# Implementing double blind reviews in SoCG

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## 1 Introduction

In June 2020, a discussion was organized during the (online) Computational geometry week to tackle two questions regarding the paper submission process of the SoCG conference:

1. Should the reviewing process be double-blind?
2. Should submissions co-authored by PC members be allowed?

A first public introduction to these questions gave way to a lively discussion both in the open forum and on the associated discord server where several concerns were raised around these issues. Two votes were organized at the business meeting, with about 120 votes cast in each. The first vote enquired about the creation of a task force to investigate some form of double blind; the results were strongly in favor[1], so a task force was created. The second vote showed support for PC submission[2] so the Steering committee included this question in the mandate of the task force.

In the discussion, there was a general agreement that the process should be as fair as possible, and that double-blind reviews had the potential to increase fairness. The main concerns raised deal with two trade-offs to be made, and which underlie any double-blind system: prevention of author uncovering VS knowledge dissemination, and bias reduction VS vulnerability to fraud. Let us stress, however, that any review process is at heart a trust-based system, not designed to be fully resistant again fraud or abuses. This includes the current single-blind system as well as any double-blind system that we consider. The question is really one of setting a trade-off between various adverse effects, which should not be considered in binary terms.

It is worth noting that this discussion is happening more broadly in the field of computer science; see `http://double-blind.org/` for a listing of major computer science conferences and their current status with regards to double blind reviewing.

### 1.1 What is bias?

Let us first make explicit what is meant by the term bias. According to a recent white paper by the League of European Research Universities [6]:

> *Bias is a cognitive process which can be defined as skewed information processing under the influence of context and accumulated experience. Broadly speaking, we act on the basis of internalised schemas, which we use to make the task of processing information efficient and manageable. However, these useful, cognitive "short-cuts" can also mislead us, because they tend to make us pay more attention to information that confirms our expectations and less attention to disconfirming information, thus introducing biases.*

[1] 41% supported the creation of the task force, and another 41% joined with the restriction that it investigates only solutions that allow authors to disseminate their papers through arXiv, seminars and workshops.

[2] 40% were in favor of PC submission in the current system; 29% were in favor of PC submission conditioned on a move to some form of double blind review; 21% were against PC submission; and 10% were unsure.

Notably, bias may be positive or negative, and is based on a complex mix of characteristics and experiences, including professional history or qualifications, past social interactions, racial or gender identity, and many other factors. In particular, relying upon knowledge of the authors both to navigate subreviews and to utilize the track record (positive or negative) when handling reviews is one sort of bias.

## 2 Bias and the review process

Bias and its impact on minority groups is well studied in many fields. To help the community appreciate the scale of the adverse issues of bias, the difference double-blind systems can make, and how delicate it is to study these questions, we collected in Appendix B summaries of a few examples of studies:

- Two studies showing evidence of bias against authors from less prestigious institutions in journals (#1 and #2).
- A study showing evidence of sexism and nepotism in a single blind grant review process (#3).
- A study highlighting methodological difficulties in drawing firm conclusions on the existence of bias and on the effectiveness of double-blind in reducing or removing it (#4).
- Two studies in conferences in computer science showing evidence of bias against authors from less prestigious intuitions (#5 and #6).

A full discussion of the literature is beyond the scope of this document and the expertise of this task force. We refer the interested reader to some of the many excellent publications either on bias and discrimination in general [5, 4, 1] or on bias in the review process [11, 12, 7]. Nevertheless, given the large body of literature that find bias and its adverse effects present in so many different communities, we find it unlikely that it is not already present in our own.

The task force discussed whether it was worth attempting to quantify the level of bias currently in the SoCG review process, either by tracking data in coming years or by attempting to analyze prior years. However, such bias is both subtle and difficult to quantify, and studies are usually defined and run by experts in the area of bias research. In the end, we concluded that such a study would be quite difficult and was not necessary given the evidence obtained across a wide range of disciplines[3].

At the discussion on this topic during the last SoCG, many felt that since bias was unavoidable, it was better to be made aware of the issue and attempt to go beyond it. The studies we have just mentioned argue that the double blind review process appears to be effective at mitigating bias during the review process. This cannot be said for every other attempt at reducing discrimination, for instance gender quotas on hiring committees [16].

