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Moderation and authority-building process: the dynamics of knowledge creation on history subreddits

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ABSTRACT

For the last 30 years, the web has been used as a space of debate and knowledge creation, including historical knowledge. The digital space has the potential to provide a more democratic history that relies on the inclusion of different voices. However, it also raises questions about editing and authority. When attempting to understand authority relations on the web, moderation gains special prominence as it involves actions of exclusion, organisation, and establishment of norms; moderators heavily influence the content created by web users.

Here, we investigate knowledge creation considering moderation bias. We address the effects of different moderation practices in history subreddits by analysing how moderators establish authority relations with other users. For that, we use a mixed-methods approach by interpreting the subreddits' rules and performing network analysis based on the subreddits' dialogues (2011–2020).

The study indicates that the rules have become progressively extensive and stricter over the years, creating appropriate ways for posting submissions and commenting but also affecting broad participation. As central authority figures, moderators engage in processes of sharing authority, rather than shared authority, tending to dominate knowledge creation.

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1. Introduction

Contemporary historiographical practice poses questioning processes on ruptures and continuities that the discipline has undergone, especially when considering the digital space. This challenge includes contemplating the web as an object of study for understanding social practices of knowledge creation. To comprehend possible transformations, it is crucial to analyse how people discussed and wrote about history on the web from the past.

A crescent body of literature addresses the transformations that the historical discipline undergoes when immersed on the web and working with the archived web (Brügger, 2018; Gebeil, 2019; Helmond & van der Vlist, 2021; Winters, 2017). The digital space has the power to provide a more participatory history that relies on the

inclusion of different voices in historical sources (Milligan, 2019). Initially understood as a tool for research and dissemination of scientific knowledge, the web began to be considered a historical source due to its relevance in cultural, political and social processes. As the web becomes a historical source, the scale of analysis, abundance of sources, and technological changes transform many aspects of historical research (Milligan, 2019).

This transformation, however, does not mean the abandonment of old historical practices in favour of a new, digital practice. Using the web to write history does not translate to “methods of knowledge, research, writing and beyond [...] suddenly facing obsolescence. [...] But it does mean that historians tackling a research question after 1996 need to approach things very differently from the way they did before” (Milligan, 2019, p.19). In other words, the constant interaction between tradition and innovation can be permeated with contradiction and conflict in creating historical knowledge on the web.

One of such innovations is the relevance that moderation has gained as “the governance mechanisms that structure participation in a community to facilitate cooperation and prevent abuse” (Grimmelmann, 2015, p.6). Moderation involves actions of exclusion, organisation, and establishment of norms; thus, moderators’ decisions influence everything seen, valued, and said by web users. Hence, the present paper aims to use the web from the past as a historical source to understand the dynamics of historical knowledge creation considering moderation bias.

Usually, scholars investigate moderation through the most popular topics on a platform (Chandrasekharan et al., 2017; Jhaver et al., 2019; Lampe et al., 2014). Subreddits dedicated to areas of knowledge remain without extensive research. Nonetheless, much of the knowledge once sought in university libraries are now pursued through online research, whether via search engines, databases, archives, Wikipedia pages, or discussion forums, and “most of the people who conduct this research do not happen to be academics” (Leitch, 2014, p.2).

That is, the web facilitates a more open and diverse history-making process. At the same time, people’s changing attitude toward the Internet causes them to interact with the past on their own terms (Foster, 2014). Consequently, a more participatory contribution raises questions about editing, authority, and who has the right to speak about history.

In this context, moderation mechanisms in history subreddits are decisive, providing traces of how historical knowledge was (and is) created on the web. Our focus is to identify the effects of a particular moderation tool – the establishment of rules – for the production of historical knowledge on subreddits (Reddit forums dedicated to a specific topic) by analysing how authority relations are established between moderators and users.

We hypothesise that the web offers a setting that enables the organisation of recognised authorities based on standards of the argument, such as questioning, research and critical elaboration (Demo, 2005; Kuukkanen, 2015; Megill, 2007; Rüsen, 2005). Moreover, we conjecture that the web enables structured spaces in which authority is centralised around specific users – the moderators – that establish the specific criteria of the argument that will be recognized.

Due to the complexity of the authority-building process and its entanglement with moderation practices, we resort to a mixed-methods approach (Hollstein, 2014;

Milligan, 2019), organising our analysis in three stages (da Cruz Freitas, 2018). First, we consider how authority emerges on the web, particularly on Reddit. Then, we address how moderation rules provide the criteria for participation in the subreddits and, consequently, the recognition of authorities. Finally, we investigate user participation based on networks of dialogues looking for the impact of these rules on users interactions and authority recognition.

2. Reddit as a platform for knowledge creation

This research exploits archived historical web sources from Reddit. The website, created in 2005 and acquired in 2006 by the media company Condé Nast, is one of the most popular discussion spaces on the web and has had several changes in its focus and structure.

Initially, the idea of Reddit was to provide user-selected content, with links directing users to another domain (inspired by other websites like Slashdot and del.icio.us). In 2008, with the creation of subreddits, the discussion around links remained, but the focus shifted to creating communities with similar interests. Over time, the platform began to rely more on conversations around user-generated than user-selected content (Singer et al., 2014).

Reddit resembles asynchronous discussion spaces – such as BBSs and Usenet Newsgroups in the 1970s and web discussion forums in the 1990s – as it adopts pseudo-anonymity as a participation model, and users communicate mainly via text to learn and share knowledge (Massanari, 2015). Like some of these spaces, Reddit relies on moderation and the enforcement of norms or standards that users are encouraged to follow. Even different subreddits dedicated to the same topic have their particular rules (respecting the general platform norms), created by the moderators, who determine what can be addressed in the subreddit.

Due to this plurality of proposals, we analyse three major subreddits¹: (i) r/history is a place for discussing about history, described by its users as Reddit's gateway to history-related content; (ii) r/AskHistorians intends to be the portal for public history, providing serious, academic-level answers to history questions; (iii) r/badhistory is the place for casual dissertations on the historicity of everything, with the goal of bringing examples of misinformed and misguided historical discourses that users find around the web. Note that these subreddits do not compete among themselves but rather offer different ways of addressing the same domain on the same platform, serving a purpose within an ecosystem of online communities (TeBlunthuis & Hill, 2022).

