Social media, deliberative communication and conflict management: Reflections based on the example case of Freiburg Im Breisgau (Germany)

Alexander Mäder [a], Monika Bachinger [b], Andreas Ziermann [c], Patricia Harprecht [b], Volker Kromrey [c], Franziska Schlemmer [b,*]

[a] *Hochschule der Medien University of Applied Sciences, Stuttgart, Germany*
[b] *University of Applied Forest Sciences, Rottenburg, Germany*
[c] *Lake Constance Foundation, Radolfzell, Germany*

ARTICLE INFO

ABSTRACT

Recreation in forests may be conceived of as a common pool resource. This resource degrades if a too large number of recreationists or recreationists with too different activities populate the forest. In such cases conflicts due to resource degradation might occur. Deliberative communication is a respectful form of communication, which enables individuals to develop a mutual understanding and realize accepted solutions. Deliberative communication might take various forms, also being mediated by social media. These media, however, contain specific challenges. By taking the Institutional Analysis and Development (IAD) Framework by Ostrom (2010) as a conceptual base, the commentary looks at the conflict between cyclists and other forest visitors in Freiburg im Breisgau (Germany) to discuss whether and how social media posts could live up to the principles of deliberative communication and thus contribute to the mitigation of recreational conflicts in forests. Results show that social media posts host a great opportunity for deliberative communication, enhancing interactivity, rationality, constructiveness, empathy and a common-good reference. However, there are shortcomings of social media as well, which relate to the communication's solution-orientation and the inclusion of silent voices. Moderation of communication on social media appears to be a complex undertaking.

1. Introduction

In recent years the number of forest visitors has increased and recreation activities have become more diverse (Weinbrenner et al., 2021; Derks et al., 2020; Dufft, 2019). Against this background, conflicts between recreationists have become more frequent (Vaske, 2019; Schirpke et al., 2016; Rupf et al., 2014). Conflicts usually do not only depend on the actual behaviour of recreationists, but also on subjective perception or expectation (Kaae et al., 2010; Mann and Absher, 2007; Cessford, 2003; Vaske et al., 1995; Jacob and Schreyer, 1980). In addition, values and norms play a role (Boehm et al., 2020). Above that, recreationists may hold a dependency on certain infrastructures or geographic characteristics of the terrain (Mann and Absher, 2007; Cessford, 2003; Vaske and Kobrin, 2001). For example, hikers use path infrastructure and skiers a slope. Their activities, furthermore, are framed by rules and institutional settings, which might differ from place to place. Socio-economic factors like the quantity or behavioural patterns of recreationists frame conflicts as well (Vaske, 2019; Tynon and Gómez, 2012;

Bell et al., 2007; Carothers et al., 2001). Conflict management, therefore, needs to account for several aspects: the behavioural aspect, the perceptual or value-based aspect, the infrastructural aspect and the institutional and socioeconomic aspect.

The question of how these aspects interrelate and how they influence recreational conflicts can be addressed by looking at the Institutional Analysis and Development (IAD) Framework by Ostrom (2010)(see Fig. 1). Developed for guiding the governance of common pool resources, the frame consists of three categories. These are exogenous variables, the action arena and evaluation criteria. The aspects of conflict management, referred to above, mostly fall in the category of exogenous variables: this is the biophysical setting, the socio-economic frame and the rules in use. Value-based aspects are attributed to the second category of the IAD-Frame, which is the action arena. There, actors using a common pool resource interact in specific situations. The third category is evaluation criteria. Here interactions, like communication, and their outcomes are considered (Ostrom, 2015).

Transferred to the context of this commentary, recreation in forests
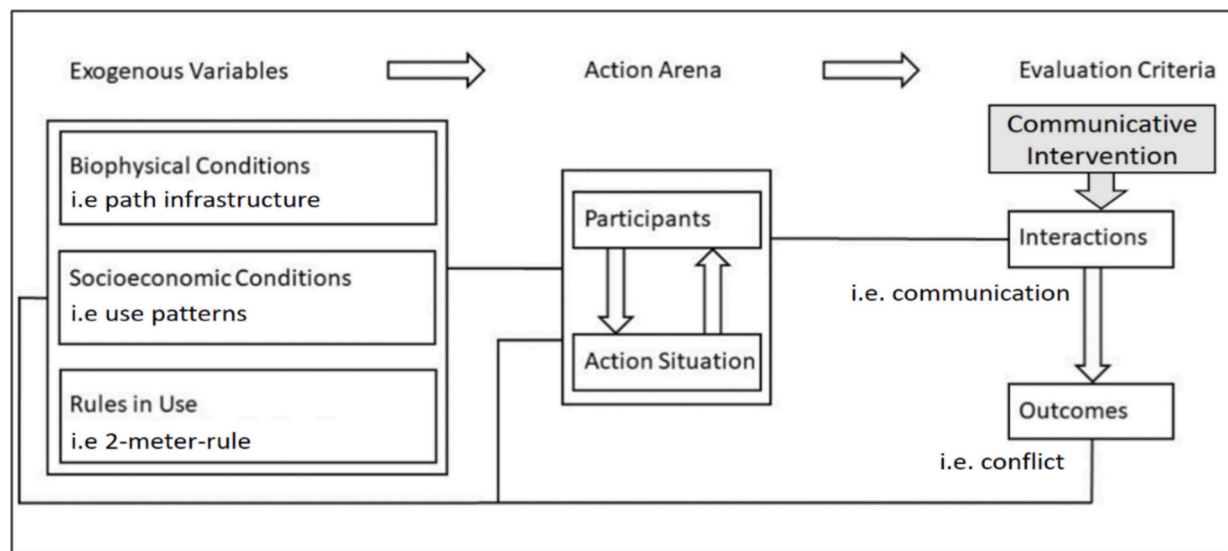

Fig. 1. IAD-Frame for Common Pool Resources (CPRs) (based on Ostrom, 2010).

can be interpreted as a common pool resource (CPR), since it holds the characteristic traits of a CPR: on the one hand, it is characterized by non-excludability in use, on the other hand it is characterized by rivalry in use (Ostrom, 2015). Non-excludability of recreation in forests means that recreationists, by and large, cannot be banned from entering forests in Germany. This is due the principle of free access to nature in German law. However, there are exceptions, for example in national parks, where recreationists usually are oblibged to stay on designated recreational trails. Forest recreation, on the other hand, suffers from rivalry in use. This results from the fact that forest recreation is limited in space and time: forest recreation, for example, might degrade in the moment, in which too many recreationists visit a forest, thus violating subjective expectations on visitation numbers, respectively individual crowding norms (Wilkes-Allemann et al., 2015a). Furthermore, recreationists might negatively affect recreation experiences by overusing forests, or by leaving use traces (Wilkes-Allemann et al., 2015b). However, these effects are highly place-specific and cannot be generalized to a high degree (Wilkes-Allemann et al., 2015b). From all these points, recreational conflict may arise; the term "recreational conflict" being defined as "indicator of social carrying capacity in recreation"(Tynon and Gómez, 2012, p. 532). This means that recreational areas, such as the forest, can accommodate a limited number of recreationists only. This applies even more if different activities are practiced side by side (Wilkes-Allemann et al., 2015b; Wilkes-Allemann et al., 2015a). When considering recreational conflicts, the interference of goals or values of the persons involved is particularly emphasized (Jacob and Schreyer, 1980). For example, conflicts arise between those seeking recreation when one person's desire for peace and quiet is opposed to the other's desire for adventure and sport (Spenceley et al., 2015).

