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Online Deliberation in Academia: Evaluating the Quality and Legitimacy of Cooperatively Developed University Regulations

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This article focuses on the potential of online participation to enable the cooperative development of norms by affected stakeholders, investigating whether such processes can produce norms of both high quality and legitimacy. To answer this question, we designed, implemented, and evaluated an online norm setting process that goes beyond the scope of those usually described in the literature. Taking as a case study a process to redraft the examination regulations for doctoral degrees at a science faculty of a German university, we show that such instances of online deliberation can integrate the diversity of opinions of all affected stakeholders. The result was a norm that implemented previously controversial external recommendations for doctoral dissertation procedures and that was met with high satisfaction from both those who participated as well as those who remained passive. While we believe that the university context in which this process was conducted is particularly promising for such efforts because of its organization, its members, and the issue that was at stake, we argue that similar conducive conditions exist, for example, for political parties. As such, the findings can be instructive for understanding the potential and limits of successful online participation in other contexts.

KEY WORDS: online participation, deliberation, evaluation, legitimacy, rulemaking

Introduction

In recent years, the Internet has been increasingly used to involve volunteers in efforts to provide or preserve collective goods. Examples include local governments' budget consultations, companies' competitions for crowdsourcing ideas or commons-based peer production of software, or even an encyclopedia. These are all instances of online participation and the key question is *what makes these efforts successful*—if at all. In this article, we evaluate the results of a particular form of online participation, namely the use of the Internet for the cooperative development of norms which we refer to as *online norm setting*, in order to establish whether such efforts can be successful at all. We use the term

“norm” invariably to refer to formal norms, that is, codified and binding prescriptions of behavior that are created in institutionalized processes. They are important because they affect the interests of a large number of individuals. Examples of such norms are legal laws or organizational rules such as in the case under investigation in this article, that is, regulations concerning university examinations. It has always been difficult to directly involve a large number of individuals in the process of norm setting because of technological and organizational limitations. Hence, norms have usually been the result of formal processes, in which representatives, authorities, or experts developed and imposed norms on their respective recipients. Today, those who are affected by a norm increasingly demand opportunities for participation in norm setting processes (Bertelsmann Stiftung, 2011; Parnell & Crandall, 2001), and the Internet provides opportunities to involve a large number of people in these processes.

The early literature on the broader question of how the Internet may change democracy in general, and democratic decision-making processes in particular, was marked by skeptical fears on the one side and optimistic hopes on the other side. Cyber-pessimists stress that online communication is far away from replacing representative assemblies, and, rather, violates democracy through polarization and fragmentation (Bellamy & Raab, 1999; Margolis & Resnick, 2000; Sunstein, 2001). In terms of Internet-enabled decision making, it has been argued that the online process might create barriers (e.g., lack of Internet access and skills) that increase social selectivity in participation (Norris, 2001). Similarly, while online norm setting could improve the quality of norms by sourcing the wisdom of a great number of people, it is disputed whether nonexperts can actually meaningfully contribute to policies and norms, and the additional input requires more time to process which reduces effectiveness. While many of the arguments reflect the discussions about the merits and problems of offline participatory initiatives (for a comprehensive overview, see e.g., Mayer, Edelenbos, & Monnikhof, 2005, p. 187), some of them are specific to the online domain such as the additional skills requirements (van Dijk, 2005) and the increased threat of manipulation (Springall et al., 2014).

At the opposite position, cyber-optimists see a revolutionary and democratizing potential fostered by online media (e.g., Hauben & Hauben, 1997). Some argue that online norm setting could increase the legitimacy of the norm through more possibilities to participate, which can be the main factor generating legitimacy beliefs (Esaiasson, Gilljam, & Persson, 2012). Since citizens are increasingly doubting the effectiveness of the representative decision-making process, online participation has often been presented as the curing pill for this perceived western democratic crisis (Dahlgren, 2005). Therefore, there is an expectation that stakeholders' participation could provide collective binding norms with more legitimacy, acceptance, and epistemic quality than the previous, strictly representative models of norm setting. These expectations reflect ideas particularly formulated by theorists of deliberative democracy (e.g., Dryzek, 2000; Gutmann & Thompson, 2004; Habermas, 1996), which have strongly influenced the literature on e-democracy (Chadwick, 2009).

Bearing the arguments of cyber-pessimists and cyber-optimists in mind, we adopt a more neutral perspective when evaluating a case of online participation in academia in this article. To this end, we designed an online process in which members of a German science faculty were invited to deliberate¹ about and develop new doctoral dissertation guidelines. By describing and evaluating a particular process of Internet-enabled cooperative norm setting, this article aims to establish whether such processes can succeed at all. By discussing the design and the context of our case study we also hope to contribute to future research aimed at a better understanding of what might shape success when people come together online in order to discuss and develop legally binding norms.

The article is structured as follows: In the first part, we outline the evaluation criteria that we apply to judge the results of online participation. We then report on the empirical findings of previous research, on which we base our research question. This is followed by an introduction of the cooperative online norm setting process that we designed and implemented at a science faculty of a German university. Subsequently, we report the results of our analyses and discuss their implications as well as limitations, before we offer a summary and suggestions for future research.

Previous Work and Research Questions

Evaluation Criteria

Initiators of online participation often ask the question: “*What makes online participation successful?*” The question of how to increase the success of participation in collective decision processes is neither new nor unique to the online domain. It has been faced for a long time by many disciplines such as political science, sociology, and economics (see e.g., the work of Olsen, 1965; Ostrom, 1990). In fact, the question entails two separate questions. First, what constitutes success of participation processes and which *criteria* can we use to measure it? Second, which *factors* influence whether a process actually achieves these standards?

The focus of this article is on the first question and on measuring two main criteria to evaluate online norm setting processes. While so far the literature lacks a consensus on how to measure the success of online participation (Macintosh & Coleman, 2006), there is no shortage of criteria that have been employed to evaluate the success of participatory processes. The challenge is rather on deciding which ones to use. Based on a review of research on online participation (Kubicek, Lippa, & Koop, 2011; Lippa et al., 2008; Pratchet et al., 2009), participation in environmental assessment (Dietz & Stern, 2008; Newig, Jager, & Challies, 2012), and public participation (Geissel, 2009, 2012; Innes & Booher, 2004; Rowe & Frewer, 2000) we identify two often applied criteria for the evaluation of participation: *quality* and *legitimacy*. Following previous research (Beierle & Cayford, 2002; Chess & Purcell, 1999; Rowe & Frewer, 2004), these success criteria can be distinguished further by applying them to the result and to

the process of online norm setting. As a result, we evaluate the norm setting process primarily from these two dimensions, and how each of them applies to the process on the one hand, and the results on the other.

In terms of *quality*, a participatory process has certain objectives, and whether these are achieved and to what degree constitutes the *quality of results*, which is also referred to as effectiveness (Rosener, 1978; Rowe & Frewer, 2004) or substantive quality (Beierle & Cayford, 2002; Coglianesi, 2002). In the context of norm setting, the objective is to produce a norm, and whether this succeeds at all, or whether the norm provides a solution to the original problem, could be the objective of an evaluation. The quality of results depends in part on the *quality of the process*. For example, reaching many people from a diverse set of backgrounds might be used as an indicator of the quality of the process; yet, it could also be a prerequisite for generating new solutions and, hence, might influence the quality of the result. Similarly, the process by which a result comes about influences the perceived quality of the results, as has for example, been shown for Wikipedia articles and the discussions that go into them (Towne, Kittur, Kinnaird, & Herbsleb, 2013).