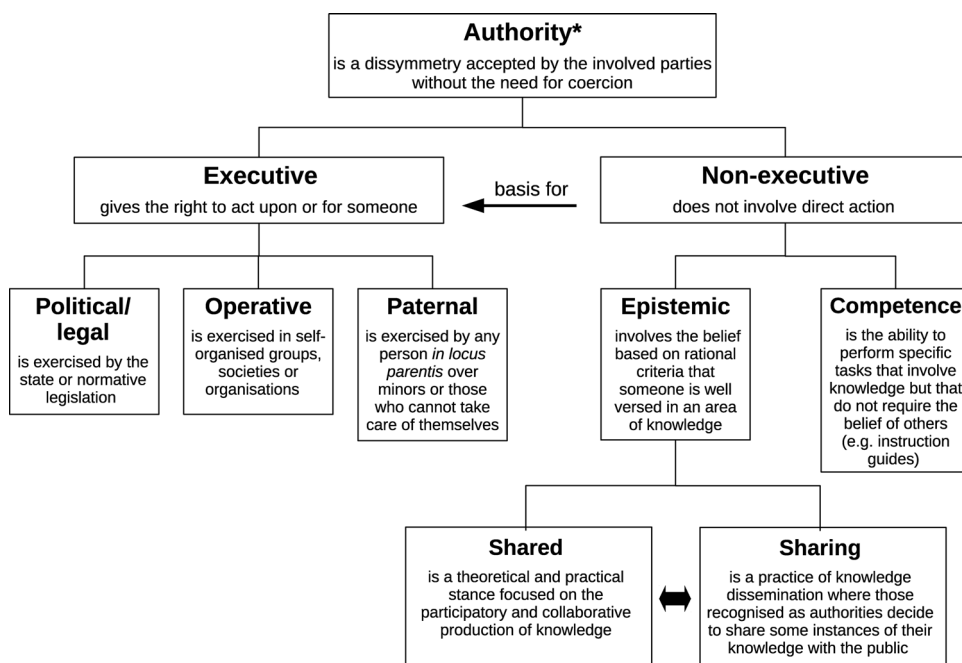
When it comes to moderation, Reddit utilises a primarily decentralised and hybrid approach to moderating content (Singh, 2019). The platform has a small, centralised team of administrators that rarely intervene (e.g. Reddit content policy, user agreement, Reddiquette), while volunteer moderators do most content moderation in the subreddits. This decentralised model “enables localised and context-specific moderation decisions as mods set and enforce content guidelines appropriate to the particular nuances, norms, and variations attributed to different discussion topics” (Singh, 2019, p.27). Therefore, moderators hold authority positions and benefit from various types of authority in the subreddits.

3. The authority-building process and shared authority

Authority is a social and historical concept that has gone through several interpretations over the centuries. Here, we consider authority as an dissymmetry accepted by users on the platform, without the need for coercion (Arendt, 2005; Kojève, 2020). It is based on the mutual recognition by both parties in a relationship in which one party has leverage and uses it to guide the other, disciplining them and changing their way of acting through reference to a higher standard. In the following, we present a brief analysis of authority concepts (Figure 1) relevant to this work (for a deeper discussion, see Linkevicius de Andrade (forthcoming)).

DeGeorge (1985) classifies authority types in two categories: executive and non-executive authorities. The latter do not involve a direct action on or for someone. Executive authorities, however, presuppose direct action: their notion implies that a person obeys a command but mainly because the command takes place in a domain, within a context that she accepts as plausible and legitimate.

There exist several types of executive authority. Here, the operative authority is the most relevant as it is established in spontaneously created groups (like subreddits) whose users unite in a free and spontaneously manner to discuss about a topic of common interest. However, someone – the moderators – must perform authority, creating and following rules. All the group members submit themselves to the rules



*Authority types are not exclusive but rather they relate to each other constantly, in different ways. Furthermore, note that religious authority is often considered an epistemic authority (see Zagzebski, 2012), but due to the scope of this paper, we chose not to address it

Figure 1. Authority framework. The authority types relevant for this study are epistemic and operative authorities. We do not include religious authority, often considered epistemic authority (Zagzebski, 2012).

they adopt, and if they disagree with the rules, they are free to leave the group. One of the distinguishing features of operative authority in cooperative groups is that all users have some degree of it. The minimum operative authority in subreddits – i.e. the power of direct action that any user can take – is through the voting system. Nevertheless, moderators have much broader and more decisive permissions.

Authority types are not mutually exclusive; the same person may simultaneously exercise several of them in the same context. As a matter of fact, DeGeorge (1985) argues that the basis of executive authority is non-executive authority.

Among the several types in the non-executive category, we focus on epistemic authority. Recognizing someone as an epistemic authority is to say that such a person has great knowledge about a topic. Therefore, epistemic authority produces a principled reason for it to be believed and recognised as reliable and plausible; authority needs justification to exist and be maintained. The belief that sustains epistemic authority is not self-justified but based on criteria.

Kuukkanen (2015) suggests that, in many cases, the epistemic authority may be personal (associated with a specific person). Nevertheless, it is more interesting to reflect in broader terms, not strictly linked to the historian herself but to the qualities that the historian's assertion must have. Demo (2005) presents a similar perspective by analysing the differences between the argument-from-authority and the argument-as-authority.

Demo (2005) claims that, in theory, a discourse is worth more due to the argument it contains than because of whom is uttering it. Thus, epistemic authority builds upon the qualities presented in the discussion – an argument-as-authority. However, in practice, this is not always the case. A discourse contains things it does not say, beyond the rules that articulate the discourse, including the social conditions (e.g. the author's background and credentials) of a specific space, digital or not. The argument-from-authority refers solely to the social condition, in which uncontested trust in the author (and not in the argument) is sufficient to establish the asymmetrical bond between herself and her audience (Demo, 2005). This can be easily identified when an author has her argument embraced in a quasi-automatic process as a consequence of her credentials from, for instance, elite institutions.

Sennett (1993) understands that the existence of the above dynamics is not itself a problem, because authority relations, executive and non-executive, are fundamental. The problem emerges when we reflect on historical knowledge creation, and different expectations from the public regarding how to discuss history in the digital space. In (Gardner, 2010, p.53) words, "the issue is not really including user-generated content but giving up authority."

Hence, when discussing history produced in the digital space, it is crucial to consider the concept of shared authority – a theoretical and practical stance, that guides the work of historians focused on the participatory and collaborative production of history (Frisch, 1990). Cauvin (2022) believes the success of this concept, generally associated with discussions on public history, relates to the fact that participatory culture has again become an agenda in the production of history, especially since the 1990s.

With shared authority, we depart from a context in which the historian is the authority conducting projects of historical knowledge creation to a context where

she acts more like a co-author, in a dialogical relationship. Thus, the authority of both the historian and the public are recognized.