## 3 Prevention of author uncovering VS dissemination

In all double-blind systems that we examined, the burden and the responsibility of anonymizing the submission rests on the authors' shoulders (with certain checks, see Section 5). The minimal requirements appear to be removing the authors' names and reformulating any reference to their past work (i.e. turning "We" into "They"). Some systems go as far as to require that authors to keep their results confidential and explicitly forbid posting preprints, giving talks and seminars, etc., while others embrace what is sometimes called "light double blinding", which does not restrict such activities.

The discussion at the Computational geometry week 2020 revealed a strong opposition to any requirement that would forbid dissemination through posting preprints on arXiv or giving talks at, for instance, EuroCG or a Dagstuhl workshop. This means that in many cases, a reviewer can learn of the authors of a submission; this can be willingly, by a mere google search, but also *unwillingly*, for instance by receiving a daily update

[3] We note that the mathematics community has not engaged as of yet much with this issue; see [3] for some initial discussion by the MAA.

from the arXiv. More broadly, there is the possibility that the reviewer guesses who the authors are, for instance because of the style or the display of a particular combination of expertise.[4] From this, the two main concerns raised were the following:

- "*Such an easily overcome blinding would be useless*". Again, this should be considered in the perspective of a trust-based system designed to reduce, rather than eliminate, adverse effects of bias. We expect most reviewers will read the entire paper and have already formed an initial impression before that first google search. If at that point a google search to check related work reveals the author information, we still feel that the resulting reviews are more likely to improve in quality.
- "*The extra-work required by a double blind system from authors, reviewers and committee members would be prohibitive*". We note that several studies and posts about conferences and journals who have moved to double blind found that after an initial period of concern or debate, both authors and reviewers generally preferred to stay with such a system in the long term [14, 2].

Altogether, we recommend a light double blind strategy, to aim for anonymization requirements compatible with dissemination through arXiv and the usual computational geometry venues (EuroCG, Dagstuhl). We found the specifications of the recent editions of the *European Symposium on Algorithms* (ESA) very adequate. In the terms of their call for papers (2019, 2020 and 2021), the blinding should:

> *... help PC members and external reviewers come to an initial judgment about the paper without bias, not to make it impossible for them to discover the authors if they were to try. [...] authors should feel free to disseminate their ideas or draft versions of their paper as they normally would. For example, authors may post drafts of their papers on the web, submit them to arXiv, and give talks on their research ideas.*

# 4 Bias reduction VS vulnerability to fraud

Double-blind systems reduce the effects of bias by introducing some opacity in the system, which in turn may make it more vulnerable to certain types of abuse. We acknowledge that this is a major issue, to be considered, again, in the perspective of a trust-based system designed to reduce, rather than eliminate, fraudulent behavior.

Any review process is at heart a trust-based system: we trust reviewers to honestly assess papers and provide critical feedback, and PC members to make decisions about the final program using this information. We rely upon authors, reviewers, and PC members to behave according to community standards, in any review system. A dishonest participant can break such a system; for instance, authors could collude over time to artificially inflate ratings for colleagues whose work they recognize. There is increasing evidence that such collusion can take place.[5] Neither the single-blind nor the double-blind systems are designed to protect against collusion or other abuses. It is simply more possible that such abuse might be discovered by a conscientious PC if identities of authors and reviewers are known.

One possible trade-off which we propose to consider is to have a "double blind until discussion" process, where reviewers and PC start blinded and get unblinded at some point during discussion phase, but before the decisions are finalized. For example, the PC could get unblinded after the reviews have been entered, so that one sees the name of the authors at the same time as one sees the other reviews. This does allow some opportunity to uncover problematic cases (again with no guarantee) but is less effective at removing bias than a through-and-through double-blind system. It was also noted in discussion that author identity would then still prove useful in the discussion phase, to situate the paper properly; for example, the PC can then

[4] Let us stress that the impression that one could guess the authors may be deceptive: a survey run after the POPL conference went double-blind in 2012, see https://www.cs.utexas.edu/users/mckinley/notes/popl12recap.pdf, reports that only 22% of reviewers guessed correctly who wrote at least one of their reviewed papers, and 86% of the PC reported making an incorrect guess about the authors.

