Realigning science, society and policy in uncertain times

Goverdhan Mehta, Henning Hopf, Alain Krief and Stephen A. Matlin

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Original submission: 1 April 2020
Revised submission: 30 April 2020
Final acceptance: 4 May 2020

Note: Reports are unedited and appear as submitted by the referee. The review history appears in chronological order.

Review History
RSOS-200554.R0 (Original submission)

Review form: Reviewer 1

Is the manuscript scientifically sound in its present form?
Yes

Are the interpretations and conclusions justified by the results?
Yes

Is the language acceptable?
Yes

Do you have any ethical concerns with this paper?
No

Have you any concerns about statistical analyses in this paper?
No

Recommendation?
Accept as is
Comments to the Author(s)
What Mehta, Hopf, Krief and Matlin write makes very good sense. Their exhortations to both science and the general public to join in giving value again to the hard-won facts of modern science are very appropriate. So publication is definitely to be encouraged.
Where this essay fails is in two ways: First, it does not deal in specifics (except for the Covid-19 mention). It’s all generalities. Second it fails to pose and refer the reader to crucial questions. For instance,
1. How can it be that in a society that values technological advance (the United States) that a majority of the population does not believe in evolution?
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4. Why a country as progressive in its science as Italy and Spain, countries that believed in scientific expertise, why did they not move more quickly on controlling Covid-19?
There are studies and discussions in the literature on 3 of the 4 difficult questions I raise, but this paper does not reference them. It seems to me to take the easy way out, to list the troubles, bemoan the situation, but not deal with specifics. It preaches to the choir.

Review form: Reviewer 2 (Daniël Lakens)

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I greatly enjoyed reading this perspectives piece. I think it is very strong, and I only have very minor suggestions.

Section 4 starts with “The decline in trust and respect and sometimes undermining of the effective functioning of science”. However, public trust in science in general has remained stable over the last decades (e.g., https://www.pewresearch.org/fact-tank/2019/03/22/public-confidence-in-scientists-has-remained-stable-for-decades/). If the authors want to argue for a decline in trust in science, they will either need to support their argument with data and references, or they might want to be more specific in what they mean (e.g., a greater concern about trust in science, or more visibility of distrust in science – but general trust seems stable The link goes to 1 survey, but I had a post-doc once collect these surveys across countries – the pattern
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It was a pleasure to read this perspective. I look forward to seeing it in print, and circulating it among my colleagues.

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Is the language acceptable?
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Do you have any ethical concerns with this paper?
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Have you any concerns about statistical analyses in this paper?
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Recommendation?
Accept with minor revision (please list in comments)

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This article highlights the importance of "trust in science", the need for a scientifically literate population and for a strong and fruitful relationship between science and policy. It emphasises the dangers of ignoring science based evidence as in climate change denial and the "anti-vaxxer" movement (which might be discussed in the article). Although all these points have been made before, they are well worth highlighting and the article should be published.

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Decision letter (RSOS-200554.R0)

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Dear Dr Matlin:

On behalf of the Editors, I am pleased to inform you that your Manuscript RSOS-200554 entitled "Realigning science, society and policy in uncertain times" has been accepted for publication in Royal Society Open Science subject to minor revision in accordance with the referee suggestions. Please find the referees' comments at the end of this email.

The reviewers and Subject Editor have recommended publication, but also suggest some minor revisions to your manuscript. Therefore, I invite you to respond to the comments and revise your manuscript.

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If your study uses humans or animals please include details of the ethical approval received, including the name of the committee that granted approval. For human studies please also detail whether informed consent was obtained. For field studies on animals please include details of all permissions, licences and/or approvals granted to carry out the fieldwork.

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It is a condition of publication that all supporting data are made available either as supplementary information or preferably in a suitable permanent repository. The data accessibility section should state where the article's supporting data can be accessed. This section should also include details, where possible of where to access other relevant research materials such as statistical tools, protocols, software etc can be accessed. If the data has been deposited in an external repository this section should list the database, accession number and link to the DOI for all data from the article that has been made publicly available. Data sets that have been deposited in an external repository and have a DOI should also be appropriately cited in the manuscript and included in the reference list.
If you wish to submit your supporting data or code to Dryad (http://datadryad.org/), or modify your current submission to dryad, please use the following link: http://datadryad.org/submit?journalID=RSOS&manu=RSOS-200554

• Competing interests
Please declare any financial or non-financial competing interests, or state that you have no competing interests.

• Authors’ contributions
All submissions, other than those with a single author, must include an Authors’ Contributions section which individually lists the specific contribution of each author. The list of Authors should meet all of the following criteria; 1) substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; 2) drafting the article or revising it critically for important intellectual content; and 3) final approval of the version to be published.

All contributors who do not meet all of these criteria should be included in the acknowledgements.

We suggest the following format:
AB carried out the molecular lab work, participated in data analysis, carried out sequence alignments, participated in the design of the study and drafted the manuscript; CD carried out the statistical analyses; EF collected field data; GH conceived of the study, designed the study, coordinated the study and helped draft the manuscript. All authors gave final approval for publication.

• Acknowledgements
Please acknowledge anyone who contributed to the study but did not meet the authorship criteria.

• Funding statement
Please list the source of funding for each author.

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3) Included a 100 word media summary of your paper when requested at submission. Please ensure you have entered correct contact details (email, institution and telephone) in your user account
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Once again, thank you for submitting your manuscript to Royal Society Open Science and I look forward to receiving your revision. If you have any questions at all, please do not hesitate to get in touch.