Throughout the 2010s, historians started to associate shared authority and digital space, putting on the agenda the possibility of historians accelerating any tendency to share authority through digital technologies (Foster, 2014). Yet, the literature rarely questions whether the digital spaces for discussions about history are interested in this approach to authority.

DeGeorge (1985) points out that the notions of shared authority and participation are attempts to conceptualize authority in non-hierarchical ways that are more compatible with the basic equality of all, and against the impropriety of any group dominating another. To be effective, the concept or model of authority must coexist with other components of society's social beliefs and values. In practice, some views of authority are more or less suited to the needs of society, and some coexist with the attitudes and values of that society better than others. What is at stake, therefore, is the appropriate view of authority for historical knowledge creation from the late 20th century onward.

For Frisch (2003), this involves a change in historians' attitude, which would require a consensus between them and the community about the stages of research and its product, that is, knowledge creation. Thus, although Frisch does not assert what kind of authority – epistemic, operative, or even both – would be shared between historians and the public, we believe epistemic authority is the primary authority type to be shared in public history.

Note that, despite any credentials the author might have, or whether the author is a professional historian or not, the plausibility of a historical thesis still depends on its impact on the argumentative field. The successful practice of providing assertive inferences leads to authority. According to (Kuukkanen, 2015, p.199) "a historian's construct can be seen as epistemically authoritative if it is seen to be fit with respect to all dimensions of cognitive justification: the rhetorical, the epistemic and the discursive".

Due to the need for impact on the argumentative field, the attitude of shared authority has often been changed to a process of sharing authority. The latter suggests something that historians do or should do: that "they" have authority and should share it with "others" (Frisch, 2016). Cauvin (2022) notes that the distinction between the two concepts has often been unclear. Instead of seeking to build knowledge with the public, many historians have considered sharing some of their authority with the public to be a natural continuity of traditional historiographical practice. This behaviour changes the parameters of public participation in historical knowledge creation in the digital space: "To some extent, sharing authority implies that historians can decide whether or not they wish to share authority [...] that historians have the prerogative to distribute historical authority, therefore contradicting Frisch's view that the authority is shared by definition." (Cauvin, 2022, p.5). Hence, sharing authority involves admitting that the historian holds authority over historical knowledge creation and chooses to share some fundamentals of this knowledge with the public, a practice more of dissemination than mutual construction.

Then, how does establishing authority – epistemic and operative – work on the web? Following DeGeorge (1985), authority relations are always domain and context-bound, so we need to understand how they are established on the digital space, but specially on subreddits.

On the web, authorities legitimise themselves through a process rather than a specific piece of information (Vitali-Rosati, 2018). Hence, epistemic authority recognition can only happen in subreddits when users constantly participate in the thread structure of the subreddits, i.e. by posting submissions (also called original post–OP–or simply post) and comments. Users who do not participate or have their participation banned and deleted – by moderators – have no chance of being recognised as authorities. In a pseudo-anonymous platform, where it is challenging to use traditional means of technical epistemic authority recognition (such as certificates), one could ask whether it is possible to establish authority relations exclusively through the construction of the argument.

Therefore, how can we think about authority relations in a subreddit that may involve professional historians and history enthusiasts without academic training, both focused on creating historical knowledge? Can we identify shared authority processes or spaces where users engage in sharing certain aspects of their authority?

4. Following the rules

To reflect upon the issues presented in the previous section, we analyse the rules that dictate the functioning of the subreddits. We aim to identify possible limits and possibilities that govern users' participation, the construction of arguments, and the authority-building process in the subreddits.

Rules are sometimes considered authority themselves, and sometimes they are the source of authority that people have (DeGeorge, 1985). In the case of the history subreddits, the rules act in two main ways: they justify the actions of moderation (being themselves a mechanism of moderation), and they explain about the parameters that discourses must contain in order to be accepted in the community. Therefore, rules provide traces of how users organise authority relations in the subreddits, particularly when it comes to elaborating the argument to create historical knowledge and build one's reputation in the community.

Rules are directly related to moderators' operative authority as they provide the basis for moderators to perform direct actions towards users. However, they also educate users on basic principles of the historical method, functioning as a tool for building epistemic authority. Note that the principles contained in the rules do not coerce users to act in a certain way; users still can choose not to follow them, accepting the consequences of direct actions from the moderators who are invested with operative authority. Nevertheless, rules can become an essential means to sharing with users epistemic qualities that grant authority to historical discourse. This is the focus of our rules analysis.²

Subreddits discussing the natural sciences and humanities feature a more extensive set of rules (for the construction of the argument) and a more active and rigorous team of moderators (Chandrasekharan et al., 2017; Massanari, 2015). The analysis of the rules of the three subreddits reveals that, over the years, they have become more extensive and stricter, but also more explanatory and educational, establishing ways considered appropriate for posting submissions and commenting. Thus, the recognition of epistemic authority when a user participates in the dialogical structure of the subreddits appears to be guided by elements in the argument.

For example, Reddit considered *r/history* a default subreddit³ for a long time. Nevertheless, *r/history* had few rules up until 2013, mostly concerning respect and tolerance, the prohibition of posting spam, and guidelines on how to attribute downvotes or upvotes. There was only one mention concerning historical argument: the need to insert historical sources in the discussions (Reddit, 2013, September 21). One year later, in 2014, limitations on how to comment and post submissions and norms forbidding political discussions without historical context were included. The rules also explicitly stated that the subreddit was now actively moderated (Reddit, 2014b, June 29).

In 2014, there was a difference between the so-called link posts and self posts. The former – the most popular form of posting – consisted of inserting a link directing to a domain outside Reddit, without requiring a question about history. With the new rules, moderators demanded descriptions for link posts, focusing on quality and argument construction. Self posts, conversely, did not contain a link, just user-produced content. From the rule, it becomes clear that users could make questions if they inserted elements to make these more comprehensive and rich. Finally, the emphasis on active moderation, right after the delimitation of how to post submissions, implied that the subreddit turned more restrictive about how users participated in it. At the same time, more extensive and explanatory rules on elements of the historical argument (descriptive and meaningful comments) provided more opportunities to users to master some requirements of the argument-as-authority.

