which practical experience could you make use of? Which scientific works influenced the development of LiquidFeedback? Is there cooperation with scientists and practitioners in the field?

We already had experience in implementing complex workflows and were familiar with certain effects of internet communication. Knowing what we want to avoid and some common sense helped to define the challenges, and more than once we found answers in computer science, history, jurisprudence, mathematics and social choice theory. The development was influenced by previous research e. g. by Kenneth Arrow, Thomas Schwartz, Nicolaus Tideman, Markus Schulze, Condorcet, and by historical experience (e. g. the 1969 Thunder Bay amalgamation referendum[PLF, section 4.11]). By definition, our work is multidisciplinary. We work with everybody who can contribute and of course we share our results with the scientific world.

We also discuss with and learn from practitioners in foundations and intergovernmental organizations around the globe.[Myanmar] Typically cooperation is based on joint convictions such as improving instead of replacing representation, the key role of political parties for revitalizing democracy, and the necessity of changing political parties to overcome the democratic fatigue.

Q4: How important is the discourse? Why did you chose such a formal design for the discussion process? Does LiquidFeedback replace "real life" discussions? What do you think about less formal online discussions?

The discourse is essential for informed decision-making. In order to provide a fair process for decision-making that scales up to thousands of participants, LiquidFeedback employs a structured discussion where it is not possible for every participant to reply to any contribution. Instead, LiquidFeedback employs a system for exchanging arguments which agitates people to make constructive proposals in order to gain other people's support. This way, LiquidFeedback organizes the discourse by not only providing the pre-defined timing but also fulfilling a central announce and quantified feedback function for ideas.

The discourse in LiquidFeedback is not meant to completely replace other discussion forms.

The diverse real life discussion formats, e. g. between co-workers, in town halls, in talk shows, have their own pros and cons. They are either limited in the number of (active) participants or they are moderated which limits the ability of participants to speak as they see fit. They usually also don't deliver a quantification of the support for the points of view being expressed. On the other hand, these comparatively unstructured discussions have a great creative potential. We think it is a perfect symbiosis to see results of all these discussion formats reflected and measured in LiquidFeedback's structured discourse.

Something similar could be said about unstructured, not quantified online discussions if they were not mostly dysfunctional as soon as real conflicts between participants are involved.[PLF, subsection 4.10.4]

Q5: You seem to count on competition rather than cooperation? Why don't you try to reach a consensus?

We don't call for competition but we factor it in. We encourage everybody to cooperate. Looking at politics, we just don't believe you can always count on (bipartisan) cooperation. So there has to be a mechanism to deal with conflicting interests.

A consensus is nice if it actually exists, but demanding a consensus (in the meaning of "unanimity") is undemocratic because the majority can be taken hostage by a minority (which would assign more power to members of the minority than to other individuals). In return, minorities could feel presumed or actual pressure for conformity. Consensus requirements increase the risk of resentment, hidden conflicts, and stagnancy.

Compulsory consensus as well as (the more moderate approach) supermajority requirements are no suitable strategies to achieve minority protection. Only majority rule satisfies political equality[McGann] notwithstanding other measures to provide minority protection.[PLF, sections 4.10 and 4.13] Even if decisions have to be made by majorities, LiquidFeedback's structured discussion process still enables its participants to work towards a

solution where all minority points of view are considered.

Q6: You claim that LiquidFeedback enables participants to organize a collective moderation process where no privileged moderator or request commission is needed. Why is an initiator in LiquidFeedback allowed to

(a) freely choose the subject area for his or her proposal, even if this has effects on vote counting due to different delegations, and

(b) decide by him- or herself whether a proposal shall be a mutually exclusive alternative to another proposal?

Isn't a request commission needed to decide these issues?

One of LiquidFeedback's design goals is indeed to provide a discussion process where all participants are treated equally. Nominating a moderator with special privileges or a request commission would thwart this goal.