Moving on to the second dimension, *legitimacy*, it is clear that cooperative norm setting processes also require that the results are perceived as legitimate. We take this to mean that the results are deemed as worthy of being accepted by those affected by them. Based on the approach of Schmidt (2013) who has further developed the work of Scharpf (1970), we distinguish three sources for the *legitimacy of the results*. First, legitimacy can be obtained by ensuring sufficient “input” into the process, which mainly relates to ample opportunities for participation by those affected. This has been the main concern of participatory democrats since Pateman (1970), and it has indeed been empirically shown that being able to have a say in decisions increases legitimacy beliefs (Bowler & Donovan, 2002; Stutzer & Frey, 2006). Another argument for enabling widespread input into the process is that the diversity of experiences and opinions can improve the final results (i.e., the output, see below) of a process, an old idea that with the spread of the Internet has received renewed attention as the so-called wisdom of crowds (Surowiecki, 2004). A second source of legitimacy derives from the properties of the decision-making process (which Schmidt [2013] terms “throughput”): whether it gives unbiased consideration to all input, is effective in reaching a decision, and transparent in its functioning. It has been shown that if people perceive the process as fair, they are more likely to accept its outcomes, even if those outcomes are unfavorable to them (Bertelsmann Stiftung, 2014; Esaiasson et al., 2012; Tyler, 2000). Finally, legitimacy of the result might also derive from the quality of these results (or “output”). In other words, if people are satisfied with the quality of the result (in our case the norm), this means that they will be willing to accept it, and hence judge it as legitimate.

Input and throughput legitimacy is what we consider when we analyze the *legitimacy of the process*. From a theoretical perspective, the interrelation between process and results has been outlined in great detail by theories of deliberative democracy. While deliberative theories are very different in detail, all of them

address a relationship between certain conditions (input) for a specific type of communication (throughput) and the results (output) that are produced due to such a deliberative process (Friess & Eilders, 2015; Wessler, 2008). Deliberative theorists argue that the processes of deliberation will produce consensual decisions with high epistemic quality, which enhance legitimacy, and therefore acceptance of the final decision (Barber, 1984; Habermas, 1996; Manin, 1987). While Bohman (2007) is skeptical regarding consensus as the ultimate goal of deliberation, he argues that error avoidance is the main goal of deliberative processes, which, therefore, affects the quality of deliberative decisions. In the same vein, Mendelberg (2002, p. 153) states that deliberation will lead to decisions which are “more considered and informed by relevant reasons and evidence.” We adopt this argument from deliberative theory when we assume that the legitimacy of the results is related to the process of cooperative norm setting.

Previous Research

Following Fung’s (2006) framework, public participation opportunities can be distinguished along three dimensions: who participates, how participants engage with each other, and what power participants have over the outcome of the process. Referring to these dimensions we argue that meaningful cooperative online norm setting would entail: (i) that all who are affected have a chance to participate (which includes knowing about the process); (ii) that participants engage with each other in a dialog to achieve at least a common understanding of the problem at hand (if not the solution); and (iii) that participants have at least indirect power over the final decision of the norm.

These principles are seldom implemented in an online process. An exception is Wikipedia, which is open to everybody, the norms on issues such as what constitutes a relevant article are developed through deliberation, and those who are affected have the chance to vote upon them. The quality and the legitimacy of these norms can be judged by the results that they produce, and, with some exceptions, Wikipedia articles have been found to be generally reliable (Mesgari, Okoli, Mehdi, Nielsen, & Lanamäki, 2015). Another area is the development of open source software as discussions about decisions, for example, on future software features, are also coordinated online (Weber, 2004). These norms too have been successful in producing high-quality results (Mockus, Fielding, & Herbsleb, 2002). However, these processes are very selective in who has the ability to participate (e.g., because of the knowledge necessary to develop code) and the norms that guide these efforts of commons-based peer production remain outside the formal rule of law and pertain to arguably nonessential areas of life.

In contrast, both demand for participation and promise for increased quality and legitimacy are particularly high in regard to formal norms such as laws and regulations. While processes to set such formal norms have also been carried out online, these have usually been confined to simple expressions of opinions—instead of meaningful deliberation—and have limited the power of participants to mere consultation instead of involving them in the decision process. Three groups

of such processes can be distinguished. First, for over a decade, executives and legislatures have used the Internet to elicit input from citizens on general politics, most prominently through online petitions (Böhle & Riehm, 2013). While petitioning sometimes involves means for deliberating the issue at stake, their connection to the legislative process is weak and leaves the majority of petitioners dissatisfied with the outcome, which indicates that (opportunities for) online participation do not automatically translate into greater legitimacy (Carman, 2010; Escher & Riehm, 2016).

Second, the general public or affected stakeholders can participate through formal consultations on planned legislation. The U.K. parliament started online consultations in the late 1990s. While these early efforts resulted in greater quality of the norm, they did not increase trust toward the decision makers and hence added little to overcome the lack of legitimacy (Coleman, 2004). Similarly, efforts by the U.S. administration to increase participation in regulatory rulemaking have shown that through these channels new voices could be attracted, which improved the final rules and also increased their legitimacy (Shulman, 2003; Stanley & Weare, 2004). However, in general, results have been sobering, because the introduction of online means of engagement has not increased levels of public participation in rulemaking (Balla & Daniels, 2007; Coglianese, 2006). In particular, even when a substantial number of people participate, they rarely contribute content that provides new information to increase the quality of the rule-making process (Lubbers, 2012; Shulman, 2006, 2009). Additionally, participants usually submit just a single comment and rarely deliberate with other participants (de Figueiredo, 2006, p. 992).

The third group are projects that aim to enable collaboration of citizens in order to develop norm proposals and provide citizens with more power to influence the outcome. However, this power is limited to agenda setting, for example, by mandating relevant elected bodies to discuss the citizen proposals. Examples include Estonia's "today I decide" (TOM) project (Glencross, 2008), the Finnish Citizens' Initiatives (Christensen, Karjalainen, & Nurminen, 2015), and the attempted reform of the constitution of Iceland (Landemore, 2015). Evaluations show that these initiatives are used by citizens to develop sensible norm suggestions. At the same time, the studies cited show that few citizens participate online, little deliberation takes place and the results of such initiatives tend to be blocked by the bodies that are formally responsible for the decision. Overall, such initiatives often lead to dissatisfaction among participants.

In conclusion, in the area of legally binding norm setting processes our experience is limited to very few examples in which participants were given a significant degree of power over the shape of binding norms. Those examples, which have enabled at least some collaboration online, indicate that improvements in the quality of the final norm are possible, but that more often than not, only few participate and rarely do such processes enable real deliberation, meaning that few significant contributions are made, which in turn also impact on the legitimacy. Given this limited and inconsistent evidence, we focus on the following research question:

Does online norm setting result in norms of high quality and high legitimacy?

Our work extends previous research in several ways. First, we focus on a real norm setting process in which participants were involved in the development of legally binding norms.² Second, the affected stakeholders had the ability to engage in serious deliberation about the subject instead of simply expressing support. Third, we carry out the case study in a context that favors online participation, as we will discuss in more detail later on. As such, our research analyses what can be considered a case study of critical relevance (Yin 2009, p. 74)—if online norm setting were unsuccessful when purposefully designed and situated in a favorable context, it would be questionable if it could work at all.