One subreddit that seems to rely its moderation on high detailing of rules is *r/AskHistorians*. In 2013, in a thread celebrating two years of the subreddit, there are posts from the moderators explaining the beginning of moderation (Reddit, 2014a, February 17). Throughout the first year, *r/AskHistorians* founder who led the moderating team believed in the power of upvote quality control, free speech, and “people power,” refusing to make more restrictive decisions regarding the debates. However, after attacks by trolls, moderation took another tone: bad-quality posts, jokes, and memes would be deleted; trolls would be banned; and there would be less tolerance for non-compliance with the rules, leading to an eventual expulsion from the subreddit.

As a result, rules became more extensive and detailed, going beyond only avoiding toxic behaviour. The moderators were careful to insert explanations and examples of what they considered to be comprehensive and insightful questions and answers. The rules explicitly stated that users do not need to be historians to post comments (Figure 2), however, these had to be informative and follow principles of the historical method.

"I'm not a historian, but..."

If your answer includes this phrase, **STOP**.

- Do you have the expertise needed to answer this question?
- Have you done some research?
- Can you cite your sources?
- Can you answer follow-up questions to your answer?

If you answer "Yes" to all of these questions, then proceed. If you answer "No" to one or more of these questions, seriously reconsider what you're posting.

A note of clarification here: You do not need to be an actual historian to answer a question. However, you do need to be able to provide the type of answer that a historian would give. The point here is not about *who* is posting, but *what* is being posted: providing a good answer is more important than who you are.

Contents

"I'm not a historian, but..."
No speculation
No part answers or "placeholders"
No political agendas or moralising
Abuse of links, quotations, and Google
Avoid historiographical fallacies

Figure 2. *r/AskHistorians* wiki (Reddit, 2014d, October 10).

Therefore, anyone dedicated to writing about the past, whether a historian or not, could (in theory) participate in the debates and be recognized as an authority, provided that she followed basic precepts of the historical method. The analysed excerpt indicates the intention to build epistemic authority with the public. (Malerba, 2014, p. 44) states that, regardless of whether the historiography is academic or not, the same protocols involved in the process of rational methodology of procedures and the exposition of arguments and critiques must be followed. Standards are beneficial in historical discussion on the web – they are vital to organise a community that avoids scientific misunderstandings, enforcing essential criteria that help build the authority of a historical argument. This is especially valid in the digital space, that facilitates the dissemination of false and superficial information (Kumar & Shah, 2018).

The r/badhistory subreddit also set rules early on. In 2014, the rules required justification when posting a link that is an example of a “bad story,” i.e. a description of the mistakes made in the discussion of history topics by other users on the web (Reddit, 2014c, May 5). On the one hand, with r/badhistory’s rules, a user must substantiate the argument as nothing is evident; everything needs to be properly confirmed to make the beginning of the debate possible without early conclusions (Demo, 2005). On the other hand, due to its more strict rules, r/AskHistorians appears as an official reference for r/badhistory, such that the users could use it in the argument (Reddit, 2016, June 3). As r/AskHistorians articulates strict criteria regarding the standard of the argument, it became, for r/badhistory, a guarantee of what could be accepted in terms of argument, suggesting that r/AskHistorians itself is recognised as an epistemic authority on the platform. Still, we do have grey areas when it comes to how much authority would be shared in the history subreddits. Reflecting on the process of shared authority is also to understand how to establish a space for debate that includes the voices of diverse actors. While it is highly positive to have rules that educate about methods and critical exposition, we must understand to what extent users can also counter-argue or make a comment to another comment. In other words, to what extent do the rules allow critical debates to take place around several users, such that an epistemic authority “...needs others not as servants, but as partners on the same journey” (Demo, 2005, p. 44)?

For instance, some norms such as a 2018 r/history norm, about applying human moderation to posts before they are published by users, might inhibit user’s participation (Reddit, 2018b, March 27). The moderation prior to the posting is a challenge for the shared authority process – it indicates that moderators intensely concentrate the decision-making capacity on what can be published. It is a trade-off: while pre-post moderation can prevent any users from being exposed to situations of hate speech and misinformation, it also centralises authority in the hands of the moderators. The latter, supported by the epistemic authority they concentrate, act directly on users’ submissions, performing operative authority when deciding to publish them or not.

Another example is the r/AskHistorians rules including the so-called flaired users. These are selected by the moderators as the subreddit’s experts, with extensive knowledge of a specific topic in history. To gain this credential, users must submit their comments for moderation review and, of course, follow the rules. Once admitted, these users begin to use a coloured tag next to their username so that others

can identify them in the subreddit.⁴ The participation of other users is welcomed (Reddit, 2012, December 31) but even if one does not need to be a historian to participate, the subreddit proposal involves epistemic authorities – flaired users and moderators – who respond to other users, what might ultimately foster argument-from-authority.

By extension, we understand that r/AskHistorians relies on users sharing their authority rather than that authority being shared in principle. This raises questions about whether historiographical discussion in a digital environment makes history a shared authority process, or rather facilitates the participation of those already taken as experts in the discipline, sharing their authority.

Matias (2019) indicates that moderators come into their positions through a wide range of means: through friends who already moderate a community and need help, through invitation after substantial participation in the subreddit's affairs, recruitment based on experience in operating the platform's software. In r/AskHistorians, expertise (or rather epistemic authority) is required moderators in order for them to perform a range of functions: "Because they have a good sense of where expertise lies in the community, moderators noted that they would alert those with expertise in a given area when a relevant question was asked. [...] Deciding whether an answer to a question should remain or be removed sometimes requires a degree of expertise in the topic area." (Gilbert, 2020, p. 18).

The r/history moderator application in 2019 makes clear what is expected of users who wish to apply for this position: experience with Reddit and r/history; a firm interest in history; communication skills; free time; thick skin; willingness to install and use software tools (Reddit, 2018a, August 9). Note that the first item valued in choosing new moderators is the degree of experience and productivity on the platform, which strengthens our understanding that authority is recognised through participation in the subreddit dialogues. Next comes interest (and possibly knowledge) in history.

An year earlier, the main criteria for selecting new moderators for r/badhistory was experience with moderation and the process of ensuring that users follow the rules: "We're looking for people willing to go through comments and posts, verifying that everything is following our complex and increasingly arcane rules. We'd prefer someone with modding experience, but really, if you love the sub, that's good enough!" (Reddit, 2018c, May 8). Although experience in exercising operative authority seems to be paramount, the love of history – i.e. some degree of epistemic authority – is reinforced.

Regarding the "arcane rules" referred to, note that a relevant feature of the subreddit is that the strictest rules concern submissions and not comments (Figure 3). This makes sense when we think about the aim of discussing examples of bad quality history. As the rules are more rigid for submissions than comments, the recognition of users' epistemic authority is based on their submissions and not necessarily on their participation in the debate generated from them. Hence, submissions can be a means to users with epistemic authority to share it with others. The debate space can be a good moment for other users to build and share their authority together, a movement that starts with a user's initiative to post and share her knowledge. It is an interesting dynamic from sharing authority to shared authority.