Therefore, it's up to the respective initiator to (a) choose a subject area and to (b) post the proposal as competing or not competing. A request commission is not necessary due to the following considerations:

Letting an initiator freely choose the subject area for their proposal is not a problem if there is a previous agreement on which kind of resolutions may be enacted in which subject areas. Whenever the participants in a particular subject area decide on something that is not to be decided in that subject area, such a resolution must be void, just like when a committee is exceeding its authority.[PLF, sections 2.3 and

4.8] The decision whether the subject area was correct may not be determined by a computer algorithm, but always needs to be decided by humans. This decision, in turn, may be made either outside or inside the system (“decisions in this context may also be made within LiquidFeedback using a designated subject area” [PLF, p.28]).

The question whether a proposal is mutually exclusive to another proposal should always be answered prior to voting, because LiquidFeedback's voting algorithm is designed in such a way that only one initiative of a group of competing initiatives may win. Also in this case, we recommend not using a request commission but to let the participants decide whether they accept a proposal as competing: nobody is forced to support or vote for a competing proposal if it has been obviously misplaced by the respective initiator. In addition to that, it is always possible to discuss these meta questions (including the proper choice of subject area) by altering or creating initiatives in the same group of competing initiatives and extending them with arguments on the correct or incorrect placement of the other initiatives in this issue.

Dealing with meta questions is a necessity of democratic decision-making. Those meta questions (e.g. which proposals are competing with each other) always have to be answered by humans and cannot be determined by a computer algorithm. LiquidFeedback just provides a framework in which humans can deal with all those questions. While moderation tasks are often delegated to a small group of elected persons, LiquidFeedback, in contrast, allows for a

truly collective and self-organized decision-making process where everyone has equal rights and where delegation is always voluntary and can be revoked at any time.

Q7: Which projects do you support?

Anybody can use and customize LiquidFeedback which is published by the Public Software Group.[License]

The developers also teamed up in the Interaktive Demokratie association to promote the use of electronic systems for democratic processes by offering workshops and lectures. [IADfound] We offer consulting for projects but we only endorse participation projects conducted with a minimum of seriousness in terms of access control, meaningful results and defined purpose. So we had to turn down cooperation with some participation projects which were sure to go south like the participation approach of the Internet Enquete Commission of the German Parliament.[EIDG]

Q8: How do you decide about implementation of new features and other changes?

Many requirements don't even need changes to the software as LiquidFeedback comes with numerous parameters to configure the decision-making process; e. g. it is possible though not suggested to completely turn off the topic spam protection by setting the admission threshold to zero which essentially eliminates the admission phase.

If an idea needs programming, there are sev-

eral aspects including but not limited to foundation of a change request based on a (mathematical) proof or evidence, implications for the process in terms of conceptual conformity, and/or implementation complexity. [FeatureReq]

Many changes to the core were triggered by the valuable input of experts. We usually didn't go for try and error proposals, proposals which would increase complexity at almost no return, or proposals which would jeopardize the scalability of the Liquid Democracy approach.

However, the Public Software Group publishes LiquidFeedback under the most liberal MIT license[License] which allows any modification and recombination of the software and it is not unusual for organizations to make minor changes to their LiquidFeedback system.

It is even possible to change the very character of the decision-making process and to create a derivative. In fact even this has already been done and there are LiquidFeedback derivatives being used for binding decisions.

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[Bruning] Hans Bruning is Executive Director of NIMD, The Hague, The Netherlands

[Helgesen] Vidar Helgesen is Chief of Staff to the Norwegian Prime Minister

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Also published by Interaktive Demokratie e.V.:

The Principles of LiquidFeedback

This book gives an in-depth insight into the philosophical, political and technological aspects of decision making using the internet and the “secrets” of LiquidFeedback, a computer software designed to empower organizations to make democratic decisions independent of physical assemblies, giving every member of the organization an equal opportunity to participate in the democratic process.

The inventors of LiquidFeedback explain the principles and rules of procedure developed for LiquidFeedback providing the key features for democratic self-organization. They give a theoretical background about collective decision making and answers to practical questions. This is a must-read for anybody planning to make online decisions or to build online decision platforms and is also interesting for anybody interested in the future of democracy in the digital age.

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- real-world integration into existing democratic systems
- analysis of the verifiability of voting systems
- glossary and an extensive index
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