Kind regards,
Andrew Dunn
Royal Society Open Science Editorial Office
Royal Society Open Science
openscience@royalsociety.org

on behalf of Professor Matjaž Perc (Associate Editor)
openscience@royalsociety.org

Comments to Author:
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Author’s Response to Decision Letter for (RSOS-200554.R0)

See Appendix A.

Decision letter (RSOS-200554.R1)

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Dear Dr Matlin,

It is a pleasure to accept your manuscript entitled "Realigning science, society and policy in uncertain times" in its current form for publication in Royal Society Open Science.

Please ensure that you send to the editorial office an editable version of your accepted manuscript, and individual files for each figure and table included in your manuscript. You can send these in a zip folder if more convenient. Failure to provide these files may delay the processing of your proof. You may disregard this request if you have already provided these files to the editorial office.

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Thank you for your fine contribution. On behalf of the Editors of Royal Society Open Science, we look forward to your continued contributions to the Journal.

Kind regards,
Andrew Dunn
Royal Society Open Science Editorial Office
Royal Society Open Science
openscience@royalsociety.org

on behalf of Professor Matjaz Perc (Associate Editor)
openscience@royalsociety.org

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Our responses to specific points made by the reviewers are as follows (highlighted in yellow):

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Since the authors’ intention was to comment on a very broad set of relationships between science, society and policy without making the Perspective too long, the temptation to give many detailed examples and references to support the arguments was deliberately avoided at the outset – the exception being Covid-19, which was taken as an example of the failures seen in many other cases. Nevertheless, some further specific examples have been cited in response to this reviewer and to comments and requests by other reviewers for additional information, as highlighted in the responses below.

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See also R3-2 for a similar point.
We take the points, as made by Reviewers 2 and 3, that the degrees and locations of the decline in trust in science to which we refer are variable. We have therefore modulated the language and added clarifying text and references to make this explicit, as follows:

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- In Section 3, end of [new] first paragraph, addition of the sentence: “This has been widely recognised in, for example, the science and innovation policies of OECD countries.”
- In Section 4, 1st paragraph has been rewritten and the two paragraphs introduced in its place summarise some of the current state of knowledge on trust in science:

R2-2. “Personally, I found the last sentence of section 4 too strong: “The culture of science denial displayed by some politicians and sections of society affects the approach to looming planetary disasters and also spawns a social attitude that it is acceptable to scorn rigorously proven evidence and to treat fake science and faked evidence as if it is of at least equal value for decision-making.” I mean, yes, these are troublesome developments, but not unique our history. We are relatively far removed from treating fake science as a good source of decision making. The manuscript does not mention there is a huge pushback to fake news as well, so in some ways it also increases the awareness of the importance of reliable information among

Appendix A
others, who work actively to make sure internet pages are reliable (e.g., think of hundreds of thousands of moderators cleaning up internet for a such as reddit).”

We have
a. referenced the ‘culture of science denial’ displayed by some politicians [Section 4] and
b. revised the beginning of Section 5 to acknowledge that there has been some pushback (see response to R2-3 & R2-4 below).

R2-3 “In section 5, I would like to see a reference after “Responses by the scientific community to the growing challenges have frequently been muted.” I wonder which examples the authors are thinking of.”

and

R2-4 “Related to 2 points above, when the authors write “Scientists have often been slow to react publicly to the circulation of fake science” I feel they are not giving enough credit to the many scientists actively fighting fake news. If I see how someone like Carl T. Bergstrom is fighting fake news on twitter, I think such people deserve some recognition.”

This paragraph at the beginning of Section 5 has been rewritten and references introduced to modulate the description of responses, reference the range of responses and provide some of the possible reasons for them.

R2-5 “I am in doubt of the value of the figure in Box 1. I think this article is really strong. I greatly enjoyed reading it. This figure is by far the weakest part in the manuscript. It’s not needed, overly simplistic, and the corona virus might be a good hook, but this perspective piece will stay relevant in future crises. I would probably take it out myself. If not, the picture might need a credit (I assume the corona virus picture was taken from somewhere).”

We have adopted the Reviewer’s suggestion and deleted the Figure in Box 1 and made small consequent changes to the wording to remove reference to a ‘trivalent’ vaccine.

Reviewer 3:

R3-1 “This article highlights the importance of “trust in science”, the need for a scientifically literate population and for a strong and fruitful relationship between science and policy. It emphasises the dangers of ignoring science-based evidence as in climate change denial and the “anti-vaxxer” movement (which might be discussed in the article).

We have have adopted the Reviewer’s suggestion and introduced references to climate change denial and the “anti-vaxxer” movement in relation to the discussion of science literacy in the first part of Section 3.

R3-2 “I have two concerns which I would like the authors to consider. First, I think there is an unduly pessimistic tone to the article. It refers to re-establishing trust” and whereas I accept that there are issues here, I think there is still a great deal of confidence and respect for science and scientists in many countries and is some (eg the UK), we have seen an increase in the recognition by governments of the importance of science to the economy and society generally. I think the impact of the article will be greater if these positive aspects are recognised more clearly.

The ‘trust’ addresses the same issue (R2-1) as that made by Reviewer 2 and is dealt with in the response to that point.

We have tried to further emphasise optimist about the role of science and its capacity to solve problems despite the uncertainties, including through the introduction of the quotation (ref 1) and the final paragraph of the article.

R3-3 “Secondly, the style of the article deserves some attention. It could in parts be clearer and more readable.”

We have reviewed tried to clarify some of the denser language and longer sentences and paragraphs – including, in particular, the first paragraph in Section 3 which has now been revised into 3 paragraphs with some re-ordering and references added.