



# The potential drawbacks of open peer review. A simulation model of scientist behaviour

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## Research question



- ❑ Transparency is viewed as a means to avoid selfish behaviour by scientists and increase science accountability and credibility
- ❑ This is true, in principle, but the devil is in the detail!



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## The basic model



- ❑ A population of  $N$  agents (authors & referees)
- ❑ Resources, productivity and quality
- ❑ Evaluation process: intrinsic vs. perceived quality
- ❑ Publish or perish

Parameter	Value
Number of agents	240
Number of reviewers per author	[1, 2, 3]
Initial scientist resources	0
Fixed productivity gain	1
Number of accepted publications	30
Publication productivity multiplier	1.5
Evaluation bias by default	0.1
Author investment for publication	1
Reviewing expenses of unreliable reviewers	0.5
Underrating by unreliable reviewers	0.1
Overrating by unreliable reviewers	1.9
Velocity of best quality approximation	0.1

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# Play with our NetLogo model!



A screenshot of the OpenABM website. The page title is "Peer Review with Multiple Reviewers" by Federico Bianchi and Flaminio Squazzoni. It shows submission details (Sep 10, 2015) and 12 downloads. The main text describes the model's focus on the effect of multiple reviewers on the quality and efficiency of peer review. A sidebar on the left lists navigation options like Home, Model Library, and Education. A search bar and navigation tabs (home, about, faq, contact) are at the top.

<https://www.openabm.org/model/4718/version/1/view>

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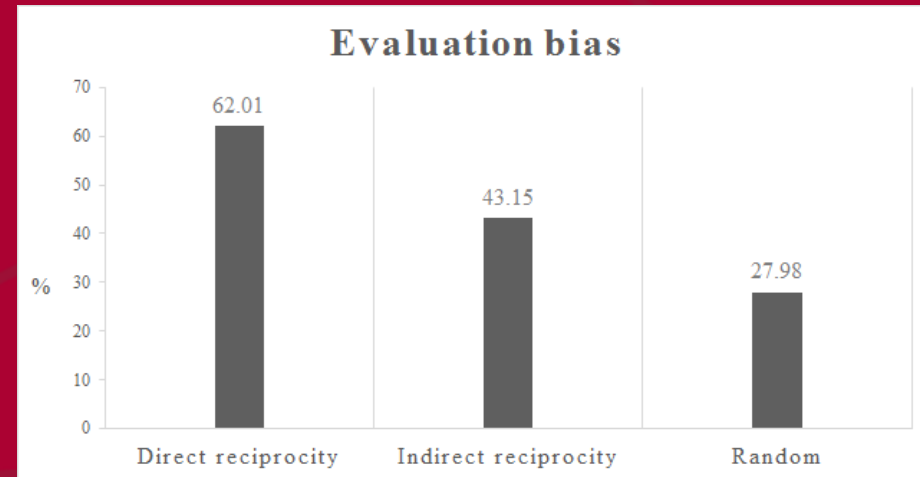
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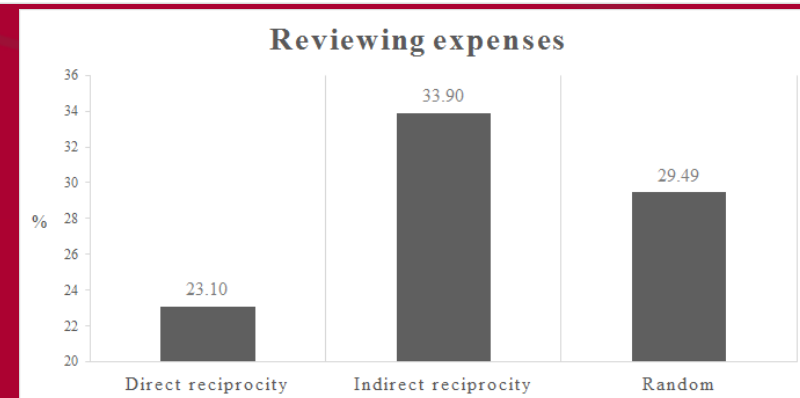
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Evaluation bias				
Scenario	Number of reviewers			
	1	2	3	
Random	27.98	14.98	12.43	18.46
Reliable	5.05	9.39	13.19	9.21
Unreliable	50.37	29.76	27.26	35.80
Direct reciprocity	62.01	49.05	33.15	48.07
	36.35	25.80	21.51	27.89