We searched the literature for studies that evaluated participatory online processes that have been employed in universities.³ The University of Augsburg tested *Demokratix*, a platform that allows students to voice suggestions for improvements and vote upon them (Noack, Schnurr, & Sporer, 2011). However, these suggestions are not integrated into any formal decision-making procedure, and the platform seems to be rarely used (seven proposals in the period 2012–16). Henkel and Sieghardt (2011) describe a participatory process at the University of Natural Resources and Life Sciences in Vienna that aimed to improve the quality and “studyability” of its degree programs. While their mission is comparable in scope, the process was mainly based on offline participatory mechanisms save for a small online forum. While there is extensive research on the use of the Internet for facilitating academic learning, we were not able to find studies reporting use of the Internet for engaging academics in decision-making processes and norm setting in universities. While we did not find any comparable studies, we cannot entirely rule out that relevant studies exist.⁴

Case Study

Overview

This article reports the results of a cooperative online norm setting process that was initiated, designed, and implemented by our interdisciplinary research team in order to gain a better understanding of such processes, in particular to assess their effect on quality and legitimacy of the results. The subject of the online norm setting was a redraft of the examination regulations that govern the conferral of doctoral degrees at the science faculty of a German university. The regulations concern, among others, what is necessary to be eligible for a degree, supervision arrangements, and defense of theses and grading. These rules pertain to the very essence of the faculty as they are the guidelines by which new scholars are admitted into academia.

The standard procedure in which these rules are developed and determined gave a large degree of power to the vice dean. This individual would suggest improvements and circulate the draft to the management committees of the individual departments. It was at the discretion of the deanery to incorporate the

comments they received from the departments. Eventually, a revised version would be put to the Faculty Council, an institution of 15 elected representatives (eight professors, two post docs or Ph.D. students, three students, and two members of nonacademic staff), for discussion and the final vote. If there was a majority in favor, the rules were adopted, otherwise there would be another round of comments. While in all these committees there were usually also representatives of post docs, doctoral students, and nonacademic staff, professors always held the majority of votes. This indicates that although Ph.D. students are formally involved in decision-making processes in the faculty (e.g., regarding the regulations of the Ph.D.), professors always had the most powerful position and could always reach a decision even if all other members of the Faculty Council opposed the suggestion. For the purpose of our project, the process was opened up to all members of the faculty, which in the context of the German university system includes all professors, post docs, and doctoral students. In addition to these, the student representatives and selected nonacademic staff involved in administration of these matters were also given the chance to participate. Overall, 1,346 people were invited to participate and for simplicity, we will refer to all of these as faculty members.

The process was structured in five phases over a period of three months. In the first phase, which lasted three weeks, general principles of the new regulations were discussed such as how many papers are necessary for a cumulative Ph.D. thesis. Participants could (a) express agreement or disagreement by rating a proposal (pro/contra vote); (b) discuss a proposal by writing a comment; or (c) make a new proposal that could be rated and discussed by other participants. In the second phase, the deanery combined those principles that seemed to have the most support and that would also make a plausible overall norm into a set of rules for the prospective examination regulations. In cases in which a principle did not have a clear vote in (dis)favor, the comments and the judgment of the deanery were taken into account. This aggregate was then again subject to public online participation for two weeks. In the third phase, the deanery drafted a document of the new regulations, which was publicly discussed for three weeks in the fourth phase. The fifth and final phase was the debate of the Faculty Council on the proposed new regulations to formally enact the new rules.

Design Considerations

A multitude of factors determine the outcome of participatory efforts via the Internet. They can be divided into two categories (Beierle & Cayford, 2002; Pratchet et al., 2009; Rowe & Frewer, 2000): *context* (e.g., institutional culture of the administration initiating a participation process) and *design* (e.g., aspects of the technical platform or the rules of decision making). In terms of context, this process took place at a science faculty of a German university on whose characteristics we elaborate in more detail in the discussion. In terms of design, our decisions were targeted at three areas. First, we aimed to generate

participation as the basis for the entire process. Second, we aimed to increase the quality of the process, mainly by enabling and encouraging meaningful and constructive input and discussion. Third, we aimed to create a process that ensured both the lawfulness of the result and acceptance by participants, and as such its legitimacy.

Previous research has shown that a key factor to *motivate engagement* in participatory process is a clearly stated goal and the relevance of the issue at stake (Kubicek et al., 2011, p. 10). We tried to increase engagement by making sure that only people who were affected by the examination regulations were invited; by gaining support of the dean; and by contacting all affected persons via email to inform them about the process. To reduce barriers to participation, the online system did not require setting a password straight away and we offered different opportunities for participation, from voting on proposals, which just needed one click, to commenting and writing of proposals. By splitting the process into several steps, the structure also aimed to make participation easier. At the beginning, it was only relevant to discuss general principles; having expert knowledge of the norm itself was not required. Recognition of user contributions, for example, by immediately displaying contributions and also attributing them, has also been shown to motivate participation (Towne & Herbsleb, 2012, p. 102). Finally, reminder emails notified the target group of the start of new phases in the process.

To improve the *quality of the process*, we focused on usability and on creating an environment for constructive debate. We relied on the open source software Adhocracy.⁵ This platform has been used in several previous participatory processes, most notably for the Internet-Enquete commission, a special committee of the German Parliament (*Bundestag*) (Gollatz, Herweg, & Hofmann, 2015). To ensure the usability of the platform, we conducted a small pretest of its usability with 21 students, which led to some modifications of the system (e.g., increased visibility of the voting buttons). In addition, the online forum's design considered several factors which empirical research has identified as influencing the quality of online discourses positively (see Friess & Eilders, 2015; Janssen & Kies, 2005; Towne & Herbsleb, 2012). First, the complex task of developing a norm was divided into smaller tasks that required less time and knowledge and allowed participants to choose a certain field of interest and competence (Koop, 2010, p. 49; Towne & Herbsleb, 2012, p. 103). Second, by providing a first set of relevant principles to discuss instead of offering only an empty space we aimed to facilitate participation and provide guidance on the topics that would be relevant for participation (Koop, 2010, p. 57). Third, the forum provided a section of relevant information as this has been shown to support the exchange of rational arguments that is at the core of deliberation (Fishkin, 2009; Himelboim, Gleave, & Smith, 2009). Fourth, the online platform displayed the real name of the participant. Even if the factor of identification is a controversial matter, there is evidence that identification of the user improves the quality of discourse (Janssen & Kies, 2005; Suler, 2004). Fifth, the deanery had the right to moderate comments that were considered to be offensive or illegal (as mentioned in the terms of use)

because moderation has been found to improve the quality of online debates (Janssen & Kies, 2005; Wright & Street, 2007). Finally, the online process was supported by a number of dedicated staff to attend to technical queries as well as other questions (Kubicek et al., 2011, p. 10).

To ensure the *legitimacy of the process* from a legal point of view, it was necessary to acknowledge that only the Faculty Council has the right to adopt a new examination regulation. To allow for outside participation, the Faculty Council invited all stakeholders to discuss and rate the proposals or make new suggestions. However, for legal reasons, only the members of the Faculty Council could vote on the adoption of the norm. Yet, because the members are free in their mandate, it was not possible to bind them on the vote of the wider participation exercise.⁶ This could pose risks for legitimacy, because this small group of people had the power to ultimately change the norm. However, Kubicek et al. (2011, p. 10) found that a large degree of transparency of process and decision making improves its acceptance. Therefore, the whole process was open to everybody; in particular the website was accessible for everyone as was the Faculty Council meeting, and this transparency was meant to contribute to legitimacy in terms of acceptance. In the same way, the deanery's aggregation of the principles discussed in the first round was meant to ensure a norm of high quality. However, this gave large discretion to the deanery, which could result in lower levels of legitimacy for fear of abuse or manipulation. Therefore, this aggregate set was again put to discussion and vote to increase legitimacy.