[5] A discussion of a recent example in the SIGARCH community can be found at
https://medium.com/@tnvijayk/potential-organized-fraud-in-acm-ieee-computer-architecture-conferences-ccd61169370d

consider who else is working on the problem as well as possibly recognizing related preprints of the paper as not being missing related work.

There are valid reasons to object to this double blind until discussion strategy. As pointed out in the forum, author identity is really a proxy for the real goal: an honest and comprehensive related work section that places the work in a broader context, making the identity not so necessary. Moreover, as pointed out by Dr. McKinley in a discussion of implementation of double blind for SIGPLAN[6]:

> *Unblinding after the first review is submitted is insufficient because the reviewing process is far from over at this point. In the next phases, the other reviewers opinions are revealed. Are you willing to stand by your contrary judgement if the submission is from MIT or Nowhere University? Reviewer biases for and against authors may taint online discussions, the author response process, and the program committee meeting, all critical steps of the decisions making process.*

Nonetheless, given concerns over transparency and collusion, we feel this strategy is worth to consider as an alternative to the "double blind until accept" strategy.

# 5 Running a double-blinded SoCG

What are the practical implications of a double-blind system with respect to paper submission and program committee work? This section is an attempt to clarify[7] what issues the chairs will have to handle and how they could approach it, taking into account the particularities of our community.

We would like to emphasize that the vote is **NOT** on the specifics in this section, however: the PC chairs and steering committee will have the freedom to implement the system in the way they prefer. In fact, it is reasonable to expect this process to evolve over time, so our goal is merely to present a potential and reasonable structure for consideration.

**Workflow chairs.** Some steps of the described process require an unblinded person (i.e., somebody that sees the author names). We will refer to that person as the *workflow chair*. This person is generally a dedicated person not involved in the actual reviewing process, as PC chairs are often engaged in the review process and may prefer to be blinded, although the PC chairs could also potentially serve in this role. Depending on the setup, the work of the workflow chair can also be too high for a single person, in which case the workflow chair's job can be split among additional dedicated people and/or the PC chairs.

**Blinded submissions and checking.** Authors should write their papers such that their identity is not immediately revealed (i.e., avoid phrases such as "In our previous paper [1], we showed that..."). Extra material should also be communicated without breaching anonymity, for instance via the workflow chair or an anonymous link to a publicly available cloud service; commonly used places that support this are Amazon cloud, Dropbox, or Github. References to the authors (such as copyright in code for instance) should also be removed.

Many researchers in our community are not used to this "blinding" procedure. Therefore, especially in the first years of double-blinding, we propose that submitted manuscripts are checked for the absence of revealing phrases, at least on the first 1-2 pages. This is standard in most double blind conferences and is naturally a task for the workflow chair – we admit that checking 200 submissions is a time-consuming task, but as this only requires "shallow reading", the workflow chair can seek help from outside the PC for this task. An alternative would be that PC members check papers which they do *not* handle as reviewers.

In either case, we assume one week is a realistic estimate for this task. That raises the question of extending the reviewing process by a week (submission deadline earlier and/or notification deadline later)

[6] See https://www.cs.utexas.edu/users/mckinley/notes/blind.html

[7] Our suggestions are based on the feedback of PC chairs of related theory conferences that switched recently to double-blind (ESA,ALENEX). We also took into account the experience of large-scale conferences in non-theory conferences. However, program committees in most fields are much larger and structured hierarchically, so that their concepts are not always applicable. Moreover, whether certain steps are possible depends on the capabilities of the used conference management system (see below).

or to shorten the review time by a week, both of which seem reasonable options. We point out that the alternative to checking the papers is to either reject a submission if the authors accidentally reveal their identity, which we consider unreasonably harsh, or to simply ignore that authors did not hide their identity, which seems inadequate.

**Managing conflicts.** One major issue is to identify conflicts of interest of PC members and potential subreviewers when the author names are not known. The definition of a conflict of interest does not change under the double-blind model: for instance, to avoid the perception of bias, a paper should not be reviewed by a person from the same institution, even if the reviewer is not aware where the paper is coming from.

It is standard in all double-blind venues to burden most of the overhead for conflict detection to the authors. To begin with, all authors are required to register domain-based conflicts, so that each author on a paper must specify institutional level conflicts. Some conferences stop at this level of conflict declaration, while others extend to individual level declarations.