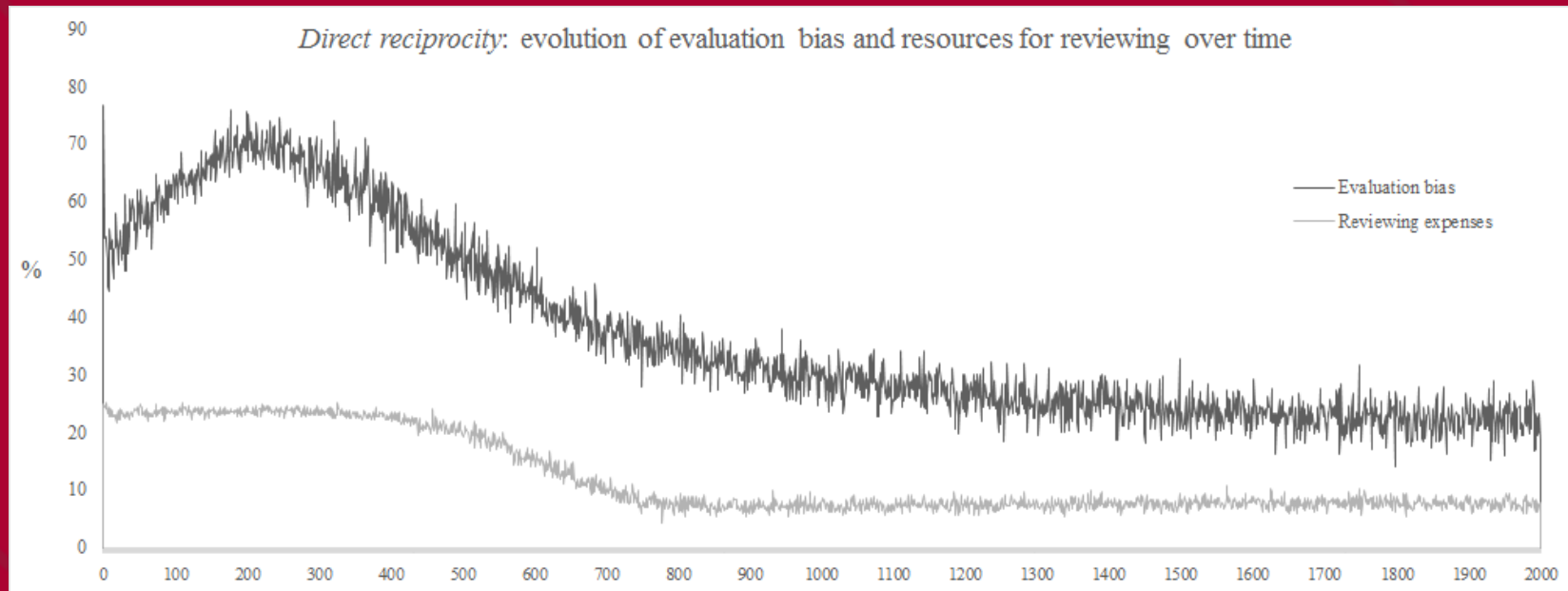


Reviewing expenses				
Scenario	Number of reviewers			
	1	2	3	
Random	29.49	50.30	81.30	53.70
Reliable	35.26	92.77	144.12	90.72
Unreliable	23.08	45.21	69.93	46.07
Direct reciprocity	23.10	46.85	70.55	46.83
	27.73	58.78	91.48	59.33





# Dynamics



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## A conflict of values?



- Is science community a society of peers or is it based on a hierarchical stratification?
- Next step: adding reciprocity strategies that are sensitive to hierarchy and status
- Does transparency challenge justice?
- Does “respect” question the “truth”?
- Is transparency a dangerous social experiment imposed without any control factors?



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