By looking at the categories of the IAD-Frame, the genesis of recreational conflicts can be analysed. With regard to the conflict between cyclists and other forest visitors, for example, information on the biophysical setting would comprise path infrastructure, terrain elevation or vegetation. Socio-economic information would comprise the main activities performed in an area or the regions recreationists come from. Rules in use would contain laws and regulations on recreation. Actors would be recreationists who perform cycling and other recreational activities. Their expectations, values or group identification would be attributed to this category, too. According to the IAD-Frame, actors meet in action situations. These might be situations, in which recreationists interact directly or situations in which interaction is indirect, for example by perceiving traces of others in forests. It is important to note,

however, that recreationists might respond to these situations in different ways – that is, their interaction, according to the IAD-Frame, might look different. Here, the commentary steps in and looks at the role of communication for the mode of interaction, and thus – in a further step – for minimizing conflicts or helping to prevent conflict genesis as an outcome (Ostrom, 2015).

The present commentary puts deliberative communication and social media centre-stage. Deliberative communication is understood as a respectful form of communication, which enables individuals to develop mutual understanding and to reach accepted solutions in participatory processes (Friess and Eilders, 2015). Social media, in turn, have been discussed as highly biased. Communication in social media might be charged with emotions and highly identity-related. Specific groups might dominate the discourse, which renders achieving deliberative goals difficult: "bottom-up dynamics [of social media platforms] grant more visibility and a disproportionate influence to the loudest users" (González-Bailón and Lelkes, 2023, p. 172). Additionally, the design of social media platforms influences the way information is presented and perceived. Feeling empowered as a group, for example, is reduced on platforms that depend less on personal contacts and more on anonymity (Halpern, 2017). Nevertheless, communication between recreationists increasingly takes place in social media (Kang and Schuett, 2013). The media's role in public deliberation and conflict management, therefore, is interesting (Dryzek et al., 2019).

The aim of this commentary is to explore whether and how social media can live up to the principles of deliberative communication and in how far they might contribute to mitigating recreational conflicts in forests. The underlying key question, therefore, targets potential contributions, but also challenges of social media for deliberative communication in recreational conflicts in forests. This question is relevant, since social media have become an integral part of society's communicative practice. The commentary is structured as follows. The concepts of deliberative communication and of social media are explained in a theoretical section. Then, the recreational conflict of cyclists and other recreationists in Freiburg im Breisgau (Germany) is looked at as an example case. The case is described according to the structure of the IAD-Frame (Ostrom, 2015), that is, findings on each component of the IAD-Frame (socio-economic setting, rules in use, biophysical setting, action arena) are reported on to lay out the background for discussing potential contributions of social medial to deliberative communication in the case region. In this way, the specific situation is characterized, in which the recreational conflict in Freiburg im Breisgau appeared.

Futhermore, looking at the IAD-Frame helps to understand how communication on the conflict looked like, and how it was reported on in regional media. Methodological information is kept as short as possible and appears together with the related results in the same section. This is to keep up the structure of the IAD-Frame's components and enhace readability. The last part of the commentary, finally, looks at the key question, and evaluates communicative interventions in social media in respect to their contribution to deliberative communication in the example case. Future fields of research and first implications for forest management are deduced in the conclusion.

2. Definition of terms

In the following section, central concepts are defined. The focus is on the concepts of deliberative communication and social media. Both concepts overlap insofar as deliberative processes might take place in social media. However, deliberative practices in social media are complex and exhibit specific challenges.

2.1. Deliberation and deliberative communication

From a procedural point of view, deliberation is understood as a communication process, which is based on public participation. Some authors even see deliberation and public participation as identical (Dietz, 2013; Ravenscroft et al., 2002). More importantly, however, deliberation is a social learning process in which people learn with and from each other. Social learning processes are considered essential in dealing with use conflicts, and therefore exhibit a special importance for recreational conflicts (Schusler et al., 2003). In this context, Friess and Eilders (2015) emphasize the character of deliberation as a "rational, interactive, and respectful form of communication" (Friess and Eilders, 2015, p. 331). Deliberation is "a specific type of participation that is characterized by informed discussion between individuals about issues that concern them" (Friess and Eilders, 2015, p. 339).

In detail, six key dimensions characterize deliberative processes. These are rationality, interactivity, equality, civility, common good reference and constructiveness (Friess and Eilders, 2015). Rationality means an evidence-based argumentation. That is, assumptions and prejudices are put aside. The degree of rationality can be measured by participants staying on topic and not deviating, or by whether arguments and perspectives are based on well-informed sources. Interactivity includes active listening, responding to each other and the willingness to understand other opinions. A deliberative process, therefore, requires a certain degree of empathy (Friess and Eilders, 2015).

Equality, in turn, refers to equal opportunities for taking part in deliberative processes. A proxy for equality are evenly spread shares of talk time (Friess and Eilders, 2015). Equality can also be measured by looking at socio-demographic characteristics of participants such as age or gender (Friess and Eilders, 2015). Equality is an important feature of deliberation, because it safeguards the diversity of opinions and prevents the debate being narrowed down to pros and cons: "[W]hen the information is presented as more complicated, multidimensional, and interlinked - as a series of dilemmas and trade-offs - it is much harder to ignore the contradictory information" (Coleman, 2021, p. 144).

Another key criterion is civility, which includes politeness and respect among participants. Also relating the debate to a common good is considered a key factor. This means that participants do not put self-interest first, but try to understand the problem from an overarching perspective. Related to social media, referring to common goods seems more difficult. Friess and Eilders (2015) state that abstraction from one's own interests seems easier in direct discourse. Constructiveness, at last, means an orientation toward solution finding, which in recreational conflicts means developing measures for diminishing existing or for preventing new conflicts (Friess and Eilders, 2015).

As for outcomes, Schusler et al. (2003) define deliberation as "any process to communicate, raise and collectively consider issues, increase understanding, and arrive at substantive decisions" (Schusler et al., 2003, p. 312). However, taking consensual decisions does not necessarily need to be part of deliberation. Curato et al. (2017) emphasize that deliberation means acknowledging the plurality of views while agreeing on some basis for discussion: „Rather than consensus, deliberation should recognize pluralism and strive for meta-consensus, which involves mutual recognition of the legitimacy of the different values, preferences, judgments, and discourses held by other participants" (Curatol et al. 2017, p. 31). Raymond and Kenter (2016) describe the effects of deliberation as drivers of value change, because deliberation might change attitudes and preferences. Deliberation from a meta-perspective, furthermore, might increase legitimization of decisions (National Research Council (U.S.), 1996) and political efficacy (Friess and Eilders, 2015).

The risks in deliberative processes, on the other hand, are a high degree of emotionality and a predominance of specific groups (Beauvais, 2020). Deliberative processes do not always ensure the inclusion of all stakeholders, as participation is voluntary. Decisions, therefore, do not necessarily reflect all stakeholders' interests and their arguments (National Research Council (U.S.), 1996). Furthermore, deliberation is often criticized for being "just talk" and for having little influence on decision-taking (Polletta and Gardner, 2018; Dietz, 2013; Ravenscroft et al., 2002).