Sources of Data

We draw on a variety of data sources including the platform log data, a survey of invited faculty members, content analysis of the online discussions, and interviews with randomly chosen stakeholders. The online platform allowed tracking of individuals' usage of the platform including navigation through the site, voting history, access location, and device. In addition, a few days after the Faculty Council had passed the new regulation, all 1,346 faculty members were asked to complete an online questionnaire, focusing on their assessment of the quality and legitimacy of process and result (Appendix A). In total, 230 questionnaires were completed sufficiently (i.e., at least half of the questions were answered), representing a response rate of 17 percent. Unsurprisingly, those actively participating in the online process by voting or commenting were twice as likely to participate in the survey, hence making the sample biased toward this group (59 percent of the sample were active participants while overall only 29 percent of the faculty population participated). Additionally, professors are overrepresented in the sample (23 percent in the sample vs. 14 percent in the faculty population) at the expense of post docs. However, the gender distribution of the faculty was replicated in the sample (37 percent women in the sample and in the faculty population). The survey data could be combined with platform log data, for example, to distinguish people who engaged with the platform from those who did not.

To enrich the survey's results and gain more insight into the perceived legitimacy and quality of the online participation process and the process's result, we conducted semi-structured interviews during November 2013 and February 2014. We selected the interviewees by stratified random sampling from the population of all invited faculty members to avoid selection bias. In total, we interviewed 15 people from different status groups: five doctoral students (S), five post docs (PD), two professors (P), two people from nonacademic staff (N), and a person within the deanery (D). Of those 15 people, five also belonged to the Faculty Council (F) (two professors [P-F], two post docs [PD-F], and one member of the nonacademic staff [N-F]). Furthermore, the interviewees differed in their participation intensity. While some of them preferred to only follow the online discussion, others actively participated but differed in frequency; one interviewee did not participate actively. The interviews were conducted face-to-face, were recorded with the consent of the participants, and lasted approximately 40 minutes. We transcribed and anonymized the interviews, and analyzed the data using qualitative content analysis (Mayring, 2000). A coding scheme with categories to infer quality and legitimacy of the process and result was developed with MAXQDA (VERBI Software GmbH, Berlin, Germany), a software tool for systematic assignment of codes (contextual categories) to text sections.

Finally, 435 comments that were written during the first phase of the online discussion were content analyzed on the basis of a coding scheme drawn from the fundamental assumptions of normative deliberative theories (e.g., Dryzek, 2000; Gutmann & Thompson, 2004; Habermas, 1996) and previous research on online deliberation (Graham & Witschge, 2003; Monnoyer-Smith, 2006; Stromer-Galley, 2007). The coding scheme includes 15 variables, which operationalized the concept of deliberation within nine categories (Appendix B). All posts were coded by two trained coders. Intercoder reliability was 0.90 (using the Holsti index), which can be considered excellent for content analysis.

Results

Before discussing the results in relation to quality and legitimacy, we briefly want to report on the general levels of participation. Of the 1,346 invited faculty members, 29 percent did not react to the process at all while more than a quarter of invited people (29 percent) actively participated by voting, commenting, or drafting proposals of their own. A further 42 percent visited the platform but remained passive. Overall, more than 5,000 votes were cast by the participants, more than 500 comments were written, and 10 people made new proposals on the site for discussion and voting by the other participants. The log-file data analysis showed that active engagement with the platform was highest at the beginning of the process, but waned toward the later stages. Finally, we analyzed the participation levels of the different status groups. While both doctoral students and professors were comparatively highly motivated, resulting in about a third of these groups actively participating, post docs were less interested (only 19 percent were active). The members of the Faculty Council were particularly

engaged (67 percent were active), which means they actively participated in the discussion and acted to integrate this online forum into the offline Faculty Council discussions. Doctoral students and professors exhibited very different styles of engagement. While the students opted in the majority for voting, the professors usually preferred to comment.

Quality of Process and Result

The *quality of the process* has several dimensions. The first dimension is the structure of the five-step process, which interviewees considered to be transparent and suitable to structure the process of opinion formation and decision making (S.01; PD-F.02). The reminder emails played a crucial role in ensuring transparency and participation during all phases (PD-F.02; S.04; S.05; N13). Another dimension is usability, for which we report both technical measurements as well as subjective assessments from survey and interviews. From a technical perspective, the system was accessible more than 99.9 percent of the time and remained responsive (latency less than one second), despite phases with a high number of requests. The user support received only five emails highlighting minor technical problems, and six emails that made suggestions for improvement of the site (e.g., including additional links or information). We interpret this as an indication for a largely usable site, given that this is about 1 percent of all people who at least visited the site. The problem of usability was less in using the site for voting and commenting, but that the lively discussion could make participation difficult as participants did not have the capacity to read all comments and to cognitively connect information, as findings from the qualitative interviews indicate (P-F.03, S.05; S.07).⁷

Of particular interest is the quality of the debate. The survey showed that the majority judged the discussion as respectful and based on rational arguments. These assessments are supported by the results of the content analysis, which showed that it fulfilled many of the criteria postulated by deliberative theory (e.g., rationality, interactivity, civility, constructiveness) (for a systematic review on online deliberation research, see also Friess & Eilders, 2015).

Regarding rationality, the findings show that almost all 435 analyzed comments were clearly related to the topic of the forum (98 percent) and contained a clear position (96 percent). Two-thirds of the comments showed at least one valid argument. About 12 percent of the comments specifically asked for further information, while more than 25 percent provided additional information. In terms of interactivity, we found that 55 percent of the analyzed comments included references to other comments. In order to differentiate the type of interaction, we also coded whether people interacted in a critical, supportive, or argumentative manner. The analysis shows that about 21 percent of the interactive posts made a critical reference to another comment and 26 percent supported other posts. About 25 percent of the comments were replying to a specific argument, while 28 percent of the interactive posts remained neutral. While the first impression may indicate an average level of interactivity, the fact

that many of the posts were referring to the initial proposal for a new guideline draws another picture. Thus, a reply like "good idea, no doubt on that" was not coded as substantial reply. Only replies which specifically addressed other participants' posts were coded. Considering this, the findings indicate a fairly high degree of interactivity. The debate contains no evidence for uncivil communication. There was no withdrawal of the right to speak by the moderator and almost no disrespectful or discriminating content. This indicates a respectful atmosphere. On account of the fact that all the participants were members of a university, these findings are not surprising. Finally, we found that more than 20 percent of the comments included constructive elements, which indicates that participants tried to find a common ground or proposed new solutions.

Results from the survey provide further evidence for the high quality of the process. More than two-thirds of surveyed faculty members were at least somewhat satisfied with the online discussion and online drafting of the new regulation; less than 10 percent were dissatisfied. The evaluation of the process differed significantly between those who actively participated through voting or commenting, and those who did not. In the active group, 84 percent were satisfied with the process; in the passive group only 59 percent were satisfied.

Some interviewees pointed out that they see online procedures as the only way to enable broad participation in decision-making processes (e.g., PD.12, D.14). They argue that participation in online debates is more efficient and more flexible than in offline debates. Two of the interviewees ascribed the increased quality to the relatively low complexity of the process as the number of participants was small and interests were largely homogeneous (S.01; S.04). However, some of the ambivalence of research findings into online interactions is also expressed by the interviewees. PD-F.02 argued that nonverbal cues like bodily expressions and pitches of voices are helpful for a correct understanding of the intended meaning; this is why online deliberations are potentially affected by misunderstandings. Additionally, the interviewee called attention to the fact that writing well-grounded arguments takes a lot of time and was also concerned that extreme positions appear more often on the Internet than in face-to-face discussions.

