



Volume 13 Issue 2



GLOSSARY
ENTRY

Consensus techniques

Steve Jankowski *University of Amsterdam*

DOI: <https://doi.org/10.14763/2024.2.1750>

Published: 4 April 2024

Received: 13 July 2023 **Accepted:** 27 October 2023



OPEN
ACCESS

Competing Interests: The author has declared that no competing interests exist that have influenced the text.

Licence: This is an open-access article distributed under the terms of the Creative Commons Attribution 3.0 License (Germany) which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. <https://creativecommons.org/licenses/by/3.0/de/deed.en>
Copyright remains with the author(s).



PEER
REVIEWED

Citation: Jankowski, S. (2024). Consensus techniques. *Internet Policy Review*, 13(2).
<https://doi.org/10.14763/2024.2.1750>

Keywords: Consensus, Sociotechnical decision-making, Democratic theory

Abstract: A core activity of decentralising internet projects has been participation, and with it the democratising potential of governing through consensus. This encounter between democratic ideals on one side and its integration into socio-technical projects on the other has had significant consequences for the purposes and meanings attached to consensus as a technique. While the democratic potential of developing such techniques is hopeful, there is a deep ontological question about consensus that has been rarely answered: to what degree is the meaning of consensus dedicated to decision-making and when is it committed to understanding? Additionally, to what degree do these techniques shape and set up the conditions for how we understand and encounter the meaning of consensus? The glossary entry examines these questions by tracing historical differences in general agreement to its diverse interpretations in liberal, feminist, and technocratic perspectives through the lens of cultural techniques and affordances, a combined approach that extends deliberative democratic theory by emphasising how the political is an effect of the tools enlisted to materialise it. The entry provides an overview of the consequences of these effects by delving into the Internet Engineering Task Force (IETF) and blockchain technologies where rough consensus, running code, and distributed consensus have been championed. However, this shift carries with it a significant drawback: the unintended technocratic co-optation of consensus for efficient decision-making, a trend that neglects the democratic necessity for fostering understanding amid disagreement. Aimed at both political theorists and internet researchers dedicated to the democratic potential of decentralising technologies, this entry serves as a feminist and media-sensitive guide to make democracy durable by emphasising the role consensus plays in creating understanding rather than decision-making.

This article belongs to the **Glossary of decentralised technosocial systems**, a special section of *Internet Policy Review*.

Consensus is a concept that often denotes a legitimising practice of participation within democratic settings, one that stands in stark contrast to hierarchical forms of governance. With the notions of a bottom-up flow of authority, consensus may be achieved by engaging in several activities: creating a common feeling or understanding through public discourse; distributed decision-making through rational argument; or staging the conditions of something akin to a compromise. Either alone or in combination, these practices make consensus an attractive tool for assessing contentious concerns within a democracy without resorting to a centralised authority. They put the participation of the people front and centre.

It is therefore with little wonder that internet projects dedicated to collaboration have developed ways to integrate consensus as a basis for debate and organisation. Indeed, since the 1990s there have been several experiments in *rough consensus*, *running code*, and *consensus algorithms* that attempt to encode democratic values into the procedures and outcomes of sociotechnical systems. More than providing the fuel for political imagination, projects like the Internet Engineering Task Force (IETF) and blockchain technologies have popularised ways to increase the legitimacy and durability of democratic communities through consensus techniques.

There is, however, a complication. These engineering-based innovations have been attached to systems that are primarily – or even exclusively – designed for rendering making decision-making processes more efficient. This focus on consensus as a means for solving problems marks a dramatic shift in its meaning, one that downplays or outright ignores its epistemological function within democracy: to foster understanding between antagonistically opposed groups. The consequence is that internet researchers and political theorists dedicated to distributed forms of governance may inadvertently advocate and develop projects that co-opt consensus for technocratic (and arguably undemocratic) goals. Additionally, feminist political theorists have long argued that an uncritical pursuit of consensus comes at the cost of limiting the democratic necessity of disagreement through dissensus. Given this troubling semantic terrain, how can the concept of consensus be recomposed to manoeuvre around these concerns?