2.2. Social media and constructive framing

Social media such as Facebook, Instagram, WhatsApp or YouTube have many features that make them look suitable for deliberative communication. In particular, they fulfill several of the design conditions for online deliberation, which Friess and Eilders (2015) summarize as follows: Social media form networks between friends and followers, often using their real names. Specific discussion points can be discussed in depth in separate threads. The asynchronous and uncomplicated way of communication allows users to ponder a response and still react quickly. In this way, a decentralized exchange of information can take place. Halpern (2017) emphasizes that participants may even perceive of themselves as having a duty to take part in online communication and presenting themselves continuously – especially if they have strong, personal ties with their audience. Social media, thus, promote the exchange of ideas and arguments.

However, this is not how social media always work. Social media, in many cases, provide space for hate speech and misinformation. This might relate to preferences of the users or the algorithms, which favour novel information, thus promoting extreme views and disfavouring balanced ones (Vosoughi et al., 2018). Social media users might also find their own views confirmed in "echo chambers" unless, perhaps, the platform nudges users to connect with different groups, increasing the likelihood of being confronted with information contradicting one's own beliefs (González-Bailón and Lelkes, 2023). However, González-Bailón and Lelkes (2023) point out that causal analyses of the effects of social media on individual or collective behaviour remain methodologically difficult to grasp.

Additionally, social media differ from other online deliberation forums such as chat rooms specifically designed for the purpose of deliberation. A notable feature of social media is the way they link people and content by hyperlinks, shares, hashtags or memes (Lyons, 2017) and make these links quantifiable – ready to be employed to set strategic goals and evaluate progress in reaching those goals. This connectivity, along with the specific way of notifying users, influences how users publish and process information on social media. For example, it helps new communities to emerge – especially opinion-based groups "because contemporary social media often prioritize attitude expressions as valid identity markers" (Lüders et al. 2023, p. 6). In turn, this allows "cultivating a smaller but more devoted audience, and targeting specific social identities facilities achieving this goal" (Hopkins et al., 2024, p. 5).

González-Bailón and Lelkes (2023) recommend that exchange on social media should see a greater moderation by platforms and users setting and enforcing community standards. In this commentary, we suggest that municipalities, forest administrations, tourism managements and nature conservation bodies or the media could contribute to such a moderation. In this role, they could foster deliberation by providing information, highlighting the diversity of perspectives, calling for rational responses, calling for polite and respectful behaviour, enabling participation and reminding participants of relating to a common good perspective. In doing so, they could use their knowledge of algorithms and linking opportunities of social media to a certain extent to increase their visibility and create ties.

As for content, moderators in social media could refer to the principles of constructive journalism to improve deliberation. Constructive journalism means a solution-oriented reporting, which is balanced and aims at empowering society (Bro, 2024). It is proposed as an antidote to the conventional reporting on conflicts and catastrophes, which may give rise to an overly pessimistic view of the situation. McIntyre and Gyldensted (2018, p. 666) call for journalists "to frame their stories in ways that lead to productive change." In framing, journalists decide which aspects of reality they report on, thus rendering them salient for their audience. This typically involves a problem definition, a causal interpretation, a moral evaluation and a recommendation for action (Entman, 1993). For example, journalists could present a conflict between hikers and cyclists as a complaint by hikers, in which cyclists appear to be a risk due to their speed. This could lead to the recommendation of restricting cycling on hiking routes. Of course, they could also present the case from the point of view of bikers. But importantly, journalists could also report on how both parties work to resolve the conflict based on the premise (their meta-consensus) that all recreationists should have equal access to forests without putting others at risk. The latter approach to reporting would be consistent with constructive journalism, "empower[ing] people to come to grip with their world and to change it for the better" (Hermans and Drok, 2018, p. 686).

Constructive journalism, thus, is characterized by a subjective presentation of information, which may seem at odds with the ideal of objective or impartial journalism. Nevertheless, Van Antwerpen and Fielding (2023) argue that journalists should rather aim at an "active" or "pragmatic" objectivity, and continually assess whether their reporting contributes to a fair and holistic picture of the situation which enables citizens to solve societal problems. This goes beyond "mirroring" the most important facts, which - according to constructive journalism - leads to a distorted reflection on reality due to the negative connotation of most newsworthy events. Instead, it is the task of constructive journalism to provide for the full picture, which includes, among other elements, positive developments, marginalized voices and partial agreement on substantive issues on which deliberation can build on (Bro, 2024).

3. The example case of forest recreation conflict in Freiburg Im Breisgau

3.1. Description of the case region

The city of Freiburg im Breisgau is located in the state of Baden-Wuerttemberg, Germany. With a population of around 240,000 Freiburg im Breisgau is one of the larger cities in the state. Geographically, the city is situated on the southeastern edge of the Upper Rhine Valley. It borders on the Black Forest, one of Germany's largest low mountain ranges. The city covers an altitude difference of about 1000 m: the highest point is the Schauinsland at 1284 m (Landesarchiv Baden-Württemberg, 2024). Forest areas reach almost as far as the town. The "Mountainbike Freiburg e.V." association has existed since 2011. The association counts over 1400 members, which are involved in building and maintaining mountainbike trails. Freiburg im Breisgau has a great

number of MTB trails, which are well signposted. Rules of conduct are actively communicated in the mountainbike association and beyond (Mountainbike Freiburg e.V., 2024).

This commentary looks at the conflict between cyclists (i.e. MTB, gravel bike, e-bike) and other forest visitors as an example case. The conflict is largely characterized by different values and lifestyles between both groups, as already found in literature (Ramthun, 1995; Jacob and Schreyer, 1980). Other visitors, sometimes, perceive cyclists as reckless or dangerous (Bachinger et al., 2024). They don't seem to accept them in the forest, especially when there are many cyclists or if cyclists use hiking infrastructures (Bachinger et al., 2024; Mann and Absher, 2007). Other aspects of the conflict are, for example, cyclists riding off-track and creating illegal trails or jumps in the forest (Kleiner et al., 2022; Wilkes-Allemann and Ludvig, 2019; Koemle and Morawetz, 2016; Zajc and Berzelak, 2016). Cyclists, in turn, feel annoyed if cycle paths are blocked or if dogs run loose on MTB trails (Bachinger et al., 2024).

3.2. Rules in use

A specific institutional frame for the conflict between cyclists and other forest visitors in Baden-Württemberg is the so-called "two-meter rule", which bans cyclists from paths that are smaller than two meters of width. This rule is part of the Baden-Württemberg State Forest Act (Waldgesetz für Baden-Württemberg, 1995). Cyclists perceive this rule as an unequal treatment and call for the rule to be suspended (Wilkes-Allemann et al., 2015a). In the project area, the local mountainbike association in cooperation with the local forest authority realized mountain bike trails. Some of them are less than two meters wide. This is because the law explicitly grants forest authorities the opportunity of approving smaller trails. Nevertheless, mountain bikers regularly use paths with a narrow width - even if they are not approved for MTB use, thus violating the current regulation (Wilkes-Allemann et al., 2022; Campbell et al., 2021).