To obtain an indicator of the *quality of the result*, we analyzed the recommendations of three major German research associations for how universities should improve the examination process in rules and in practice in order to assure the quality of Ph.D. theses. Using those recommendations that are made by at least two of these organizations as a standard for best practice, we found that most of the suggestions are implemented by the newly developed examination regulations. While some of these had existed already in the former regulations, about half came about as a result of the redraft. These include written agreements between supervisor and doctoral student, additional supervisors (mentors), and procedures for revoking a Ph.D. through plagiarism (for a detailed overview refer to Appendix C). In addition, that the regulation which was developed in the online process (and hence largely outside the Faculty Council) was finally passed by the Council with merely small alterations to correct minor

mistakes is a sign of its internal consistency. Remarkably, despite an intensive discussion, there were 12 pro votes and only one abstention with no contra votes which is rather rare in the Council as the members reported later. Also the subjective assessment of the targeted faculty indicates a high quality of the result. Our survey found that 70 percent of the participants think that the quality of the regulation has improved. As with the process, about 70 percent of the participants were rather satisfied with the outcome. The norm itself fulfilled all legal requirements.

Those actively participating expressed significantly higher satisfaction with the results. Overall, 73 percent of active participants were satisfied with the new examination regulations as compared to 64 percent of those who did not vote or comment. Furthermore, there are differences between status groups. Seventeen percent of the professors were dissatisfied with the resulting regulations compared to only 3 percent of the doctoral students. Notably, professors were significantly more satisfied with the old regulations: 44 percent of this group expressed that there was (almost) no need for improvement as compared to 16 percent of doctoral students, indicating that professors perceived little need for such a process. Unsurprisingly, these are also the ones who are more likely to be dissatisfied with the new regulations. A more detailed analysis of the reasons for this dissatisfaction shows three main sources of dissatisfaction that were all roughly equally mentioned.⁸ First, the increased bureaucracy created through the new regulations (in particular by annual progress reports). Second, the abolition of the general question and answer session in the oral exam. Third, the introduction of additional mentors for Ph.D. students, the latter being the only issue which dissatisfied professors and doctoral students criticized in equal measure, while the other criticisms were mainly voiced by professors.

Despite the various indicators that the quality of the discussion has been high, in the final discussion of the online draft, members of the Faculty Council still discovered some critical issues, for example, underspecified procedures and suggestions that are not in accordance with existing laws.

Legitimacy of Process and Result

Besides quality, we focused on whether participants perceived the new norm and the process by which it was developed as legitimate. A first indicator of the *legitimacy of the process* comes from the already mentioned survey result that less than 10 percent were dissatisfied with the online discussion and online drafting of the new regulation. Many interviewees perceived that the process of redrafting was opened to a broader group of participants than is usually the case (e.g., PD-F.02, P-F.03, S.07). As a result, the interviewees evaluated the legitimacy of the process as rather high: for instance, one interviewee emphasized the democratic value (S.04).⁹ Arguably, from the point of view of the interviewees, participation or the democratization of decision processes seems to be a value in itself. Most interviewees perceived the separation of the process into several steps and the aggregation phase as being transparent (e.g.,

PD-F.02, S.5). A crucial step in the online process was aggregating the premises discussed in the first phase. This was done by the deanery, which could be subject to critique from a perspective of legitimacy. However, 80 percent of the survey participants agreed with the statement that the proposals and ideas from the online discussion were adequately reflected in the draft. While the number of participants participating in this phase and hence voicing agreement was much lower than involvement in the first phase, it could be argued that this low participation is an expression of acceptance as it indicates a low need to confirm the aggregation. Also, the interviewees said they felt involved and could reconstruct in which way their comments became part of the redraft (S.06, P-F.11) or why some proposals were not successful (PD-F.10). Another potential threat to legitimacy is that the technology is liable to manipulation by those with access to it. However, this was not negatively mentioned in the process.

The overall *legitimacy of the result* seems to be quite high, again not least indicated by the high levels of satisfaction with the result. Additionally, most interviewees reported that they perceived a high legitimacy of the result (e.g., PD-F.02, P-F.03, S.07). Interviewee S.07 felt “respected” for having the opportunity to participate in the decision. Likewise, interviewee S.05 perceived some degree of control over the process’s result and appreciated that the norm was not set behind closed doors. However, the survey shows that only about 40 percent of those actively participating agreed that their proposals and votes had an impact on the final draft. About 14 percent believed they had no influence, whereas 25 percent could not tell. There remain open questions as to the perceptions of legitimacy, in particular of those groups who were dissatisfied with the results, because we lack the necessary data (as we discuss in the limitations later on). Based on the reasons of those who were dissatisfied with the result, as discussed in the previous section, we can only speculate that the biggest threat to legitimacy comes from those who have criticized the new oral exam format. They will probably have difficulty accepting the new rules (even though they have to), because they see them as a real threat to the quality of Ph.D. students and their theses. In contrast, those who take issue with the increased bureaucracy and the mentoring seem to consider the rules as less efficient but still effective, and hence should be more willing to accept them.

Discussion

The results show that there is indeed interest and potential in opportunities for online participation. Additionally, we have shown that offering different ways of engagement such as voting, suggesting principles in the early phase or commenting on a draft caters to different participation interests. While those taking up the offer to get engaged still remain in the minority, compared to other online participation initiatives, for example, those consultations reviewed by Kubicek et al. (2011) or rule-making efforts (Balla & Daniels, 2007), this represents a high rate of participation.

Interpretation of Results

This study aimed to answer the research question of whether the particular cooperative online norm setting process used in the university of our case study results in norms of high legitimacy and high quality. As the previous section has reported, the university's new regulation concerning examinations incorporates most of the external standards for improving the Ph.D. process, and in addition the majority of the affected stakeholders judged the quality of the result as high. This has been the result of a process that was judged as being of high quality both subjectively by participants and by quantitative content analysis.

Therefore, the project succeeded in generating an online space that enabled a deliberative discussion, which shows that this is indeed possible, even if many online forums are plagued by incivility and flaming (Freelon, 2010; Papacharissi, 2004). The result shows that the cooperative development of such complex issues as norms can be facilitated successfully online, and that fears of amateur participation are overstated. Against this backdrop, this case study could be considered a successful example of meaningful online deliberation.

A limitation of the research regards the question of whether the traditional norm setting process could have delivered a norm of similar quality. As we do not have comparable data, we could not investigate whether the former traditional norm setting process in the university would have delivered similar results. Even though we lack the empirical proof to answer this question, we have reason to believe that it would have been more difficult to produce a norm of high quality via the traditional process, given that those few people who make up the Faculty Council have collectively much less experience in the practical application of the rules than the vast amount of experience that the faculty as a whole brought to the process. As such, they spotted some issues in the norm that had gone unnoticed for years, such as the long obsolete requirement to be matriculated at the university. Here appears what Bohman (2007) has called the error-avoiding function of deliberation. At the same time, the online process did not detect all problematic issues. This can be partly attributed to the fact that the majority of participants lacked in particular the legal expertise to be aware of this issue; partly, we assume that some issues might just become obvious in a discussion between people who regularly deal with such norms such as the Faculty Council. Therefore, the results emphasize the benefits of the collaboration of the experts in the Faculty Council with the wider group of other stakeholders. So in terms of quality, it cannot be ruled out that this could also have been achieved by the established feedback process in which only committee members are able to comment.