To navigate this question, I first position consensus as a *cultural technique*, a con-

cept from German media theory that equips researchers with the capacity to evaluate the kinds of democratic subjects that are actually produced by tools, an approach that extends political theory by accounting for how power is materially inscribed. Secondly, I review the complicated history of the keyword within liberal, feminist, and technocratic perspectives and examine how this technocratic perspective has intensified because of an ambiguity within what counts as public rational argument and the purpose of consensus. The entry ends with an answer to the question by emphasising the necessity of reorienting consensus toward the goal of democratic understanding by making it durable through a new set of digital techniques.

Political tools

This entry is called “consensus *techniques*” and not merely “consensus” on purpose. This amendment gestures towards Cornelia Vismann’s media theory of cultural techniques which excavates the political within technology. Succinctly summarised, she explained how a tool “determines the political act; and the operation itself produces the subject, who will then claim mastery over both the tool and the action associated with it” (2013, p. 84). She follows this by explaining that the political actor “does not exist prior to that act” of using the tool (2013, p. 84). In other words, the effect of the tool is a way of life that enables or constrains specific forms of power. What Vismann describes as cultural techniques, Jenny Davis might ascribe to the *efficacy* of technological objects, or the capacity of artefacts “to effect change” (2020, p. 46). Importantly for her, while “technologies *do* things,” it is only human subjects that have intention, not artefacts (2020, p. 57). This duality is present in her theory of affordances which are composed of *mechanisms* that “allow particular lines of action and social dynamics” and *social conditions* which are the “perceptions, experiences, and cultural norms surrounding the use of a technology” (2020, pp. 11–12). By putting these two theories in conversation with one another, I have assembled a means for analysing how the politics of consensus are made legible through the effects of specific tools while also evaluating who is (and is not) culturally enabled to design and use them. With this perspective in mind, I want to turn your attention to the variegated history of consensus as a keyword and its subsequent deployment within decentralising projects such as the Internet Engineering Task Force and blockchain technologies.

A genealogy of the keyword *consensus*

When Raymond Williams wrote his *Keywords* project to analyse over a hundred

words that now “express radically different or radically variable, yet sometimes hardly noticed, meanings” (2015, p. xxix), he included an essay on the keyword of consensus. Starting with the eighteenth century, he identified that the word signified “an agreement or common feeling,” a “general connexion” within a nation, or simply a “general agreement” (2015, p. 40). Some of these meanings have since been captured by liberal democratic theory. As John Dewey described, democratic communities require a “common understanding” to sustain themselves, and this understanding is synonymous with consensus which “demands communication” (1916, pp. 5-6). Likewise, Jürgen Habermas identified that consensus is formed through “communicative actions, values, and norms”, where consensus achieves “public authority” because it is not only the result of rational argument, but also a commitment to the “intersubjective recognition” (2008, p. 329, p. 75). From these two theorists, we find deep connections with ideas of the public – or public sphere – and its capacity for “moving disputes towards consensus” (Dahlberg, 2007, p. 832). Williams further discovered that consensus is sometimes written as “concensus,” a corruption that “indicates a now habitual if unconscious connection with the practice of counting opinions” (2015, p. 41). With this nexus comes a suspicion of the utility of opinions. This suspicion can similarly be sensed in Dewey’s distinctions between *popular* opinion as having little connection to “logical consistency” (1946, p. 61) and *public* opinion which “arises only in crises” where its “rightness” is limited by its responsiveness to public emergencies (1946, p. 178).