3.3. Biophysical setting

Part of the exogenous variables of the IAD-framework is the biophysical setting of the region. In the example case, data from outdoor apps were analysed to quantify the path infrastructure, and the degree to which hikers and bikers actually use or are recommended to use path infrastructure in shared use. Special emphasis was given to routes, which are below two meters of width. The analysis referred to a forest east of the city of Freiburg im Breisgau. The Freiburg im Breisgau project area is divided into two parts. The southern part is of 34.6 sqm and the northern part is of 14 sqm in size. Our considerations in this commentary relate to the southern part. Routing data from OpenStreetMap (OSM), data on mountain bike trails of the local mountain bike association, as well as information on unofficial trails (i.e. Trailguide) and tour recommendations by the outdoor platform Komoot formed the basis of the analysis.

Paths with a total length of about 444 km were found on OpenStreetMap. Information on path widths was available for 63 % of these entries. From this share, around 55 % were narrower than two meters. The local MTB association created eleven trails as of 2024. These trails vary from short routes for children to challenging routes. They amount to a total length of 27.1 km. Trailguide, in turn, contains route recommendations, of which about 31.5 km are below two meters of width. That is 7 % of the total path infrastructure on OSM, or 11 % of the infrastructure with information on path width available. Since Trailguide contains routes based on community entries, it is likely that bikers have already used these paths before. Similarly, a comparison of the 12 most popular hiking routes in the area with the 12 most popular mountain bike routes in Komoot showed a dual use of infrastructure on about 11.41 km. Dual use of narrow paths in the project area, therefore, needs to be considered a given fact, although not a frequent one.

Visitors use outdoor platforms like Trailguide, Komoot and others for tour planning, especially if they are not familiar with the area (Mangold et al., 2024; Schwietering et al., 2024). Whether tour recommendations on outdoor platforms comply with the two-meter rule in Baden-Württemberg was tested by planning two sample tours from Kirchzarten to Horben with Komoot. The tour was planned on the platform by using fixed route points. Results show that the tour recommendations mainly used path infrastructure, which complied with the law. However, Komoot used a total of nine route sections that were narrower than two meters. The platform does not fully provide for legally sound routing information. It, therefore, might induce bikers to use trail infrastructure, which is not approved for them.

3.4. Socioeconomic setting

With the help of a visitor survey, information on the socioeconomic setting of the example case was collected. This information mainly related to the source region of visitors, the main activities, and the frequency of their visits. The survey was carried out at two highly frequented points in the southeast of Freiburg im Breisgau's city forest, where many paths for different leisure activities (including cycling, hiking and walking) converge. The survey took place on a long weekend in June 2023 at three fixed time intervals (morning, midday, afternoon). Participants could take part face-to-face or online by using a QR code (see detailed report in Bachinger et al., 2024).

A total of 224 data sets were generated. About half of the responses came from cyclists (59.5 %). In this group, mountain bikers formed the majority. Hikers were another significant group with 29 % of responses. Respondents in both groups showed a high level of expertise in practicing their leisure activities. Over half of the respondents rate themselves as very experienced. About 89.6 % of the respondents practise their leisure activity at least once a week. Cyclists are more experienced than other recreationists. The larger part (72.9 %) visits the Freiburg im Breisgau city forest more than five times per week. In terms of travel distances, cyclists cover greater distances than other visitors do. In this group, 21.5 % cover more than 100 km. Most of recreationists, therefore, are locals and frequent visitors of the Freiburg im Breisgau city forest. They know the area well and have practiced their recreational activity for a while (see detailed report in Bachinger et al., 2024).

3.5. Action arena

Actors, who are involved in the conflict and the situation in which they interact, are characterized in the following section. First, information on their expectations and values is reported on. This information is drawn from the visitor survey mentioned above. Secondly, local media reports on use conflicts between bikers and hikers were analysed to understand how the conflict was reported on in the past. Results were drawn from a media discourse analysis, see information on number of included reports and procedure below.

As for expectations of recreationists in the Freiburg im Breisgau city forests, results show that the majority of participants were satisfied or very satisfied with the forest as a place for their leisure activity (95.5 %). Almost all of them considered their expectations as fulfilled (95.3 %). The desire for a conflict-free experience is pronounced (93.2 %). If conflicts occur, more than a third state that they are generally relaxed about the situation ("I don't take it too seriously." 34.7 %). However, visitors generally avoid direct confrontation (24.0 %) or avoid certain areas if they expect conflicts to occur (12.4 %) (see detailed report in Bachinger et al., 2024).

With regard to values and norms, the survey focused on the factors of activity style, resource specificity and lifestyle tolerance. Activity style is a variable that measures identification of recreationists with their leisure activities (McCormack, 2017; Ramthun, 1995). Resource specificity captures the dependence of an activity on a specific place (Jacob and Schreyer, 1980). This might be a dependence due to special

geographical features, but also an emotional dependence due to a long personal history with the place (Mann and Absher, 2007). Lifestyle tolerance, in turn, measures the extent to which diverging norms and values are accepted in leisure practices (Vaske et al., 2007). Results show that respondents agreed strongest with the variable of resource specificity, indicating that the Freiburg im Breisgau city forest is an important place for visitors that can hardly be substituted. The variable of activity style, instead, was agreed with on a medium scale level, which implies a weak identification of recreationists with their leisure activity (Bachinger et al., 2024). With regard to lifestyle tolerance, results show that respondents identify moderately with the attitudes and values of other recreationists. 78 % of the respondents are multisporting and therefore engage in various leisure activities and thus different lifestyles (see detailed report in Bachinger et al., 2024).

To fully comprehend the conflict between cyclists and other recreationists in the example case, an analysis of media reports was done. Methodologically, the approach of an argumentative discourse analysis was applied (Wengeler, 2003; Hajer, 1997). Using this method, actors who dominate the discourse, recurring storylines and central argumentative structures (topoi) could be isolated (Wengeler, 2003). A total of 84 documents (newspaper reports, interviews, press releases) were identified by a keyword search in media repositories concerning the conflict topic covering a period of ten years from 2013 to 2023. Almost 74 % of the reports originate from the Badische Zeitung, which is a local newspaper based in Freiburg im Breisgau, as it reported most continuously on the conflict. The documents were coded and analysed using MAXQDA Version 2020 software (Gizzi and Raediker, 2021; Kuckartz and Raediker, 2019). The main category codes were determined deductively based on the objective of identifying discourse coalitions of actors and their argumentation patterns (topoi) (Wengeler, 2003; Hajer, 1993). The subcategories, on the other hand, were derived inductively on a topic-specific basis in the course of the research and coding in MAXQDA and added to until the categories were saturated and no more new categories were added (Leimbigler, 2021).

Results show five stakeholder groups taking part in the discourse. The most dominant groups are associations/clubs and lobbyists, which account for 50 % of the analysed content. Forest stakeholders (18 %), political decision-makers (16 %), recreationists (11 %) and other stakeholders (7 %) rank behind them. Most statements coded in the media reports reflect a neutral position to the conflict (more than 50 %) or favoured cyclists and hikers as being treated equally (about 34 %). Positions that held a negative stance toward cycling in forests could be found rarely (12 %), the rest of the contributions voiced no or an unclear position (about 4 %).

In a second step, statements were clustered into discourse coalitions. Discourse coalitions are groups of statements who "share a social construct" (Hajer, 1993, p. 45). Coalitions are based on a common language and practice related to a specific topic. In the sample, nine discourse coalitions could be identified. Neutral to favourable coalitions with regard to cyclists in forests dominate with 75 % of the codes assigned which indicates a neutral or positive attitude toward cyclists and their behaviour; negative or opposing coalitions toward cyclists in forests take about 25 % of the codes. Interestingly, there is a discourse coalition that considers the conflict as an artefact, as being constructed by media reports. The main argument is: "There is no/hardly any conflict. It is constructed by the media."