Rule 5: Please remember to include a description of why your submission is bad history. If no explanation is included with the post, the post will be removed until one is included. Explanations are necessary even if the bad history seems obvious. These are the minimum requirements for an acceptable R5:

1. A quote from the person or group perpetrating the badhistory. No link dumping allowed.
2. A quote from an appropriate source directly refuting the badhistory, or your own explanation of why the selected quote is badhistory. Simply leaving a link and saying "Here's the explanation" isn't enough. Quote the pertinent parts of the refutation in your post.

Sources for answers can come from a variety of places.

- Many common bad history tropes can be found in our Wiki.
- Also check the [/r/AskHistorians](#) FAQ for even more great answers.
- Wikipedia can be used for basic fact checking
- Another reddit comment (assuming that the reddit comment is a good one of course)
- Books you've read, as long as you name the specific book.
- Even documentaries that you've watched can be a good source, as long as you name the specific documentary.

Posts submitted without these bare minimum requirements will be removed until they're updated.

Figure 3. [r/badhistory](#) wiki (Reddit, 2017, September 11).

5. Dialogue networks

As we have seen, dialogues and constant participation are paramount for the authority-building process on the web. To investigate moderators' and other users' action patterns, we create dialogue networks between them based on the subreddits historical content, from 2011 to 2020.⁵ We developed a Python script (Quisen et al., 2022) to collect metadata of submissions and comments – authors of posts, date of a post, and who replied to whom – using the Pushshift (Baumgartner et al., 2020) API.⁶ Table 1 provides a summary of the data about the three subreddits.

Analysing metadata through networks illuminates how moderators behave and act in the subreddits. With submissions and comments from these subreddits, we track interactions between users based on their dialogues. Thus, we only consider submissions with comments and discard those without. We also dismiss posts from the AutoModerator (a bot with moderation properties in the subreddits, programmed by moderators)⁷ and deleted accounts, such that they are no longer part of the networks.⁸

The result is the construction of temporal weighted directed networks; we create a separate network for each year of each subreddit. The nodes represent the subreddits' users, and the directed edges are the interactions between them. The edges point out from the users commenting/answering (and likely providing knowledge). The edge weight indicates the number of interactions (in each direction) between a pair of users. Finally, we analyse the structure of these networks and how they differ from one subreddit to another over the years, taking into account two groups of nodes, moderators and other users, as the example in Figure 4 shows.

Table 1. Data summary about the subreddits we analyse.

	r/History	r/AskHistorians	r/ Bad History
Creation	2008	2011	2013
Available data (from)	01/2011	08/2011	03/2013
Users (end of 2020)	15,300,000	1,300,000	227,000
Moderators (end of 2020)	27	44	16
Number of submissions	148,577	290,908	4,470
Number of comments	1,380,596	1,337,784	460,132

Available data is the first month/year of which we were able to extract data to build the network. Number of submissions and comments correspond to the amount of these we extracted, but after filtering out comments and submissions from deleted users and the AutoModerator. Number of users and moderators are proximate numbers extracted from the Internet Archive Wayback Machine.

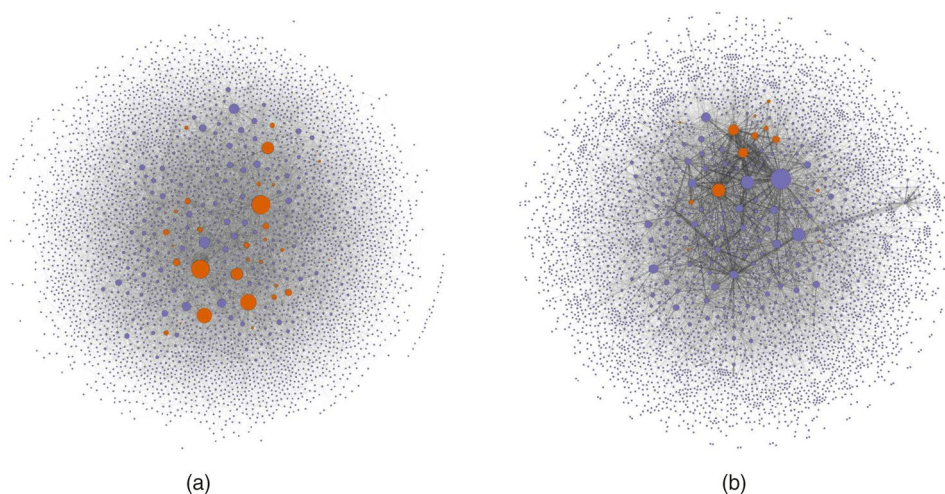


Figure 4. Network visualisation of (a) r/AskHistorians and (b) r/badhistory in 2016. Node size is proportional to popularity. The orange nodes are the moderators and other users are in purple. The edge thickness (weight) is proportional to the amount of answers/comments between the two nodes (in each direction). This example clearly shows the difference in the structure of the dialogue networks due to the subreddits' purposes and users' action pattern. In r/badhistory debates are more common, leading to more edges with larger weight in the network. In r/AskHistorians, moderators are the nodes with the highest popularity.

Due to the relevance of dialogue and participation, we focus our analysis on three metrics from our weighted directed networks: (i) the direct reach of users (their direct neighbourhood, i.e. other users with which the focal user establishes a dialogue), (ii) the frequency with which users interact with each neighbour, and (iii) the total frequency of interactions of the user with all her neighbours. We are particularly interested in the outgoing edges, when users respond to others, likely providing information or knowledge. For simplicity, we refer from now on to the first as *popularity*, the second as *edge weight*, and the third – which is the sum of all edge weights of a user – as *participation*.⁹ The first two provide insights into the dialogues, while the third, as the name suggests, into the level of user participation in the subreddits.

First, we analyse the evolution of the number of submissions and comments, and their effect on the network size (Figure 5). What stands out in r/history is the sharp decline in the number of comments in 2018 and 2019, followed by a spike in 2020 (Figure 5b). We believe it to be a consequence of the 2018 norm about human moderation before publication (Reddit, 2018b, March 27) that filtered many comments (possibly also inhibiting user participation). After a period of adaptation, the number of comments rose again. The network size presents a similar trend to that of the comments (Figure 5c), showing that the oscillation follows the participation of different users, instead of same users commenting more or less each year.