Another meaning that Williams identified was those associated with “consensus politics”, a phrase that he ascribed to “an existing body of agreed opinions” and set of policies that avoided making political divisions in order to “occupy the middle ground” (2015, p. 41). But in the race toward a centre where right and left are united, this approach was derided for maintaining an “evasive” and “manipulative” status quo that excluded “issues not already important” (Williams, 2015, p. 41). Both Nancy Fraser and Chantal Mouffe have significantly extended this line of feminist critique of the “consensus at the centre” (Mouffe, 2000, p. 6) by questioning the existence of a singular public sphere, and instead argued that there exist many publics and counterpublics that allow both consensus and dissensus to complement one another (Mansbridge, 2017, p. 105; Mouffe, p. 104). Another issue with Habermas’ theory was his view that the *telos* of deliberation is consensus, which is then used as a decision-making mechanism. However, and as Katarzyna Jezierska argued, consensus is not an appropriate end-goal for this vision of deliberation since it demands inclusion and time, qualities that conflict with the “time-efficiency” demands within decision-making (2019, p. 18). Additionally, dissensus under this arrangement is seen as an obstacle to making democratic decisions. But dis-

sensus is an indispensable condition of democracy as “there will always be disagreement concerning the way social justice should be implemented” which is precisely captured in the evergreen antagonism between the right and the left (Mouffe, pp. 113-114). Therefore, by making the goal of deliberation *understanding* (instead of consensus), both consensus and dissensus become legitimate outcomes that afford different levels of legitimacy for decision-making procedures such as “voting after deliberation” (Jeziarska, p. 16, p. 18). This agonistic theory of consensus posits that while related through the pursuit of legitimacy, democratic decisions and democratic understanding emerge from distinct situations which involve different techniques that produce political subjects: voters on one hand and deliberators on the other.

Consensus as a technocratic technique

While political theorists have long considered the meaning of consensus in its relationship to deliberative and agonist democracies, engineers and computer scientists have taken democratic ideas and fused them with decentralising digital technologies. Perhaps one of the most influential statements of this kind came out of the Internet Engineering Task Force (IETF), a group of engineers responsible for many of the core standards of the Internet. With palpable distrust for authoritarian figureheads and the coercive force of the majority, IETF participant David Clark announced in 1992 that “we reject kings, presidents, and voting. We believe in rough consensus and running code” (Kelty, 2005, p. 198). In the latter sentence, Clark articulates what Christopher Kelty identified as a key aspect of this type of “geeky” group: they persuade one another not only through “argument-by-talk”, but also through “argument-by-technology” (2005, p. 186). These two kinds of argumentation are the basis for how consensus shifted from its deliberative to its technocratic meaning.

Clark’s statement of rough consensus has come to be understood as a “consensus process” that begins with accounting for “different views among IETF participants” (Resnick, 2014, pp. 4, 1). After airing different proposals or criticisms regarding novel or existing standards, the diverging views are articulated in terms of whether a choice is “simply unappealing” or “truly problematic” (Resnick, 2014, p. 5). Ideally then, “coming to consensus is a matter of eliminating disagreements” (Resnick, 2014, p. 11), although in practice a “consensus is when everyone is sufficiently satisfied with the chosen solution” (Resnick, 2014, p. 5). This notion of sufficiency alludes to the terminology of *rough*, rather than *unanimous* agreement. In these situations, a general “lack of disagreement” is typically made legible in two

ways. First, IETF participants first make significant use of a mailing list to pose “informal polls” (Resnick, 2014, p. 10) which are used as a mechanism for “looking at the open issues and not counting heads” (Resnick, 2014, p. 14). Second, during in-person meetings, participants make their “lack of disagreement” legible by collectively humming to indicate the group is “coming to a consensus” or prefers a solution as a conversational “starting point”. To conclude the consensus process, the final decision is “taken on the mailing list” (Resnick, 2014, p. 10).