Finally, communicative topoi were deduced from the reports. According to Wengeler (2003), topoi are described as central and typical argumentation patterns. For the Freiburg im Breisgau case, two media-related topoi were identified, the "media topos" (9 coded segments, 2 %) and the "app and smartphone topos" (4 coded segments, 1 %). The media topos emphasizes the role of the media in conflict genesis: "Because the media constructs the conflict between cyclists and other forest visitors, the relationship between the two parties is not reported in a way that corresponds to reality." The "app and smartphone topos" follows the same pattern and emphasizes the role of outdoor apps for the

conflict: "Because the operators of outdoor apps do not take on responsibility for the app use, recreation-related conflicts in forests have intensified." In the view of some, a quantitatively marginal group of reports, media coverage, thus, did not live up fully to the principles of deliberation or constructive journalisms in the past.

3.6. Interaction, outcome and communicative intervention

In the following, the mode of interaction, respectively the interaction's outcome is described for the example case of Freiburg im Breisgau. In this case, the recreationists' interaction resulted in a conflict. However, the visitor survey (see above) showed that the conflict is not particularly severe. More than a third of the respondents' state that they react relaxed when encountering a conflict. The conflict in Freiburg im Breisgau, therefore has been termed an "expected every-day conflict" which does not bother too much and does not curtail the quality of forest visits (Bachinger et al., 2024). Since communication is an important part of the mode of interaction, the question is what kind of communication works best in recreational conflicts, like the conflict between cyclists and other recreationists in the Freiburg im Breisgau city forest. To gain insights on this question, communicative interventions took place.

In spring 2023 and spring 2024, students at Stuttgart Media University (HdM) planned and realized communicative interventions on social media accounts set up for this purpose. In addition to a website created for student publications, the main platforms were Instagram, Facebook, Soundcloud and YouTube. Instagram is the most widely used social media platform among the German-speaking population aged 14 to 29; Facebook is the equivalent for people aged 30 and older (Koch, 2023). Both platforms have similar options for liking, commenting, and sharing; they also highlight the number of interactions in a similar way. Soundcloud and Youtube were chosen to facilitate publishing audio and video content, which then was embedded on the website.

In the first run in 2023, students collected information on the conflict to comprehend its characteristics, involved parties and their different perspectives and produced content to portray the conflict. Over the course of four months, students published more than 50 posts or videos on Instagram and Facebook respectively. They introduced themselves to their audience as part of a research project, but claimed editorial autonomy for the content they published. They supplied information on the conflict and published statements of stakeholders on it. Most of the posts ended with a call to action, asking followers to share their experiences or weigh in on a controversial issue. Students asked stakeholders to share the content and reposted it in mountainbike groups in Freiburg im Breisgau to increase reach.

On Instagram, it was easy for the students to gain followers and likes. At the end of the summer term, the account had 260 followers and posts were liked 20 times on average. The fact that students have their own followers on this channel might be an explanation for this. On Facebook, instead, which is mainly used by individuals aged between 20 and 50 – i. e., the age group of mountainbikers (Koch, 2023), the posts received more comments than on Instagram: up to 30, despite having 100 followers on Facebook only. Videos were shown a few hundred up to 1000 times on both channels. The discussion was factual and well founded, students almost never had to step in and ask users to be more respectful. But most of the comments apparently came from bikers, which may be due to the fact that hikers are older on average and less likely to use social media at all (Koch, 2023). It may also be a consequence of students having started their research by visiting a bike festival in Freiburg im Breisgau and posting statements of bikers. This may have led to a dynamic that recommended this content to other bikers.

Even though some statements of hikers were collected and published digitally, a two-way exchange between hikers and bikers did not take place, since this would have required further arrangements for a cross-channel exchange (i.e. also outside social media) which students were not prepared for. Lastly, the students found it difficult to arrange interviews with individuals active in illegal trail construction. Those voices, therefore, were only made available to the audience by interviewing experts who know these individuals. A video on YouTube, in which student reporters thoroughly investigated the conflict and its potential solutions, was very successful. The YouTube algorithm recommended the video as relevant mountainbike content; it thus achieved a considerable reach of 40,000 views and 170 comments. Fig. 2 shows an excerpt from the video.

One year later, in 2024, a new group of students revisited the conflict and produced content with the aim to change the perspective of recreationists on forests as a leisure space. In about ten posts and reels on Instagram, students addressed positive experiences of forest visits, for example by portraying recreationists' favourite moments in forests. In short videos, bikers talked about joint rides with other bikers or about hikers interested in learning more about mountain biking. Both, hikers and bikers, told stories about bringing their children along and enjoying them play. When publishing these stories on social media, students asked users to describe how they perceive the forest. The aim was to elicit responses that show a shared interest in sports, leisure and nature,

Fig. 2. Still from YouTube video: Andreas Schäfer, forest ranger of Freiburg im Breisgau, explains to student reporter Katharina Riener a signpost he has set up. The video as well as other publications of students are accecssible via www.wir-im-wald-magazin.de (source: HdM).

as this was thought to increase awareness of forests as a resource to be shared by all recreationists, thereby not only attenuating conflict perception but also creating a common understanding as a basis for resolving potential conflicts in future. However, interaction of followers was generally low.

4. Discussion: social media and deliberative communication

Deliberative communication might help minimize existing conflicts or prevent conflicts from occurring, because it alters the way conflicting parties interact. Deliberative communication has been described as an evidence-based, balanced form of communication that is solution-oriented and refers to a common good. But is it possible with the affordances and constraints of social media? Communicative interventions were conducted in an example case to learn whether communication on social media is able to live up to the goals of deliberative communication summarized by Friess and Eilders (2015). In the following, results of the communicative interventions are discussed by referring them back to the principles of the deliberative process. Furthermore, based on the user engagement observed, the interventions are evaluated on how far they seem apt to influence the interaction of recreationists in forests and, thus, are able to alter the current outcome that is the conflict between hikers and bikers. The intervention, of course, is not a controlled experiment, and even the observations are anecdotal. Still, there is something to be learned from applying concepts of constructive journalism in a real-world setting.

In their publications, students used various moderation techniques to achieve deliberative goals: First and foremost, they used journalistic research to provide information on the positions advocated and about relevant facts and rules. Then, by inviting followers to respond, the criterion of rationality was addressed. Discussions were civil, with participants respecting the views of other recreationists: Cyclists and hikers emphasized understanding the motives of other forest users and that this understanding helped to deescalate or prevent conflicts from occurring. Stereotypes like "angry hikers" or "mountainbike pirates" were rejected as improper and exaggerated.

Other goals of deliberative communication were realized in a YouTube video. In the video, it was suggested to the student reporters that the city should dedicate a forest stand to the do-it-yourself construction of mountainbike trails. Students discussed this potential solution with their interviewees, learning that such a measure would require expert supervision, which might limit its attractiveness for youngsters. With a duration of about 20 min, the video is not a typical example of "snackable" social media content. However, it does show that ad hoc communities can form in the comment section, in which users assure each other that a joint solution is possible – even though many users remain anonymous on YouTube which could have been an obstacle to deliberation. This lives up to the deliberative goal of common good reference and constructiveness. Common good reference, because the participants discussed an issue that would benefit a group of mountainbikers and not necessarily themselves. Constructiveness, because the discussion aimed at a solution that would be acceptable and feasible.