In contrast, it is hard to imagine that a norm produced by the Faculty's traditional procedure would enjoy similar levels of legitimacy to the collaboratively crafted norm. As argued earlier, the sheer opportunity to participate and influence the process generates "input legitimacy," that is, people are more likely to accept the output. What is more, several factors contribute to "throughput legitimacy." First, while there are few formal rules governing the classical

procedure, the online process followed a clearly outlined structure and the main steps were publicly visible through the website, thereby increasing the transparency of the process. Second, the online process was effective in transforming a controversial matter into a compromise and hence producing acceptance of the new norm both in the Faculty Council as well as in the wider stakeholder group. While the examination regulations have previously been subject to intense discussion in the Council with divided opinions, the participatory online process achieved an almost unanimous vote in the Faculty Council. We explain this voting by two factors. On the one hand, the quality of the norm resulting from the online participation processes was perceived as being very high, so that the members of the Faculty Council felt no need to revise it. On the other hand, the previous nonbinding vote by the faculty members set up a high pressure on the members of the Faculty Council. Third, there was a feeling that one's contributions are relevant and that the offer for participation is a serious one. In the end, only 40 percent said that their individual contributions had an influence on the outcome. This is less likely to be caused by a feeling that the process was futile; rather, by an inability to judge the impact of individual contributions, which is also indicated by the fact that a quarter could not tell whether their contributions made a difference. However, overall 80 percent of the survey participants believed that the proposals and ideas from the online discussion were adequately reflected in the draft. The commitment of the Faculty Council to this process was also indicated by the fact that two-thirds of the members of the Faculty Council participated actively, hence showing a genuine interest in input and interaction, despite the fact that the Faculty Council was faced with a possible loss of power through the online process.

Overall, the survey has shown a high degree of satisfaction with both the process and (even though to a somewhat lower degree) the result. In sum, we argue that extending the classical procedure through opportunities for participation has positively contributed, in particular to the legitimacy of the resulting norm but also to its quality. From a theoretical point of view it can be argued that the designed process mirrors the argumentation made by deliberative theorists, which theorized the relation between the process of deliberation and its outcomes as we have discussed in the beginning.

Learning From Online Participation in Academia

With the qualifications we have made throughout this article, overall we argue that in the reported process the Internet was used successfully in order to produce a norm of high quality and legitimacy. While the results reported here are relevant in showing that online participation has the potential to increase quality and legitimacy of decisions, it raises the question of if and how similarly positive results could be realized in other contexts. This question is particularly pertinent for online participation in the political process, as previous efforts such as those described earlier have lacked participation, provided no meaningful input, or could not convince the target group of its merits.

The context of the process reported here can be characterized along the three different dimensions of organization, the (potential) participants, and the topic. As an organization, German universities already employ governance mechanisms in which all relevant groups of the university are represented. Although these institutions do not reflect the composition of the university (as professors will always have a majority), these structures offer a base that can be more easily expanded to include larger numbers of people, and they mean that there exists already a certain culture of (limited) participation. Additionally, there are fewer hierarchies in universities than in other settings (e.g., companies or political parties), which should benefit honest discussions. Notably, the process was successful even though the invited participants did not have formal power to shape the results. The size of the organization (in terms of number of members) means that all could receive a personalized invitation. Those invited to participate all had a high level of education and the necessary resources for participating online such as Internet access. Even though not all faculty members know each other, the size and structure of the organization means there exist connections between many members which are governed by a “shadow of the future” (Axelrod, 1984). This should help to mobilize for participation as well as to keep the discussion reasonably civil and polite. Finally, all organizational members were affected by the topic under discussion and had a real means of shaping the rules that would eventually apply to them. The topic itself represents a major norm for academia, given that it admits new people into academia. As such it shows that crucial topics can be successfully negotiated with the help of online participation. Despite this conducive context, only a minority of about one in four invited stakeholders actively participated. This indicates that a more widespread participation might neither be possible nor necessary to achieve the desired results (here: norms of high quality and legitimacy). This calls for a reevaluation of the common expectation that the success of a participation process is foremost dependent on widespread participation.

While we believe that the university is a favorable setting for testing the potential of online norm setting, we argue that the results are still instructive for applications in other contexts. First, the approach outlined above can be used to shed some light on why Wikipedia is considered an example of successful online rulemaking. Similar to the university, Wikipedia allows clear identification (if only by pseudonym) and approaching of those who are affected by its rules, that is, its (registered) users. While there exist clear hierarchies (e.g., between those with and those without administrator rights), everybody can vote on policies and the system itself is open and participatory in nature as those are regularly voted upon (Forte, Larco, & Bruckman, 2009). Members share a common commitment to create a high-quality encyclopedia and even though they might not know each other personally, reputation systems mean that they still have a strong incentive to collaborate. Both facts contribute toward the generally deliberative discussions. Finally, Wikipedia’s norms have direct relevance to the members. As such it is not surprising that the online norm setting process generally works well.

Comparing the university to the political context, for example, to the online consultations reported on earlier, it is clear that the foundations for successful online participation are more challenging. First, the target groups are much more diverse than the rather homogeneous group of academics we focused on in our study. In a typical council setting, many of those invited to participate might lack the skills and resources to do so online, which reduces participation. In addition, those who are invited tend neither to share social connections nor do they necessarily share a commitment to find a solution, resulting in conditions that are detrimental for a deliberative discussion. Finally, it is difficult to find a topic of consultation that is of similar immediate relevance to those targeted, an issue made worse by the fact that usually such exercises lack a binding character and hence make them even less relevant. As such, it is not surprising that online consultations have produced the negative results reported on earlier.

Notwithstanding these challenges, our results suggest that successful online participation is also possible in the political realm. For example, we consider internal participation processes by political parties as comparable to the university context. As member organizations, it is easier for parties to reach out to individual members, and those members are already involved in decision-making processes. While they are more diverse in background than academics, they are more likely to share certain values and are more experienced in arguing, which should contribute to a more deliberative discussion. At the same time the wide geographic distribution of nationwide parties make online means a suitable solution for participation when general assemblies are not an option. Therefore, it is no surprise that many political parties have made attempts to engage their members via online means, not least in Germany. However, evaluations of these efforts, both for established parties (Hanel & Marschall, 2013; Koch, Rapp, & Hilgers, 2014) as well as for the German Pirate Party (Bieber & Lewitzki, 2013; Buck, 2012; Bullwinkel & Probst, 2014), found that they produce dissatisfaction among participants. This is clearly related to the fact that so far the participation processes have had little relevance for party policy, as the existing hierarchies (i.e., the party elites) have retained a tight control on the processes and their outcomes. Should, in the future, party elites offer online processes with the serious intention of allowing participants a meaningful influence on the issues under discussion, then our results from the university context suggest that online participation could also work in this context. The same seems to hold true for nongovernmental organizations or civil society groups.

Limitations and Future Research

While we had access to a comprehensive set of data of a purposefully designed online norm setting process, our study has several limitations. First, the study would have benefited from more comparative data, particularly with regard to results from the traditional norm setting process. This information would allow putting the results into perspective. For example, those actively

participating were more satisfied with the process and results than those who did not vote or comment. Nevertheless, satisfaction was high even for those not participating. This might suggest that the opportunity for participation is in itself already providing satisfaction; which provides an interesting question for future research.

Second, although our mixed method approach provides comprehensive insights into the online participation process, it is limited by a number of measurement challenges. One is the short time frame. For instance, evaluating the quality of a norm is often not possible only a few months after the norm is set. In our case, follow-up evaluations by members of the deanery and those affected by the norm (i.e., professors and doctoral students) should be conducted in order to analyze to what extent the initial evaluation correlates with the long-term assessment of the norm. A second problem is related to the operationalization of quality and legitimacy. Satisfaction might be a problematic measure to assess the substantive quality of the result (Coglianese, 2002). After all, as we have discussed, the dissatisfaction of some professors seems to result from the fact that some provisions in the new regulations such as supervision agreements and mentoring increase their workload. However, these were explicitly suggested to improve the quality of the theses. Therefore, quality should also be assessed in other ways, for example, through an expert judgment by someone outside the faculty. In terms of legitimacy, we are basically interested in evaluations of acceptance of the final rule, but it would have been difficult to measure this in a survey as all stakeholders are legally bound to the rule anyway. Therefore, our survey did not explicitly inquire into acceptance but into satisfaction. The interesting question is what the perceptions are of those participants who are dissatisfied with the results. Do they accept the process and the result despite an outcome that was not in their favor? Future research should therefore probe deeper into perceptions of legitimacy, in particular the perceptions of those people who are dissatisfied with the outcome and/or did not participate in the process at all. Another issue with measuring legitimacy is that these rules apply also to future students, who cannot be surveyed about their assessments.