In keeping with their distrust of voting, the act of humming is “symbolic” as it works to counter the way of showing of hands gives “the impression that the number of people matters in some formal way” (Resnick, 2014, pp. 11-12). As such, humming is intended to anonymize through the collective intensity of sound. However, both actions (visible hands or heard hums) are interpreted as voting techniques. Indeed, one of the IETF’s documents wearily reports that in many meetings, humming has been used to vote on actions and for determining consensus (Resnick, 2014, p. 9). Additionally, the chair is a key role for consensus within the task force. This person not only facilitates discussions and prompts hums, but the process also “relies heavily on the good judgement of the consensus caller” (Resnick, 2014, p. 17). Thus, the moment of decision lies not with the participants, but with the chair. It should therefore not come as a surprise that when consensus is conditioned by decision-making instead of understanding, not only is disagreement seen as detrimental, but the IETF adopted the tools of authority it swore it rejected: the majoritarian vote and the voice from the throne.

However, because the IETF is a public concerned with *engineering* decisions, the group has an additional technique for forming consensus through what Kelty calls “argument-by-technology” or *running code*. To expand on this type of argument, design theorist Richard Buchanan provides the useful concept of the “design argument”. For him, “rhetoric is an art of shaping society, changing the course of individuals and communities, and setting patterns for new action” (1985, p. 6). Since design is a form of communication that accomplishes each of these, it too is a kind of argument. However, the rationality of a design argument includes technological reasoning oriented toward demonstration (Buchanan, 1985, p. 9). He elaborates on this point by stating that a design argument is communicated on two levels: “it attempts to persuade audiences not only that a given design is useful, but also that the designer’s premises or attitudes and values regarding practical life” (Buchanan, 1985, p. 10). In the context of the IETF, a general agreement that forms through “argument-by-technology” is often expressed as a “consensus [that] comes as more people begin to use that code” (Kelty, 2005, p. 202). Since every individual of this

engineering public is imagined to be able to use, change, or oppose code, the aggregate of these choices is a consensus-by-design, as demonstrated by running code. But of course, those who do not code – the vast majority of internet users – are excluded from this technical “deliberation;” the circle of those who are in the position to form consensus is thus limited.

While chairing meetings and programming software produces the political agents of the chair and programmer, there is a third kind of operator that emerges from the technocratic tool of consensus. During the 1980s when distributed computer systems were being developed, computer scientists and engineers ran into the problem of how to tell if a processor was not functioning properly. Their solution was to devise algorithms that would enable each processor to “agree” or “disagree” with one another about “unreliable” processors. Complete agreement between processors was known as “unanimity” while a majority agreement was considered to reflect “distributed consensus” (Dolev, 1981; Dolev, et al., 1987). Leslie Lamport famously contributed to this effort by developing a “consensus algorithm” (2001), a solution he explained by using the analogy of a parliament on an island named Paxos where all laws were passed out of “an atmosphere of mutual trust” (1989, p. 135). Within this imagined society, “trade came before civic duty” (Lamport, 1989, p. 133) and therefore the government used a system of updates to present and newly arrived legislator’s “ledgers” with the laws that had been recently passed. In the late 2000s, the logic of the algorithmic analogy was used for the Bitcoin network where decisions about which transactions were valid in the context of computer nodes that were constantly connecting and disconnecting from the network. To come to a majority agreement about which transactions are valid, the white paper described that computer nodes “vote with their CPU power, expressing their acceptance of valid blocks by working on extending them and rejecting invalid blocks by refusing to work on them.” This process was then labelled as Bitcoin’s “consensus mechanism” (Nakamoto, 2008, p. 8). Within the realm of distributed computing, the tool had become the political agent dedicated to decision-making. As a result, consensus had not only shifted from human participation to meaning *only* computation, but the very notion of democratic understanding had been erased completely. All that mattered was ensuring enough agreement to make calculated decisions.