For r/AskHistorians, striking is the difference between the evolution of the number of submissions and comments (Figure 5a and b). In 2016, while the number of submissions spikes, the number of comments reaches its lowest number (except for 2011, when the subreddit was founded). After that year, the number of submissions retracts

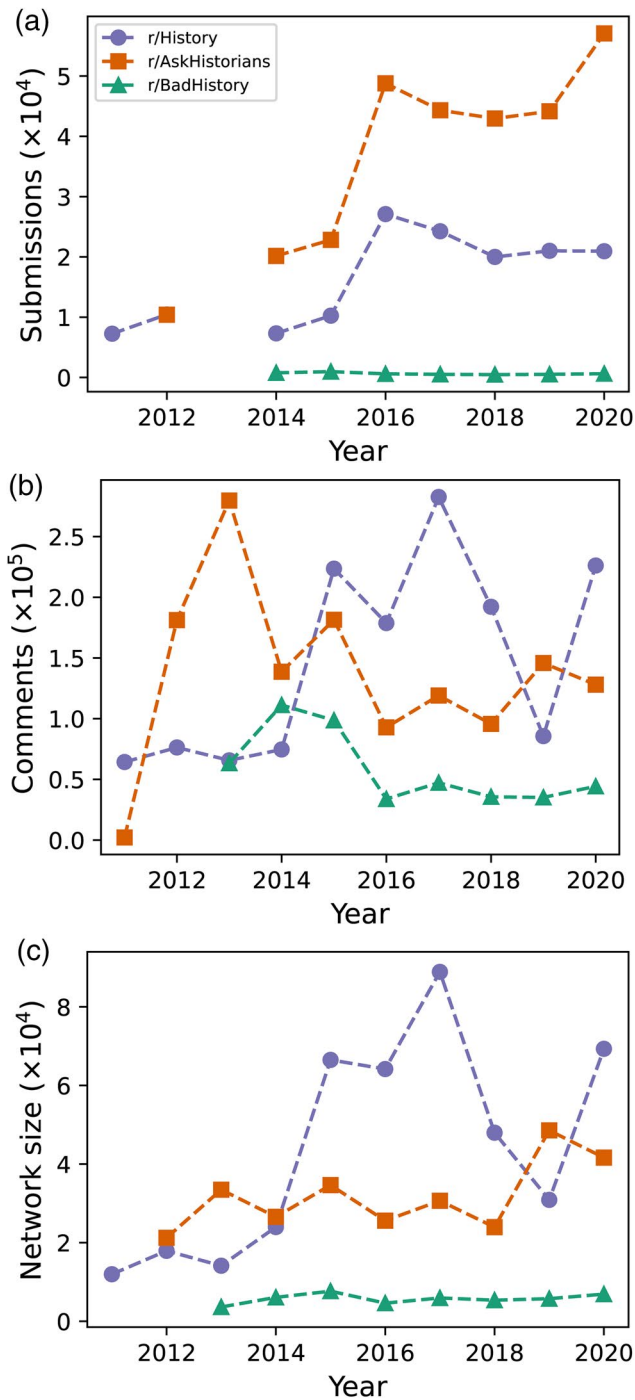


Figure 5. Evolution of the number of (a) submissions, (b) comments, and (c) network size, for the three subreddits. Data from submissions in 2013 are missing. Despite the significant increase in the number of submissions, the number of comments still decreases in the r/AskHistorians subreddit.

a little, just to spike again in 2020. We believe that stricter rules result in the public perceiving the epistemic authority provided by the subreddit. With that, r/AskHistorians seems to be attracting more people who are curious about history matters, asking questions. In contrast, the number of comments never actually recovered, indicating a different effect of stricter rules on people answering questions, and building individual epistemic authority.

While the number of submissions do not change much over time in r/badhistory (Figure 5a), the subreddit also presents a sharp decline in the number of comments in 2016 (Figure 5b). We believe this is an effect of the rules becoming more strict from that year on, similarly to what happened to r/AskHistorians.

Revisiting Figure 4, we notice two striking patterns. First, moderators (the orange nodes) participate more in r/AskHistorians than r/badhistory. From the network visualisation, moderators are the users with the highest participation in that subreddit. Second, the edge weights are proportionally larger in the r/badhistory network. Edge weights are proxies for debates between a pair of users – it is likely that high weights come from back-and-forth sets of responses, perhaps even for different submissions (i.e. in different threads). Thus, the network edges indicate a more favourable environment for debate in r/badhistory. These patterns are not isolated cases of the 2016 networks, so let us explore them in more detail.

Starting with popularity and participation, we track who are the top 10 users over the years (Figure 6). Popularity is relevant because it tells the number of unique other users with which the focal user has established a dialogue, functioning as a proxy for authority-building. The higher the popularity is, the larger the user's audience is. Network participation, in turn, gives us the total number of comments made by a user. On the one hand, a few moderators are in the top 10 most popular (Figure 6a) and participative (Figure 6b) users of r/history and r/badhistory during the whole period (with a few exceptions).¹⁰ On the other hand, moderators of r/AskHistorians participate to a greater extent and, consequently, are among the users with the largest audience. In 2018 and 2020, all top 10 most popular users were r/AskHistorians moderators who, therefore, seem to dominate knowledge creation in the subreddit.¹¹

When summing the participation of all moderators in r/AskHistorians, the proportion of their comments oscillates from 7 to 15% per year since 2016, when their participation picked up speed. For r/history and r/badhistory, the most active users do not belong to the moderation team, and the participation of moderators rarely goes above 1.5% (always below 3%).

The above idea is supported by the average popularity of moderators and common users (Figure 7), as it is our perception that stricter rules favour common users' submissions but not comments.

The decline in the number of active users in r/history (network size, Figure 5c) in 2018 and 2019 followed by the sharp rise in 2020 does not affect the average popularity of common users (Figure 7a). That is, most of these activated/inactivated users likely have small audiences, responding to a very low number of different other users. The significant increase in the moderators' popularity in r/history in 2020 (Figure 7a) might be another consequence of that 2018 norm (Reddit, 2018b, March 27). The moderators' participation becomes more intense but due to certain flexibility in terms of the format of comments, the popularity of other users remains stable.