Third, more systematic testing of success factors for online participation is needed. For example, one key assumption has been that a legitimate process should produce legitimate results. However, there are some indications that this is no simple connection. Professors and doctoral students differ significantly in their satisfaction with the outcome, even though both groups are equally well satisfied with the process. While satisfaction is no perfect measure of legitimacy, it at least shows that ensuring the quality and legitimacy of the process alone is not enough to achieve satisfaction with the outcome. This should be explored further. What is more, as participants felt overwhelmed by the amount of comments on the platform, new ways of visualization and summarization should be explored to make participation processes more accessible, in particular when online participation processes are experiencing high rates of contributions.

Conclusion

The research presented in this article had the aim of establishing whether online participation processes can at all succeed in achieving results of high quality and legitimacy. For this we have focused on a particular form of online participation, namely the cooperative development of norms by affected stakeholders. Drawing on a variety of methods and data sources, we have shown that within the context of our particular case study, that is, the redraft of examination regulations for doctoral degrees, the online norm setting process did indeed succeed in producing a norm of both high quality and legitimacy. The level of participation meant that a substantial number of people contributed actively. What is more, the quality of the debate was high based upon standards of deliberation as well as subjective interpretation by participants. Not least, satisfaction with both process and result was widespread and the legitimacy of the process and its result was not challenged. While satisfaction was higher for those who participated, it was not limited to those participating.

This article contributes to the literature in several ways. First, we carefully designed and implemented an online process focused on setting a legally binding norm that goes beyond the scope of those previously described in terms of who can participate, how they can participate, and the degree to which they can shape the final result. This project represents one of the few examples in which participants have actually shaped the final norm to a large extent. Even though the participants did not have the formal power to adopt the results as it was not possible to make them binding for the Faculty Council due to legal constraints, the members of the Faculty Council voted for the proposal developed by the participants of the online process. What is more, as far as we were able to determine, such a process has not been described and evaluated in the literature until now, even though, as we argue, this represents a context with many preconditions in place for successful online participation. From this process derived the rare opportunity to put to a critical test the potential of online norm setting and online participation more generally. If online norm setting were unsuccessful when purposefully designed and situated in a favorable context, it would be questionable if it could work at all.

This leads to the second contribution. The evaluation of the process and the result has shown that contrary to the majority of previous exercises of online participation in relation to formal norms, such processes can indeed be successful in terms of ensuring quality and legitimacy of both process and results. Hence, our study shows that online norm setting as a specific variance of online participation can indeed be successful in producing good results and fulfill expectations formulated by the literature. What is more, while we were not able to draw on comparative data from an offline norm setting process, we have discussed why we have reason to believe that the results of the online norm setting process at the science faculty under investigation do indeed represent an improvement over the established traditional procedure.

While this offers some support to the more optimistic voices in the debate about online participation, our case study also suggests that successful online participation is a demanding process, which relates to the third contribution. By highlighting relevant aspects of the described context we offer possible explanations for the widespread difficulties of participatory online processes in politics reported in the literature so far. This can be instructive for policymakers and practitioners on when (not) to incorporate opportunities for online engagement into their established norm setting processes. Therefore, policymakers may be inspired by the design considerations we have outlined. In particular, our results show that meaningful participation is possible even when formally hierarchical decision-making structures remain in place. This might act as an additional motivation for parties or government bodies to deliberate policies with a broader audience in order to achieve more legitimacy and quality for their final policy proposals.

We have pointed out a number of limitations of our study which highlight the need for future research of online norm setting in diverse contexts. By offering a detailed description of the case study and its result, this article provides a basic comparator for this future research. Such research should focus in more detail on the relationship between the input, throughput, and output of online norm setting processes. Although experimental and quasi-experimental research might help to investigate such relations, it is not always possible and not always appropriate in the context of real online participation. Additionally, it seems worthwhile to focus on other contexts of norm setting processes, for example, in party politics or nongovernmental organizations or economic enterprises.

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Notes

1. We define deliberation as a demanding type of communication which has to follow certain rules and is therefore characterized by certain standards (e.g., argumentation, interactivity, equality, respect, and constructiveness) (see also Friess & Eilders, 2015).
2. Due to legal requirements, the participants did not possess formal power to adopt the results and, hence, the final decision was still voted on by the small group of the Faculty Council. However,

the Faculty Council eventually adopted as binding the norm that was developed online. In this way, the participants had at least an indirect way to influence the final result.

3. We searched for a combination of the following terms in the title or abstract “online|Internet universit* governance|participat*” and in addition for the German terms “Selbstverwaltung| Mitbestimmung,” limiting the search to the previous 10 years. We searched full-text databases such as Web of Knowledge and Scopus. In addition, we checked the volumes of dedicated journals such as the German journal *Wissenschaftsrecht* (WissR) which focuses on “the legal and administrative problems of modern research and teaching at the university level” as well as the German Journal for Higher Education Development (*Zeitschrift für Hochschulentwicklung*).
4. There are two explanations for this lack of additional comparable studies in the university context. First, the searches resulted in very large lists of references as the keywords also applied to the large body of research related to e-learning, social media, and governance in the university. So for practical reasons we had to limit our review to the most prominent results. Even though we checked hundreds of results, we cannot rule out that relevant studies exist. Second, it might well be that online tools for collaboration are employed within the context of academia without being evaluated or at least without publication of the results of the evaluation.
5. <https://github.com/liqd/adhocracy/> [March 11, 2016].
6. However, there was a strong commitment communicated by the deanery and Faculty Council to consider the outcomes of the online process. This commitment was also displayed on the starting page of the forum.
7. As one interviewee pointed out: “There was an exponential increase of comments, they were posted so fast, at one point, everyone got confused” (S.07).
8. While 70 percent were satisfied with the result, 15 percent voiced they were neither satisfied nor dissatisfied and only 7 percent expressed dissatisfaction (9 percent could not tell). So overall 22 percent (50 people) were not satisfied, and of those 33 people offered reasons through an open survey question. Of these, 55 percent were professors, 33 percent doctoral students, and 12 percent post docs and other groups.
9. As it is “generally welcomed to have the opportunity to participate irrespective of which norm will be set at the end. It is fair to be part of a discussion about such a regulation” (S.04).

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Appendix A: Online Survey

The following is an English translation of the survey instruments.
Invitation email

Dear Mr./Miss.,.

On XX November, Faculty Council passed the new examination regulations for Ph.D. students. Before it becomes effective, it is subject to a legal examination and subsequent official publication. However, it is already available. The link to the document can be found at the end of this email.

To support the development of the new examination rules, the science faculty pioneered an online-based participation process which significantly shaped the final norm. In order to understand the opportunities and problems of such processes, the online discussion was accompanied by a research study. Finally, we would, therefore, ask you to answer a few questions. The first question can be answered directly via the link at the end of this email. The analysis is done in

anonymous form, and it the data will not be disclosed to unauthorized third parties. Please contact us if you have further questions.

Regardless of whether you have participated the online process or not: Are you satisfied with the new doctoral regulations?

Please click this link if you are rather satisfied with the new doctoral regulations: [\[Link1\]](#)

Please click this link if you have a balanced view on the new doctoral regulation: [\[Link2\]](#)

Please click this link if you are rather dissatisfied with the new doctoral regulations: [\[Link3\]](#)

Please click this link if you are not able or willing to answer this question: [\[Link4\]](#)

Thank you very much for your participation.