Towards techniques for understanding

In the course of this entry, I have travelled from consensus meaning a “common feeling,” to public opinion, rough consensus, running code, and algorithmic consen-

sus. Each of these meanings are associated with techniques (deliberation, polling, coding, voting) and their respective political subjects: the deliberators; the pollsters; the coders; and the voters. The meaning of consensus and the politics it enables are therefore an effect of the cultural techniques used to produce it. Within decentralising internet projects, such politics have been increasingly limited to creating tools for distributed decision-making rather than tools to create the conditions for common understanding. This points towards a technocratic annexation of a democratic concept, a situation that should raise concerns for political theorists and internet researchers dedicated to creating alternative sociotechnical systems. If consensus is to retain its political promise and epistemological potential, creating distributed forms of agreement is not sufficient. It must not only be complemented with dissensus as a possible outcome of deliberation (following the insight of many feminist political theorists), but both consensus and dissensus must be designed into systems with the explicit goal of cultivating understanding between agonistic groups. Without such efforts we will merely have all the tools to make collective decisions but none to understand one another.

References

- Dahlberg, L. (2007). Rethinking the fragmentation of the cyberpublic: From consensus to contestation. *New Media & Society*, 9(5), 827–847. <https://doi.org/10.1177/1461444807081228>
- Davis, J. L. (2020). *How artifacts afford: The power and politics of everyday things*. The MIT Press. <https://doi.org/10.7551/mitpress/11967.001.0001>
- Dewey, J. (1916). *Democracy and education: An introduction to the philosophy of education*. Macmillan.
- Dewey, J. (1946). *The public and its problems: An essay in political inquiry*. Gateway Books.
- Dolev, D. (1981). Unanimity in an unknown and unreliable environment. *22nd Annual Symposium on Foundations of Computer Science*, 159–168. <https://doi.org/10.1109/SFCS.1981.53>
- Dolev, D., Dwork, C., & Stockmeyer, L. (1987). On the minimal synchronism needed for distributed consensus. *Journal of the ACM*, 34(1), 77–97. <https://doi.org/10.1145/7531.7533>
- Habermas, J. (2008). *Between naturalism and religion: Philosophical essays*. Polity Press.
- Jeziarska, K. (2019). With Habermas against Habermas. Deliberation without Consensus. *Journal of Deliberative Democracy*, 15(1). <https://doi.org/10.16997/jdd.326>
- Kelty, C. (2005). Geeks, social imaginaries, and recursive publics. *Cultural Anthropology*, 20(2), 185–214. <https://doi.org/10.1525/can.2005.20.2.185>
- Lampert, L. (1989). The part-time parliament. *ACM Transactions on Computer Systems*, 16(2), 133–169. <https://doi.org/10.1145/279227.279229>

Lampert, L. (2001). Paxos made simple. *ACM SIGACT News (Distributed Computing Column)*, 32(4), 51–58. <https://www.microsoft.com/en-us/research/publication/paxos-made-simple/>

Mansbridge, J. (2017). The long life of Nancy Fraser's 'Rethinking the public sphere'. In B. Bargu & C. Bottici (Eds.), *Feminism, capitalism, and critique: Essays in honor of Nancy Fraser* (pp. 101–118). Palgrave Macmillan. https://doi.org/10.1007/978-3-319-52386-6_6

Mouffe, C. (2000). *The democratic paradox*. Verso.

Nakamoto, S. (2008). *Bitcoin: A peer-to-peer electronic cash system*. SSRN Electronic Journal. <https://doi.org/10.2139/ssrn.3440802>

Resnick, P. (2014). *On consensus and humming in the IETF* (Memo RFC 7282; pp. 1–19). Internet Engineering Task Force (IETF). <https://www.rfc-editor.org/rfc/rfc7282>

Vismann, C. (2013). Cultural techniques and sovereignty. *Theory, Culture & Society*, 30(6), 83–93. <https://doi.org/10.1177/0263276413496851>

Williams, R. (2015). *Keywords: A vocabulary of culture and society* (3rd ed.). Oxford University Press.

Published by



ALEXANDER VON HUMBOLDT
INSTITUTE FOR INTERNET
AND SOCIETY

in cooperation with



CREATE



centre
— internet
— et
— societe



R&I
IN3
Internet
interdisciplinary
Institute
Universitat Oberta de Catalunya



UNIVERSITY OF TARTU
Johan Skytte Institute of
Political Studies