However, some posts also highlighted problems and challenges in deliberation on social media. In particular, a conflict can be reinforced, instead of mitigated. This happened with a post on the student's Facebook channel which attracted 30 comments. After explaining the two-meter rule, which does not appear to have been a focus of debate on social media recently, the post went on with: "Some forest users are not entirely happy with it and there is a lot of criticism." After presenting the points of criticism, the post asked users: "What do you think about it?" The posts, thus, framed the rule as a problem worth discussing. Many Facebook users took the opportunity to voice their points against the two-meter rule, yet supporters of the rule did not feel invited to participate or did not see the post in their timeline, which is at odds with the principle of equality.

Even if it had been a balanced argument between critics and

supporters of the two-meter rule, the debate might have deepened the divide, making the problem more salient and not pointing to a potential compromise. In order to be constructive, the discourse has to be taken beyond the conflict. In such a case, the moderators should ask: "How should we proceed once we have worked out the differences between opinions?" The debate on the two-meter rule, however, lacked such a meta-consensus on what the debate is about and therefore did not bring the discourse far enough to be relevant and substantial. Constructive journalism offers further questioning techniques to achieve this – for example: "Have you already settled a dispute about the two-meter rule? What would you like to understand better about the other side? How do you think a better future could look like?" Answers to questions like these could help the discussants agree on a way forward in the debate, as proponents of constructive journalism claim (McIntyre and Gyldensted, 2018) – thereby avoiding the common critique that deliberation contributes to much talking and little outcome only.

However, constructive framing – in particular, addressing values and forest experiences which hikers and bikers share – did not evoke interactions consistently, calling into question how the goal of interactivity can be met on social media. It seems that the second part of the intervention in 2024 was not successful in creating a community of recreationists to which hikers and bikers both belong. At least, social media users did not use the content to signal their social identity in this way. Of course, this is not a final verdict and calls for more experimentation with other types of content. Nevertheless, it is worthwhile to consider potential explanations of this observation. What if conflicts and group differences are essential to deliberation on social media, or even essential to deliberation itself? A plurality of views seems necessary to start a deliberative process, and this is perhaps exacerbated on social media because on social media, users need to show the world that they are for or against something. If this were true, students could have framed the conflict not as an "every-day" conflict between hikers and bikers who share important values, but as a conflict between recreationists who want to get along with each other and other people who continue to keep the conflict alive. This would have allowed followers to show their agreement or dissent.

5. Conclusion: contributions of social media to the management of recreational conflicts

In this concluding section, the insights on the example case of Freiburg im Breisgau are summarized according to the IAD-Frame of Ostrom (2015). Special emphasis is given on the involved parties' interaction and the impacts of the communicative interventions. From there, future fields for research, but also recommendations for conflict management in forests are deduced.

Seen from biophysical conditions, the recreational conflict in the Freiburg im Breisgau city forest is characterized by a large net of path infrastructure. There is an attractive and diversified range of trails especially dedicated to mountainbiking. When dual use of pathways is analysed by considering trail information and track recommendation on outdoor platforms, a marginal share of trails appears as being actually in shared use or as being recommended for shared use, although not always approved for mountain biking by local authorities. Socioeconomic data show that visitors are mainly locals, who know the forest and their leisure activity very well. The most salient rule governing recreation in Freiburg im Breisgau is the two-meter rule, which prohibits mountain biking on tracks narrower than two meters of width.

As for the action arena, the analysis showed that actors do not strongly identify with their activity. The place itself, however, seems important to them. They identify with the forest as the best place to perform their leisure activities and would therefore hardly substitute it with any other place. Most recreationists are satisfied with their visit to the forests. The analysis of local media reports shows that neutral attitudes toward the conflict between bikers and hikers prevail, thus, emphasizing the right of both parties to use the forest equally.

Interestingly, some voices hinted at a negative role of the media in conflict genesis, arguing that the media constructed conflicts in reporting on conflicts that did not really exist.

The interaction between bikers and hikers in the case of Freiburg im Breisgau has been described as an "every-day conflict". It does not exhibit a large intensity. Visitors share a common set of values. Against this backdrop, moderators of communicative interventions must be careful not to spur the conflict instead of mitigating it. A constructive framing could help in this regard, e.g. by highlighting the common ground of hikers and cyclists (shared values, interests, and life-styles) and by nudging participants of the debate to accept other people's values as legitimate. But then again, this should not be taken too far because deliberation – especially, deliberation on social media – requires some conflict to spark interaction. Before solutions are eventually discussed, it is advisable to create a meta-consensus on the scope of the conflict and the chances for resolving it. To help the audience reach such a meta-consensus, the conflict should not be overemphasized (which makes the problem seem unsolvable) nor underestimated (lacking the urgency to deal with the problem). Instead, it should be framed in a way that shows the disputed but legitimate claims of all parties involved. This would give the audience a chance to rise above the plurality of perspectives and agree on a way to resolve the conflict – e.g., by looking for a compromise that fulfills demands from both sides at least partially.

Results of a communicative intervention, which were conducted on various social media channels, show that publication and moderation on social media can in principle live up to important characteristics of deliberation. As the intervention was not fully controlled, and the observations are anecdotal, the conclusions should be considered as suggestions for future practice and research. But they do show some characteristics which dovetail theoretical considerations in communication science. A remarkable point is that the principle of equality is difficult to fulfill if some conflict parties are not on social media. In these cases, some voices remain absent from the online debate. Additionally, platforms may vary in their degree of anonymity and connectivity which may impede or foster the exchange of arguments and the feeling of belonging to a group, which is engaged in deliberation of a certain issue. The student's communicative intervention, however, did not yield observations to elucidate this point further.

From here, future fields of research can be deduced. For one, as the analysis of the exogenous variables, the action arena and the interaction of the actors show conflicts might have very different backgrounds and might differ in intensity. Future research could consider this and compare impacts of deliberative communication on social media on different conflict types. Furthermore, conflicts seem to pass through a life cycle. That is, conflicts could be new and malleable, they could grow quickly, or they could be mature ones, with the front lines already fixed (Glasl, 2011). Future research could account for these procedural difference of conflicts and look at the impacts of deliberative communication on social media in different phases of the life cycle. Lastly, stakeholders use different media channels to inform themselves or to communicate. Further research could compare posts on various channels and their impacts on different user groups.

As for managerial recommendations, the communicative interventions in the Freiburg im Breisgau conflict show clearly that moderation of communication on social media is a difficult task. It, therefore, should be entrusted to professionals with a good stock of experience in both, digital communication and conflict management. This is even more important as users tend to use different social media channels and tend to engage in discourses to a very different degree. The interventions in Freiburg im Breisgau also show that communication on social media does not fully serve the aim of finding accepted solutions. Therefore, it can be part of a variety of communication measures but should not be the only one.

References

Bachinger, M., Hafner, M., Harprecht, P., 2024. Cultural and space-based factors influencing recreational conflicts in forests. The example of cyclists and other forest visitors in Freiburg (Germany). Eur. J. Cult. Manage. Policy 13, 12494. https://doi.org/10.3389/ejcmp.2023.12494.