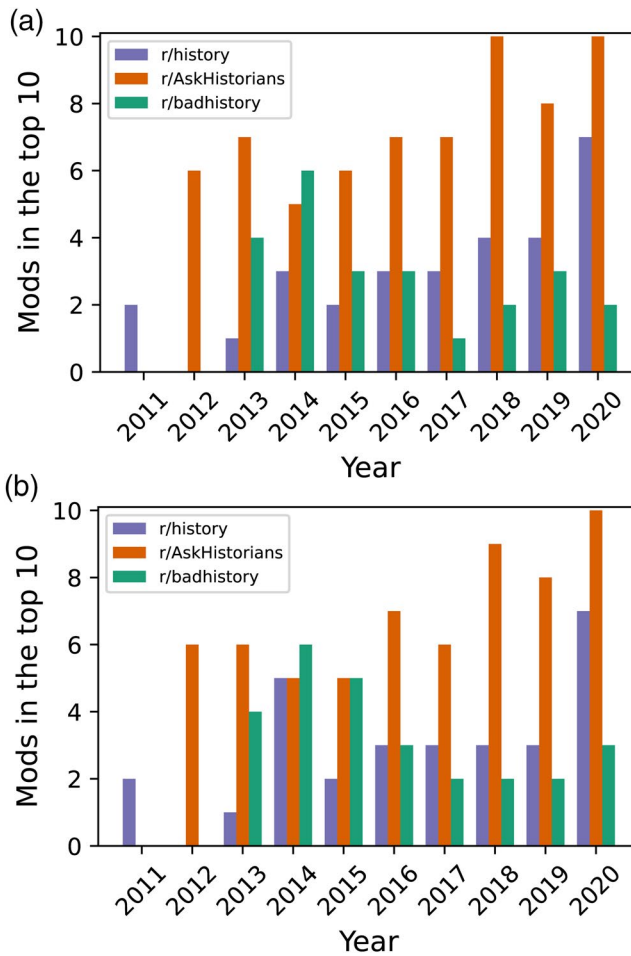


Figure 6. Number of moderators in the top 10 users, regarding (a) popularity (out-degree) and (b) participation (out-strength). These number are relatively low for r/history and r/badhistory for almost the entire period. Otherwise, the number of moderators among the top users in r/AskHistorians increases over time; all top 10 users in 2018 (for popularity) and 2020 (for popularity and participation) are moderators.

In r/AskHistorians, the moderators' average popularity (Figure 7b) explains their dominance among the top 10 users in popularity (and, as a consequence, in participation), as shown in Figure 6. While the average popularity of moderators keeps increasing steadily, the opposite happens to the average popularity of common users. The latter are becoming more active in this subreddit (Figure 5c) by asking more questions while commenting less. Conversely, common users of r/badhistory contribute much more and moderators proportionally much less with comments, when compared to r/AskHistorians.

Next, we look at each subreddit's edge weight distributions across the years (Figure 8). The tail of the distribution for the r/badhistory networks is significantly longer (it decays faster and reaches higher values in the x-axis) than the other two. This higher number of large-weight edges results from a large proportion of threads with back-and-forth comments between pairs of users, resembling proper debates. On average, a submission in r/badhistory generates more than 80 comments, while

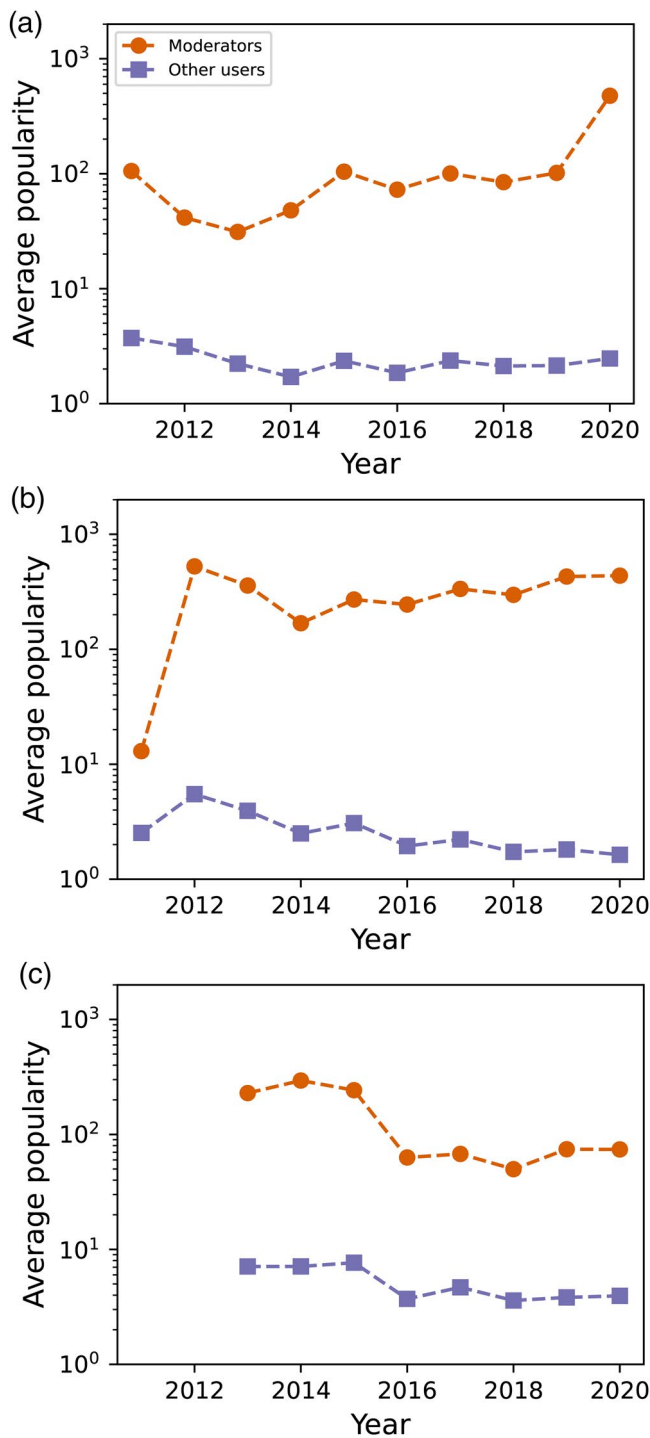


Figure 7. Evolution of the average popularity of moderators and other users for (a) *r/history* (b) *r/AskHistorians* and (c) *r/badhistory*. The difference of average popularity between moderators and common users in *r/AskHistorians* keeps expanding.