If individual conflicts will be declared, the PC chairs also compose a *pool of reviewers*, which should contain the PC members but can also contain a large part of the CG community, for instance, all authors of SoCG papers of the last 10 years, and/or all SoCG reviewers of the last 5 years. Every author of a paper has to mark those people from the list with whom he/she is in conflict. A submission is only handled by the PC if all authors have marked their conflicts.

The pool is admittedly a long list of names which would take a long time to go through one-by-one. However, authors will not have to do that: we think that the number of people that one is conflicted about is typically rather small, and thinking of these names and finding them on the list should be a matter of at most 15 minutes, based on our experience with other conferences. For example, this list for NeurIPS is typically $> 3000$ names, and the process remains manageable for authors.

It should be defined explicitly what is considered a conflict so that authors can reference those guidelines – see Appendix C for guidelines for SoCG reviewers from last year as a possible reference.

There is the option of additionally present the PC members a list of all authors and let them also mark their conflicts with authors (e.g., before the paper bidding starts). This is less common and not supported by all conference systems, but gives the PC members the chance to avoid reviewing papers of authors they feel conflicted with, in case the authors do not feel the same or just missed to mark a PC member.

**Requesting subreviewers.** Since authors have marked conflicts with the pool of reviewers, PC members can avoid sending review requests to conflicted persons (and to the authors themselves). How this works technically depends on the conference system: in some, conflicted reviewers are marked in red when the PC member selects a subreviewer from the pool, which is convenient but perhaps reveals too much unwanted information about the authors of the paper. Another possibility is that when the request is sent, the system refuses it automatically because of a marked conflict (so the PC member only learns about the conflict in the moment he/she queries a reviewer).

There is also the case that a reviewer is requested that is not in the pool. In that case, the PC member could ask the workflow chair about the request. As the workflow chair is unblinded, he/she can see whether there is an obvious conflict of interest and approve or deny the request accordingly. We expect the number of such cases to be small if the initial pool of reviewers was chosen large enough.

Of course, subreviewers will always have the option of refusing to review, if they receive a paper which they recognize or feel in conflict with, either because the conflict is of a more subtle nature or because the conflict declaration has been missed somehow by the author.

**The conference system.** Traditionally, SoCG uses easychair, and easychair supports some part of the described workflow via its "advanced conflict management" module. This module is only available with an "executive" license. The price for such a license for a conference with 200 submissions is 450 GBP (around 630 USD)[8]. The executive license is about twice as expensive as a "pro" license which has been used for SoCG already several times in the past.

[8] https://easychair.org/licenses

There are alternatives to easychair: *Hotcrp*[9] is the conference system used by SODA in the last years which also provides functionality to support all the step above (price: 7.50 USD per submission); this option comes highly recommend by people who have used it for double blind review. Another option is Microsoft CMT[10], which is the de-facto standard for large-scale conferences, which have $> 10000$ submissions and $> 3000$ reviewers.

# 6 PC submission

We next tackle the issue of allowing PC submissions. While somewhat orthogonal, it is nonetheless somewhat intertwined for some people with the question of double blind review (we come back to the dependency between the two questions in Section 7). Here we summarize the discussion held at CG Week and add a few facts to put some of the arguments in perspective.

**Arguments against allowing PC submissions.** A first argument against allowing PC submission is that it increases the risk of bias, namely that submissions co-authored by PC members may enjoy unfair positive bias. Evidence that this does occur in the single blind setting can be found, for instance, in the study [15] of the 1995 grant review process for postdoctoral positions offered by the Swedish Medical Research Council (#3 in Appendix B): applicants with no affiliation to a committee member[11] suffered the same level of discrimination as women did (that is, one needed to be roughly 2.5 times more productive in order to receive the same *competence score*; for women without such an affiliation, the penalties added up). We are not aware of any study of such bias in a double blind setting. Yet, since the goal of moving to double-blind reviewing is to *reduce* bias, allowing PC submission may appear to go in the opposite direction.

A second concern raised against allowing PC submission is the risk of *perceived* unfairness. Specifically, having a high number of accepted papers co-authored by PC members may give the impression that the conference is unfriendly to outsiders. This is for instance the explicit reason given by CRYPTO'2009 for restricting the number of submissions by PC members[12].