Beauvais, E., 2020. Deliberation and non-deliberative communication. J. Deliber. Democr. 16 (1), 4–13. https://doi.org/10.16997/jdd.387.

Bell, S., Tyrvainen, L., Sievanen, T., Pröbsl, U., Simpson, M., 2007. Outdoor recreation and nature tourism: a european perspective. Living Rev. Landsc. Res. 1 (2).

Boehm, R., Rusch, H., Baron, J., 2020. The psychology of intergroup conflict: a review of theories and measures. J. Econ. Behav. Organ. 178, 947–962. https://doi.org/10.1016/j.jebo.2018.01.020.

Bro, P., 2024. Constructive Journalism. Precedents, Principles, and Practices, New York. Rouledge.

Campbell, T., Kirkwood, L., McLean, G., Torsius, M., Florida-James, G., 2021. Trail use, motivations, and environmental attitudes of 3780 european mountain bikers: what is sustainable? Int. J. Environ. Res. Public Health 18 (24), 12971. https://doi.org/10.3390/ijerph182412971.

Carothers, P., Vaske, J.J., Donnelly, M.P., 2001. Social values versus interpersonal conflict among hikers and mountain bikers. Leis. Sci. 23 (1), 47–61. https://doi.org/10.1080/01490400150502243.

Cessford, G., 2003. Perception and reality of conflict. Walkers and mountain bikes on the Queen Charlotte Track in New Zealand. J. Nat. Conserv. 11 (4), 310–316.

Coleman, P.T., 2021. The Way Out. How To Overcome Toxic Polarization, New York. Columbia University Press.

Curato, N., Dryzek, J.S., Ercan, S.A., Hendriks, C.M., Niemeyer, S., 2017. Twelve key findings in deliberative democracy research. Daedalus 146 (3), 28–38.

Derks, J., Giessen, L., Winkel, G., 2020. COVID-19-induced visitor boom reveals the importance of forests as critical infrastructure. Forest Policy Econ. 118, 102253. https://doi.org/10.1016/j.forpol.2020.102253.

Dietz, T., 2013. Bringing values and deliberation to science communication. Proc. Natl. Acad. Sci. 110 (3), 14081–14087.

Dryzek, J.S., Bächtiger, A., Chambers, S., Cohen, J., Druckman, J.N., Felicetti, A., Fishkin, J.S., Farrell, D.M., Fung, A., Gutmann, A., Landemore, H., Mansbridge, J., Marien, S., Neblo, A.M., Niemeyer, S., Setälä, M., Slothuus, R., Suiter, J., Thompson, D., Warren, M.E., 2019. The crisis of democracy and the science of deliberation. Science 363, 6432, 1144–1146.

Dufft, K., 2019. Sport in Großschutzgebieten. herausforderungen und chancen. [Sport in large protected areas: Challenges and opportunities] In: Konflikte durch Erholungsnutzung in Großschutzgebieten und deren Entschärfung durch innovatives Besuchermanagement. BfNSkripten 520, 53–63.

Entman, R.M., 1993. Framing: toward clarification of a fractured paradigm. J. Commun. 43 (4), 51–58.

Friess, D., Eilders, C., 2015. A systematic review of online deliberation research. Policy Internet 7 (3), 319–339.

Gizzi, M.C., Raediker, S., 2021. The practice of qualitative data analysis. In: Research Examples Using MAXQDA: BoD–Books on Demand.

Glasl, F., 2011. Konfliktmanagement. [Conflict Management]. In: Meyer, B. (Ed.), 2011 – Konfliktregelung und Friedensstrategien, VS Verlag für Sozialwissenschaften, pp. 125–145. https://doi.org/10.1007/978-3-531-92789-3_4.

González-Bailón, S., Lelkes, Y., 2023. Do social media undermine social cohesion? A critical review. Soc. Issues Policy Rev. 17 (1), 155–180.

Hajer, M.A., 1993. Discourse coalitions and the institutionalization of practice: the case of acid rain in Great Britain. In: Fischer, F., Forester, J. (Eds.), 1993: The Argumentative Turn in Policy Analysis and Planning, Durham. Duke University Press, pp. 43–76. https://doi.org/10.1515/9780822381815-003.

Hajer, M.A., 1997. The politics of environmental discourse. Ecological modernization and the policy process. Environ. Values 6 (1), 111–113.

Halpern, D., 2017. How does social media trigger collective efficacy through deliberation? A field experiment. Int. J. Commun. 11, 3955–3974.

Hermans, L., Drok, N., 2018. Placing constructive journalism in context. Journal. Pract. 12 (6), 679–694.

Hopkins, D.J., Lelkes, Y., Wolken, S., 2024. The rise and demand for identity-oriented media coverage. Am. J. Polit. Sci. https://doi.org/10.1111/ajps.1287515405907.

Jacob, G.R., Schreyer, R., 1980. Conflict in outdoor recreation. a theoretical perspective. J. Leis. Res. 12 (4), 368–380. https://doi.org/10.1080/00222216.1980.11969462.

Kaae, B.C., Pröbstl, U., Wirth, V., Bell, S., McCormack, A., Elands, B.H.M., 2010. Good practice in European recreation planning and management. In: Pröbstl, U., Wirth, V., Elands, B.H.M., Bell, S. (Eds.), Management of Recreation and Nature Based Tourism in European Forests. Springer, pp. 175–285. https://doi.org/10.1007/978-3-642-03145-8_8.

Kang, M., Schuett, M.A., 2013. Determinants of sharing travel experiences in social media. J. Travel Tour. Mark. 30 (1–2), 93–107.

Kleiner, A., Freuler, B.F., Arnberger, A., Hunziker, M., 2022. Biking-hiking conflicts and their mitigation in urban recreation areas. Results of a quasi-experimental long-term evaluation in the Zurich forest. J. Outdoor Recreat. Tour. 40 (4). https://doi.org/10.1016/j.jort.2022.100563.

Koch, W., 2023. Ergebnisse der ARD/ZDF-Onlinestudie 2023. Soziale Medien werden 30 Minuten am Tag genutzt - Instagram ist die Plattform Nummer eins. [Results of the ARD/ZDF Online Study 2023: Social Media are Used for 30 Minutes a Day - Instagram is the Number One Platform]. Media Perspektiven 26/2023. https://www.ard-zdf-onlinestudie.de/files/2023/MP_26_2023_Onlinestudie_2023_Social_Media.pdf.

Koemle, D.B.A., Morawetz, U.B., 2016. Improving mountain bike trails in Austria. An assessment of trail preferences and benefits from trail features using choice experiments. J. Outdoor Recreat. Tour. 15, 55–65. https://doi.org/10.1016/j.jort.2016.04.003.

Kuckartz, U., Raediker, S., 2019. Analyzing Qualitative Data With MAXQDA, Wiesbaden. Springer.

Landesarchiv Baden-Württemberg, 2024. Freiburg im Breisgau, Stuttgart.

Leimbigler, B., 2021. Using MAXQDA for identifying frames in discourse analysis. Coding and evaluating presidential speeches and media samples. In: Gizzi, M., Rädiker, S. (Eds.), 2021: The Practice of Qualitative Data Analysis: Research Examples Using MAXQDA, Berlin. MAXQDA Press, pp. 121–133. https://doi.org/10.36192/978-3-948768058.