The text of the new examination regulations is available here [\[LINK\]](#).

Sincerely,
Vice Dean

Online Questionnaire

Thanks for your initial assessment. In the following, we still have a few short questions we kindly invite you to answer.

[Depending on the answer to the previous email, participants were asked whether there were any parts of the regulation with which they were particularly (dis)satisfied, and if so, which parts.]

How do you assess the need for change in the old doctoral examination regulations?

Select the left button if you appreciate the need for change to be very large. Choose the right button when you do not see any need for change. Select one of the three middle buttons, in order to provide a more nuanced assessment.

Very large ○ ○ ○ ○ ○ Not at all

How satisfied are you with the online discussions and online development of the new doctoral examination regulation?

Very satisfied ○ ○ ○ ○ ○ Very dissatisfied

Regardless of whether you have participated online via the platform in the process of developing the new regulations: Have you tried to influence the draft in any other ways (e.g., by a direct email to the vice dean, discussion within the Faculty Council, etc.)?

Yes ○ No ○

On the online platform, all participants were clearly identifiable with their real names. Do you think this makes sense, or should the participants remain anonymous in such a discussion?

- All participants should be anonymous
- Participants should have the choice on whether they want to be identified or not
- All participants should be identifiable with real names

How often did you visit the platform during the online phase, that is, from [Date] to [Date]

- Daily
- Several times a week
- Once a week
- Less often
- Never

Which of the following functions of the online platform did you use at least once (multiple mentions possible)?

- Rated a proposal or comment (approved or disapproved it)
- Wrote a comment
- Made a proposal
- None of the above

Please read the following statements and indicate for each individually how much you agree.

During the online discussion, I found myself outside the platform regularly with colleagues talking about the redraft of the Ph.D. guidelines.

Totally agree ○ ○ ○ ○ Strongly disagree Do not know ○

I think that through the online discussion, the examination regulations have improved in quality.

Totally agree ○ ○ ○ ○ Strongly disagree Do not know ○

I think that the proposals and positions from the online discussion were adequately integrated into the examination regulations.

Totally agree ○ ○ ○ ○ Strongly disagree Do not know ○

I think that the opinions expressed on the platform were supported by arguments.

Totally agree ○ ○ ○ ○ Strongly disagree Do not know ○

I think that the participants treated each other respectfully.

Totally agree ○ ○ ○ ○ Strongly disagree Do not know ○

I think that my suggestions and votes had a real impact on the examination regulations.

Totally agree ○ ○ ○ ○ Strongly disagree Do not know ○

If you have any further comments on the online process or survey, please use the text field below:

Appendix B: Content Analysis Coding Scheme

Dimension	Indicators	Distinction [Code]
Rationality	Topic relevance	Topic relevance [1]
		No topic relevance [0]
	Position statement	Position statement [1]
		No position statement [0]
	Argumentation	No argument [0]
		Unqualified argument [1]
Qualified argument [2]		
Demand for information	More than one qualified argument [3]	
	Comment asked for information [1]	
Information presentation	Comment did not ask for information [0]	
	Information provided [1]	
Interactivity	Substantial interaction	No information provided [0]
		Reference to other comment [1]
	Critical interaction	No reference to other comment [0]
		Critical reference to other comment [1]
	Supportive interaction	No critical reference to other comment [0]
		Supporting reference to other comment [1]
Argument engagement	Not supporting reference to other comment [0]	
	Reference to an argument [1]	
Civility	Recognition of the right to speak	No reference to an argument [0]
		Recognition [1]
	Respect	No recognition [0]
Absence of disrespectful speech [1]		
Common good references	Common good reference	Disrespectful speech [0]
		Reference to the common good made [2]
		No reference to the common good made [1]
		Reference to particular group interests made [0]
Constructiveness	Constructive communication (e.g., searching for common ground, debate summary, solution proposals)	Constructive elements present [1]
		No constructive elements present [0]
Emotional talk	Negative emotions	Negative emotions present [0]
		No negative emotions present [1]
	Positive emotions	Positive emotions present [1]
		No positive emotions present [0]

Appendix C: Implementation of External Standards

The revision of the doctoral regulations described in this study was embedded in a debate on the reform of the German doctoral procedure, which had its origin in public reports about several German politicians' massive frauds in doctoral dissertations. Several institutions had published guidelines and recommendations for implementing standards to avoid such cases in the future. Three of those proposals were linked to the platform for the purpose of information only.

In order to receive some qualitative evaluation criteria, we analyzed the proposal of the German Council of Science and Humanities (Wissenschaftsrat), the German Rectors' Conference (Hochschulrektorenkonferenz), and the German Association of University Professors and Lecturers (Deutscher Hochschulverband). These proposals reflect the positions of the main institutions representing the interests of scientists in Germany. Drawing on these documents, we extracted recommendations for quality assurance that can be explicitly regulated in doctoral regulations. As a result of the internal discussions in those circles of experts, these positions may be regarded as "best practice" standards for doctoral dissertations procedures. The following Appendix Table C1 provides an overview of the different regulations and which of those have been implemented in the final doctoral regulations.

Table C1. Comparison Between the New Doctoral Regulations and Recommendations of the Major Science Organizations in Germany

Recommendation	WR ¹	HRK ²	AFT/DHV ³	Implemented in New Regulations
Selection and admission				
Clearly defined admission criteria	x	x		x
Faculty decides about admission	x	x	x	x
Fast track (B.A. degree) requires attending accompanying master's program	x	x		x
Registration at the beginning of doctoral program	x	x		x
Supervision				
Supervision agreement	x	x	x	x
Regular meetings	x	x	x	x
Limitation of doctoral students per supervisor	x	x	(x)	
Supportive working environment (e.g., sufficient opportunity to work on Ph.D., integration in teams, colloquia)		x	x	
Additional supervisor for each doctoral student	(x)	x		x
Arbitration board	x	x	x	(x) ^a
Support for external doctoral students	x	x	x	
Process for cancelation of doctoral program	x			x
Assessment				
Separation of supervision and assessment	x			
External examiners (outside home university)	x	x	(x)	(x) ^b
Candidates have access to thesis examination reports prior to their doctoral defence	x			x
Report by third examiner			(x)	(x) ^c

Table C1. Continued

Recommendation	WR ¹	HRK ²	AFT/DHV ³	Implemented in New Regulations
Doctoral defence (instead of Rigorosum)	x	x		x
Public doctoral defence	x	x		x
Four-member examination committee	x		x	x
Public display of the dissertation	x			x
Binary grading: passed/passed with distinction	x			x
Clear rules for cumulative dissertations	x	(x)		(x)
Scientific misconduct				
Delivery of primary data	x			
Random checks on misbehavior	x	x		x
Instruction on rules of good scientific practice	x	x	x	x
Declaration in lieu of an oath		x	(x)	x
Submission of electronic version		x		x
Regulated procedure for withdrawal of degree		x	x	x

Sources: ¹Wissenschaftsrat (2011) (German Council of Science and Humanities); ²Hochschulrektorenkonferenz (2012) (German Rectors' Conference); and ³Allgemeiner Fakultätentag, Fakultätentage und Deutscher Hochschulverband (2013) (German Association of University Professors and Lecturers).

Notes: The last column indicates whether these recommendations are implemented in the currently valid doctoral degree regulations. Recommendations that have been added as part of the online process described here are highlighted in bold.

^aRealized through introduction of mentoring.

^bOnly for the award of distinctions.

^cIn case of deviations of more than one grade or for the award of distinctions.