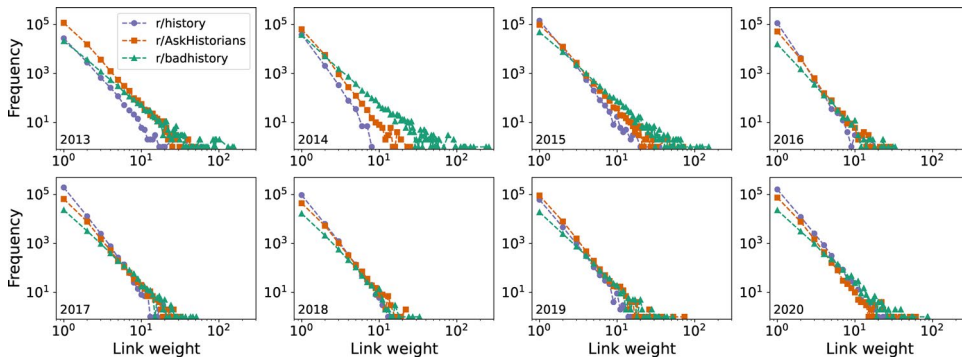


Figure 8. Edge weight distributions for the three subreddits from 2013 to 2020 (for clarity and because r/badhistory has no networks in 2011 and 2012, we have omitted these years in the figure). The longer tail of the r/history distributions shows a higher propensity for debate in this subreddit, with many back-and-forth comments, than in the other two.

only about 10 in r/history and six in r/AskHistorians (Figure 5a and b). A high number of comments per submission alone is not sufficient to state that debates between pairs of users is happening as many users can engage in a thread without receiving responses. However, the presence of large-weight edges supports the idea of a more open environment for debate in the r/badhistory subreddit, also explaining the higher popularity of common users.

It seems that with more restrictive rules, the exchange of argument becomes more challenging. Ultimately, we might think that if the users follow the rules, i.e. if they present an argument-as-authority, they become recognised as authorities. However, as Figure 7b shows, this organisation leads to r/AskHistorians having just a few who dominate the restrictions laid out in the rules. Through the rules, moderators educate users about the qualities of argument-as-authority in historical knowledge. However, by restricting the debate, they also create conditions in which users with epistemic authority engage in the process of sharing authority, instead of shared authority, with the public.

6. Conclusion

This article sought to understand the effects of different moderation practices in history subreddits by analysing how moderators establish authority relations with other users.

We believe the main contributions of this study are twofold. Methodologically, by using network analysis to investigate authority relations on the web, and substantively, by posing challenges to moderation practices regarding the shared authority process, especially where operative and epistemic authority overlaps.

The networks and the rules revealed a solid propensity for adopting sharing authority processes in constructing knowledge in the subreddits analysed. Sharing authority is not a problem: it can be the first step in public history to educate people and disseminate historical knowledge. Given the level of submissions r/AskHistorians

receives, it seems to be very successful in its purpose. Likewise, r/history also appears to strengthen this process by implementing pre-post moderation measures. However, there is the other side of the coin. The commitment to sharing authority is a beginning, not a final destination (Frisch, 2003). It can lead to an excessive use of the argument-from-authority because it recognizes that some people have authority and then decides to share it, concentrating knowledge creation.

The moderators from r/badhistory, while steadily increasing and elaborating its rules, adopt an approach that moves from sharing authority in submissions to shared authority in comments. This movement is an interesting feature of r/badhistory, especially regarding the smaller distance in popularity between moderators and common users. This panorama is favoured by the r/badhistory proposal, which involves discussions around (bad) examples of the historical argument, promoting the debate. As a result, the structure of the r/badhistory networks end up more balanced, more prone to debate, and with a higher diversity of user participation.

It is necessary to consider the challenge of creating and moderating web spaces that approach the shared authority process as an ultimate goal, which can contribute to a greater pluralization of voices and recognition of experiences in the historical knowledge creation. How to recognize the authority of more users while maintaining the qualities that grant epistemic authority to the argument? How to manage this process in large subreddits?

Despite the initial promise of communities in the digital space advocating freely interaction among users and the establishment of egalitarian places where judgments would be based on the merit of the argument rather than status, this is not always the case. Moreover, visible moderation is often interpreted as censorship (Gilbert, 2020). This perception, along with Reddit's predominantly white and male culture, creates challenges for moderators to encourage empathy for historical topics and participation from marginalized populations. Consequently, even if technology allows the opportunity to transform the hierarchy of knowledge, not all subreddits are able to, opting to maintain a sharing authority process.

However, we believe that this choice should be a starting point. Reflecting on the production of history on the web, in the light of public history, raises the need to analyse the historiographical experiences of the web from the past and identify our difficulties regarding the process of shared authority. We must consider that the existence of digital tools does not necessarily facilitate this process but instead results in a concentration of knowledge production.

Based on our study, we defend researchers should act on two fronts simultaneously. First, acting directly in the construction of historical knowledge on the web, by striving to improve research methodologies and fostering public participation in debate. Second, acting from outside, by exploring what has been done on the web in the last 30 years – concerning the production of historical content – and considering the historiography they would like to build for the future with and on the web.

Notes

1. Here, the subreddits' description follow their December 2020 homepage version in the Internet Archive collection.

2. The three subreddits have comprehensive rules regarding acceptable behaviour to avoid trolls, aggression, etc. It is not our intention to judge personal micro-behaviours. We analyse rules that delimit specific types of behaviours regarding the construction of the argument.
3. Until 2017, default subreddits were a collection of subreddits that new users were automatically subscribed, to introduce the experience on the website.
4. In r/AskHistorians, all moderators are considered flaired users, although not all flaired users act as moderators.
5. We start our analysis in 2011 due to data availability, according to Table 1.
6. Currently, the platform has two APIs: the official one and Pushshift. Until early 2019, Reddit allowed historical data extraction from the platform through its API. However, that policy has since been changed. Now, it is only possible to extract information from past years using Pushshift, which is still in the process of being built and improved. All 2013 submissions for the three subreddits are missing in the data. For comments, r/history is missing the following months: 05, 09/2017; 02, 03, 05/2018; and 05/2019. Both r/AskHistorians and r/badhistory have 09/2017 and 02, 03/2018 missing.
7. Although the AutoModerator appears in some discussions, its participation is usually not recognised but condoned by other users.
8. For ethical reasons, we do not disclose the usernames of any user.
9. In network terms, popularity (as we use it here) is the out-degree of a node and participation is the out-strength of the node.
10. We consider as moderators those that were in the moderators list in December of each year
11. Note that the number of users are four to five orders of magnitude larger than the number of moderators on these subreddits.

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Data availability

The data that support the findings of this study are openly available from the Pushshift API at <https://pushshift.io/>.

Disclosure statement

No potential conflict of interest was reported by the authors.

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