**Arguments in favor of allowing PC submissions.** A first argument in support of allowing PC submission is that its prohibition makes it more difficult to assemble a program committee, as invited members that have a submission in sight are prone to decline. We contacted the PC chairs from the past 6 years to find out how common this really was. Altogether, 125 people have served as members of the PC (in addition to the 12 PC chairs). During the same time frame, 65 people have declined PC invitations. It is interesting to note that this was highly variable, with one year having only 5 invitations declined while another had 20 declined. Among the (variety of) reasons cited for declining, 12 of the 65 refusals explicitly mentioned or asked about the issue of PC submission.

Additional arguments to allow PC submission mentioned the amount of work involved with being a PC member, and argued that a larger PC could lower this workload. This is of particular concern to some if double blind review passes, as this might entail more work at least in the first few years for PC members, until we are comfortable with the process. However, since PC submission is not allowed, there is concern about restricting more members of our community from sending papers to SoCG. Currently, the SC recommends that PC members serve only every 4-5 years, to spread this work among the community; however, if the burden of work were lower and PC submission were allowed, a larger PC could be formed without restricting submissions.

Finally, in the forum some people simply expressed the opinion that if review is double blind, there is no reason *not* to consider PC submissions, since reviewers (and fellow PC members) would be unaware of author identity, and hence less likely to allow that to influence their reviews.

[9] https://hotcrp.com/

[10] https://cmt3.research.microsoft.com/About

[11] Committee members affiliated with an applicant did not review that application nor participated in the discussion.

[12] See https://www.iacr.org/conferences/crypto2009/faq.html

**Existing systems.** Some conferences (e.g. SODA) have implemented PC submission even without a double blind review process.[13] In these cases, the PC submissions often receive extra scrutiny, with a separate review process to ensure quality. In terms of other conferences, there is a mix of what is allowed, with many possible variations, further complicated by different terminology, as "PC", "reviewer", and "area chair" often used in different ways across communities. However, the PC chairs are almost always banned from submission, as they oversee all discussion.

# 7 The Voting Procedure

To summarize, we recommend to articulate the vote in the following two questions:

1. Should SoCG submission be reviewed in the single-blind, the light double-blind until discussion, or the light double-blind until accept model?

2. Should PC members of the SoCG committee be allowed to submit papers?

The mechanics of the vote are not straight-forward, because the first question has three options. Separating the two questions is also difficult: 29% of the votes in 2020 SoCG expressed the opinion of only allowing PC submissions if a double-blinded system is used. On the other hand, we also received opinions saying that double-blind should only be introduced if PC submission is allowed. Because of this entanglement, we think that it is best to combine the questions and allow all six combinations of answers.

Both the voting procedure and its evaluation are non-trivial. Transparency is therefore important. We think that it should be clearly defined before the vote how the "winner" is determined.

Based on these conditions, the steering committee suggested the following procedure: The prefered option among the six candidates is determined by the *Schulze method*[14] which is supported by the Belenios online voting system in which the vote is planned to be performed. In this method, voters rank the options in an ordered list of preferences (where several options can be ranked equally). We refer to the wikipedia page for the details of the evaluation. The final decision will be officially made by the steering committee, using the results of this vote, with implementation decisions left to future PC chairs in conjunction with the steering committee.

# References


[1] Dominic Abrams. Processes of prejudices: Theory, evidence and intervention. Technical report, Equalities and Human Rights Commission, 2010.

[2] Katherine Egan Bennett, Reshma Jagsi, and Anthony Zietman. Radiation oncology authors and reviewers prefer double-blind peer review. *Proceedings of the National Academy of Sciences*, 115(9):E1940–E1940, 2018.

[3] Scott T Chapman. Opinion: Ethics lessons learned while editing the monthly: Modern publishing is raising new issues. *Notices of the American Mathematical Society*, 65(10):1270–1272, 2018.

[4] John F. Dovidio, Kerry Kawakami, Craig Johnson, Brenda Johnson, and Adaiah Howard. On the nature of prejudice: Automatic and controlled processes. *Journal of Experimental Social Psychology*, 33(5):510–540, September 1997.

[5] Anthony G. Greenwald and Mahzarin R. Banaji. Implicit social cognition: Attitudes, self-esteem, and stereotypes. *Psychological Review*, 102(1):4–27, 1995.