Lyons, B.A., 2017. From code to discourse: social media and linkage mechanisms in deliberative systems. J. Publ. Deliber. 13 (1), 4. https://doi.org/10.16997/jdd.270.

Mangold, M., Schwietering, A., Zink, J., Steinbauer, M.J., Heurich, M., 2024. The digitalization of outdoor recreation: Global perspectives on the opportunities and challenges for protected area management. J. Environ. Manag. 352. https://doi.org/10.1016/j.jenvman.2024.120108.

Mann, C., Absher, J.D., 2007. A two stage analysis of recreation conflict as a basis for management strategies in the Black Forest. A methodological contribution. For. Snow Landsc. Res. 81 (1/2), 123–138.

McCormack, K.M., 2017. Inclusion and identity in the mountain biking community: can subcultural identity and inclusivity coexist? Sociol. Sport J. 34 (4), 344–353.

McIntyre, K., Gyldensted, C., 2018. Positive psychology as a theoretical foundation for constructive journalism. Journal. Pract. 12 (6), 662–678. https://doi.org/10.1080/17512786.2018.1472527.

Mountainbike Freiburg e.V., 2024. https://www.mountainbike-freiburg.com/. Available at:

National Research Council (U.S.), 1996. Understanding Risk. Informing Decisions in a Democratic Society, Washington, D.C. National Academy Press.

Ostrom, E., 2010. Beyond markets and states. Polycentric governance of complex economic systems. Am. Econ. Rev. 100 (3), 641–672.

Ostrom, E., 2015. Governing the Commons. The Evolution of Institutions for Collective Action. 10th Printing. Cambridge. Cambridge University Press (Canto classics).

Polletta, F., Gardner, B.G., 2018. The forms of deliberative communication. In: The Oxford Handbook of Deliberative Democracy, pp. 69–85.

Ramthun, R., 1995. Factors in user group conflict between hikers and mountain bikers. Leis. Sci. 17 (3), 159–169. https://doi.org/10.1080/01490409509513254.

Ravenscroft, N., Curry, N., Markwell, S., 2002. Outdoor recreation and participative democracy in England and Wales. J. Environ. Plan. Manag. 45 (5), 715–734.

Raymond, C.M., Kenter, J.O., 2016. Transcendental values and the valuation and management of ecosystem services. Ecosyst. Services 21, 241–257.

Rupf, R., Haider, W., Pröbstl-Haider, U., 2014. Hikers and mountain bikers - do they fight like cats and dogs?. In: Conference: The 7th International Conference on Monitoring and Management of Visitors in Recreational and Protected AreasAt: Tallin

Schirpke, U., Timmermann, F., Tappeiner, U., Tasser, E., 2016. Cultural ecosystem services of mountain regions: modelling the aesthetic value. Ecol. Indic. 69, 78–90. https://doi.org/10.1016/j.ecolind.2016.04.001.

Schusler, T.M., Decker, D.J., Pfeffer, M.J., 2003. Social learning for collaborative natural resource management. Soc. Nat. Resour. 16 (4), 309–326.

Schwietering, A., Steinbauer, M., Mangold, M., Sand, M., Audorff, V., 2024. Digitalization of planning and navigating recreational outdoor activities. Ger. J. Exerc. Sport Res. 54, 107–114. https://doi.org/10.1007/s12662-023-00927-1.

Spenceley, A., Kohl, J., McArthur, S., Myles, P., 2015. Visitor management. In: Worboys, G.L., et al. (Eds.), 2015: Protected Area Governance and Management, Chapter: 23, Canberra. ANU Press, pp. 715–750.

Tynon, J.F., Gómez, E., 2012. Interpersonal and social values conflict among coastal recreation activity groups in Hawaii. J. Leis. Res. 44 (4), 531–543. https://doi.org/10.1080/00222216.2012.11950277.

Van Antwerpen, N., Fielding, V., 2023. Constructive journalism: techniques for improving the practice of objectivity. J. Med. Ethics 38 (3), 176–190.

Vaske, J.J., 2019. Indicators and Standards for Quality Visitor Experiences at City of Fort Collins Foothills Natural Areas. Colorado State University.

Vaske, J.J., Kobrin, K.C., 2001. Place attachment and environmentally responsible behavior. J. Environ. Educ. 32 (4), 16–21.

Vaske, J.J., Donnelly, M.P., Wittmann, K., Laidlaw, S., 1995. Interpersonal versus social-values conflict. Leis. Sci. 17 (3), 205–222. https://doi.org/10.1080/01490409509513257.

Vaske, J.J., Needham, M.D., Cline, R.C., 2007. Clarifying interpersonal and social values conflict among recreationists. J. Leis. Res. 39 (1), 182–195. https://doi.org/10.1080/00222216.2007.11950103.

Vosoughi, S., Roy, S., Aral, S., 2018. The spread of true and false news online. Science 359 (6380), 1146–1151.

Waldgesetz für Baden-Württemberg, 1995. [Baden-Württemberg State Forest Act]. https://www.landesrecht-bw.de/bsbw/document/jlr-WaldGBWrahmen. Available at:

Weinbrenner, H., Breithut, J., Hebermehl, W., Kaufmann, A., Klinger, T., Palm, T., Wirth, K., 2021. The forest has become our new living room. The critical importance of urban forests during the COVID-19 pandemic. Front. For. Glob. Change 4, 672909. https://doi.org/10.3389/ffgc.2021.672909.

Wengeler, M., 2003. Topos und Diskurs. Begründung Einer Argumentationsanalytischen Methode und ihre Anwendung auf den Migrationsdiskurs (1960 - 1985). [Topos and Discourse. Justification of an Argumentation-Analytical Method and Its Application to the Migration Discourse (1960 - 1985)] Tübingen: Niemeyer (Reihe Germanistische Linguistik, 244).

Wilkes-Allemann, J., Ludvig, A., 2019. The role of social innovation in negotiations about recreational infrastructure in forests – A mountain-bike case study in Switzerland. Forest Policy Econ. 100, 227–235. https://doi.org/10.1016/j.forpol.2019.01.002.

Wilkes-Allemann, J., Pütz, M., Hirschi, C., 2015a. Governance of forest recreation in urban areas: analysing the role of stakeholders and institutions using the institutional analysis and development framework. Environ. Polity Govern. 25 (2), 139–156. https://doi.org/10.1002/eet.1668.

Wilkes-Allemann, J., Pütz, M., Hirschi, C., Fischer, C., 2015b. Conflict situations and response strategies in urban forests in Switzerland. Scand. J. For. Res. 30 (3), 204–216. https://doi.org/10.1080/02827581.2014.1002217.

Wilkes-Allemann, J., Ludvig, A., Gobs, S., Lieberherr, E., Hogl, K., Stelter, A., 2022. Getting a grip on negotiation processes: addressing trade-offs in mountain biking in Austria, Germany and Switzerland. Forest Policy Econ. 136. https://doi.org/10.1016/j.forpol.2021.102683.

Zajc, P., Berzelak, N., 2016. Riding styles and characteristics of rides among Slovenian mountain bikers and management challenges. J. Outdoor Recreat. Tour. 15, 10–19. https://doi.org/10.1016/j.jort.2016.04.009.