[13] See http://blog.geomblog.org/2019/03/on-pc-submissions-at-soda-2020.html for the guidelines provided to PC members for SODA 2020.

[14] https://en.wikipedia.org/wiki/Schulze_method

[6] K. Gvozdanovic, J. Maes. Implicit bias in academia: A challenge to the meritocratic principle and to women's careers – and what to do about it;. Technical report, League of European Research Universities, 2018.

[7] Samir Haffar, Fateh Bazerbachi, and M. Hassan Murad. Peer review bias: A critical review. *Mayo Clinic Proceedings*, 94(4):670–676, April 2019.

[8] Barbara McGillivray and Elisa De Ranieri. Uptake and outcome of manuscripts in nature journals by review model and author characteristics. *Research integrity and peer review*, 3(1):1–12, 2018.

[9] Kanu Okike, Kevin T. Hug, Mininder S. Kocher, and Seth S. Leopold. Single-blind vs double-blind peer review in the setting of author prestige. *JAMA*, 316(12):1315, September 2016.

[10] Douglas P. Peters and Stephen J. Ceci. Peer-review practices of psychological journals: The fate of published articles, submitted again. *Behavioral and Brain Sciences*, 5(2):187–195, 1982.

[11] R. Smith. Peer review: a flawed process at the heart of science and journals. *Journal of the Royal Society of Medicine*, 99(4):178–182, April 2006.

[12] Richard Snodgrass. Single- versus double-blind reviewing. *ACM SIGMOD Record*, 35(3):8–21, September 2006.

[13] Mengyi Sun, Jainabou Barry Danfa, and Misha Teplitskiy. Does double-blind peer-review reduce bias? evidence from a top computer science conference, 2021.

[14] Andrew Tomkins, Min Zhang, and William D. Heavlin. Reviewer bias in single- versus double-blind peer review. *Proceedings of the National Academy of Sciences*, 114(48):12708–12713, 2017.

[15] Christine Wennerås and Agnes Wold. Nepotism and sexism in peer-review. *Nature*, 387(6631):341–343, May 1997.

[16] Chris Woolston. How a hiring quota failed. *Nature*, 566(7742):287–288, 2019.

# A Glossary of terms

**Bias** is skewed information processing under the influence of context and accumulated experience.

**Single blind** is a term for our current review process, where authors' names are on the paper, but reviewer identity is not revealed.

**Light double blind** is a term we use for the form of author anonymization we are proposing, where materials may be posted on arxiv and talks may be given.

**Double blind until discussion** is one proposed new format, where submissions are blinded (so author identity is not known) during the review process, but the author identity is revealed to the PC during the discussion phase. Reviewers remain anonymous throughout the process.

**Double blind until accept** is a term for a system where authors' identities are concealed throughout the entire review and discussion process, until the point where papers are accepted. Reviewers remain anonymous throughout the process.

## B Some examples in bias study

Bias and its impact on minority groups is well studied in many fields, although a full discussion of this is beyond the scope of this document and the expertise of this task force. We refer interested readers to some of the many excellent publications [5, 4, 1]. With regards to the review process, many studies have been conducted in a range of fields to attempt to measure bias, sometimes comparing its effects in single versus double blind reviews; we will describe a few, and refer to additional surveys which examine this complex issue [11, 12, 7].

1. One classic study of psychology journals in 1982 [10] took 12 already published articles from prestigious institutions, made minor changes to the title and contents, and changed the authors' names and affiliations. They then resubmitted the papers to the same journals. Only 3 journals realized the papers had already been published, and 8 of the remaining 9 were rejected – not because of originality, but specifically because of poor quality. The authors concluded that this was evidence of bias against authors from less prestigious intuitions.

2. A similar study [9] took a fabricated manuscript containing several errors, supposedly written by two past presidents of the American Academy of Orthopaedic Surgeons, both from prominent institutions. They found that the manuscript was given notably higher ratings and was more likely to be recommended for acceptance (87% versus 68%) in the single blind study.

3. Another study [15] of the grant review process for postdoctoral positions offered by the Swedish Medical Research Council in 1995 showed evidence of substantial sexism and nepotism. In particular, women needed to be roughly 2.5 times more productive in order to receive the same *competence score*.

Some studies do, however, stress the difficulties in assessing both bias and its effects. For instance:

4. An analysis [8] of more than 100 000 submissions between 2015 and 2017 to 25 *Nature*-branded journals offering authors the choice between single-blind and double-blind found that the small number of accepted papers and the lack of independent measure of quality of the manuscripts prevented drawing firm conclusions on the existence of bias and on the effectiveness of double-blind in in reducing or removing it.

Closer to us, here are two studies on conferences in computer science[15]:

5. In [14], the authors present a comparison of full length submissions to the 2017 Web Search and Data Mining conference, which split its set of reviewers into two equal size groups, one single blind and one double blind. The conference that year handled approximately 500 submitted papers, with a 15.6% acceptance rate. They found that reviewers in the single blind group typically bid for 22% fewer papers, and preferentially bid for papers from top universities and companies; in addition, they found that single blind reviewer were significantly more likely to recommend acceptance for papers from famous authors, top universities, and top companies.

6. A similar study [13] was conducted in the International Conference on Learning Representations in 2018, when it shifted from single to double blind review. They found that the scores given to the most prestigious authors significantly decreased, although the scores were still above the threshold for acceptance and as a result did not significantly affect paper decisions. However, they do find that the double blind process may have limited other biases, as (in their words), "papers rejected in single-blinded format are cited more than those rejected under double-blind format, suggesting that the double-blind review better identifies poorer quality papers".

[15] We note that mathematics community has not engaged as of yet much with this issue; see [3] for some initial discussion by the MAA.

## C How was conflict of interest defined in SoCG'21?

The following paragraph is taken from

https://cse.buffalo.edu/socg21/files/SoCG21%20Guidelines%20for%20reviewing.pdf

*Submissions should be judged solely on the basis of the submitted extended abstract. You may have a personal bias on some papers. Only you can judge such a bias, and decide if you don't feel comfortable reviewing the paper. These conflicts of interest (CoI) can be tricky – they come in various shapes and sizes. We distinguish between strong and weak CoIs. A strong CoI prevents you from reviewing the submission and from handling it as a PC member. A weak CoI does not formally prevent you from reviewing the submission and from handling it as a PC member, but you should indicate the nature of the weak CoI in the confidential comments for the PC, for transparency. Here is a list of instances of relationships that can cause strong or weak conflicts of interest. These should be viewed as guidelines: Not all cases can be covered, every situation is unique, and there is no obvious scale for measuring ties between two persons.*

- *current or past PhD supervisor or PhD student (strong: past 10 years; weak: anytime);*
- *employment at the same institution or company, within the last 2 years (strong) or 5 years (weak);*
- *close collaboration on some recent projects or papers, within the past 2 years (strong) or 4 years (weak) – this refers to collaboration on joint research, not publication (journal papers often appear some time after collaboration);*
- *current work in the exact same area, so that accepting the submission would significantly impact a current project of the potential reviewer or handling PC member (typically, working towards obtaining the same result);*
- *financial, family or close personal relationship;*
- *in general, any doubt that the potential reviewer or handling PC member can judge the author's work fairly.*

*Do not declare a strong conflict of interest too quickly, just because you wrote papers with someone recently. You might just be one of the few who can judge the paper well. For unclear cases, the following informal criterion might be helpful: Judging a paper that you would support (or stand up against) for reasons related to you and not the content of the paper itself should be avoided.*

## D What are similar conferences doing?

We provide a brief survey of theoretical computer science conferences or conferences in closely adjacent fields, and their current status with regards to double blind review and PC submission.

- FOCS and STOC are both single blind review processes, with (as far as we know) no concrete plan of going double blind.
- SODA has been single blind up to now, but is planning on moving to double blind in the next year, based on the terms under which PC members have been invited to serve. This follows a discussion and vote made at the business meeting in January 2018. SODA has allowed PC submission for the past 2 years, with the review process for those papers run under a separate, stricter review process in a subcommittee of the PC.
- ESA has been running double-blind since the 2018 edition. The blinding goes on until the final decisions are made. PC members are not allowed to submit.

- SGP has been running double-blind since the 2020 edition. PC members are allowed to submit, but the mechanics of handling are quite different, since they run a larger, tiered PC.
- CRYPTO has been running double blind for at least 20 years, and allows each PC member to submit 1–2 papers.

For further examples, we refer to a more complete listing of CS conferences and their current status, maintained at http://double-blind.org/.