

How do journals publish research (*what has changed in the last 300 years*)?

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Sideview

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The basic structure of research articles hasn't changed for 300 years

XXVI. *An Examen of the Chalybeat, or Spa-Waters, called by the Germans Acid or Sowre-Brunns, or Fountains; but prov'd to be of a contrary Nature, that is, Alkali's. By Dr. Fred. Slare, Fellow of the Coll. of Physicians and Royal Society.*

I Have, for many Years past, had more than a bare Suspicion, that Physicians and Learned Persons had impos'd upon themselves and others Erroneous Notions about the Nature and Properties of those Mineral Waters, which are of the *Chalybeat* or Iron Species. *Germany* abounds much with these Waters, and they bestow one general Name upon them, and call them *Sowre Brunns*. that is. sower Wells or Springs of Water.

1. I put but one drop of Oil of Vitriol to a large Glas full of strong *Spa-Waters*, which before the addition of this *Acid* did give a deep purple to the Solution of Galls; but now would not give the least Tincture, tho' I put in four times as much of the Galls: From hence I conclude, that the Virtues of the *Chalybeat* Ingredients, which I take to be the Life and Soul

Let this be a caution to those that design to make these Waters pass better by Urine, that they do not make use of any *Acids*; it being a common Practice to use Spirit of Vitriol, *Spiritus Nitri dulcis*, &c. as a Diuretick :

Title

Phil Trans
Roy Soc
1712

Introduction

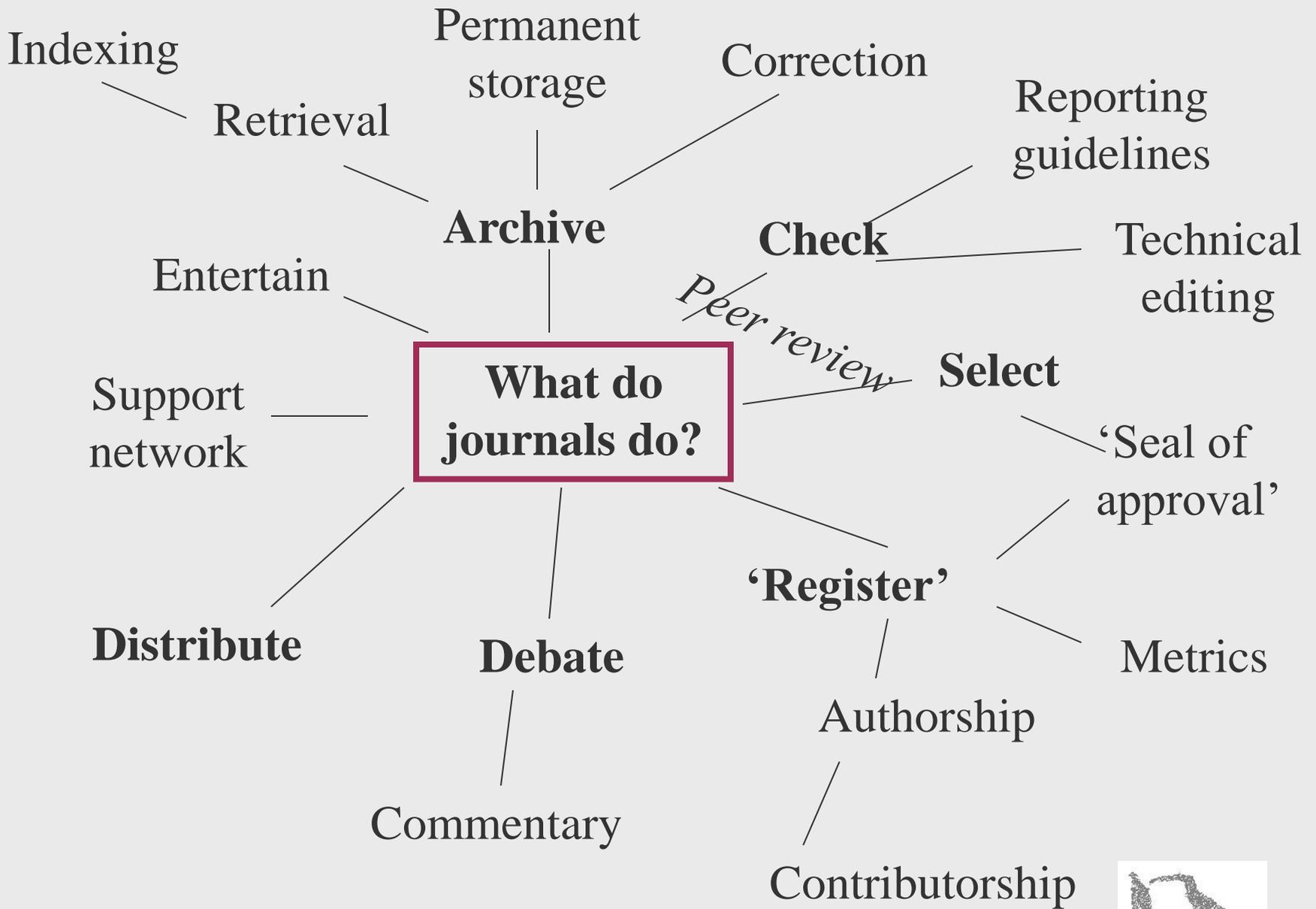
Methods / Results

Conclusion

is it evidence based?

- very little research on usability
- house style is usually arbitrary





Oldenburg's vision

(letters to Robert Boyle 1664-5)

- **Registration:** We must be 'careful of registering as well the person and time of any new matter., ... whereby the honor of the invention will be inviolably preserved to all posterity'
- **Dissemination:** By such a system 'all Ingenious men will be thereby encouraged to impart their knowledge and discoveries'
- **Archiving:** I should not 'neglect the opportunity of having some of my Memoirs preserv'd, by being incorporated into a Collection, that is like to be as lasting as usefull'
- **Peer review:** Articles should be published after 'being first reviewed by some of the members' [of the Royal Society]

From Mabe Ch 17, *Academic & Professional Publishing*
(ed Campbell, Pentz & Borthwick), Chandos 2012



Information distribution has changed

e-journals allow:

- changes in ways we find information
- different business models
- possibilities for Open Access
- faster communication with reviewers
- clever metrics



Some advances

- DOIs (reference linkage)
- CrossCheck / text matching software
- CrossMark (version control)



What works?

- Lots of evidence that following reporting guidelines improves quality
- Plint et al Med J Aust 206:185:263-7
- Systematic review
- *‘Journal adoption of CONSORT is associated with improved reporting of RCTs’*



Technical editing

- can improve readability
- can identify mistakes (increases accuracy)
- can reduce ambiguity

- Wager & Middleton / Cochrane review
- *JAMA* 2002;**287**:2821-4



BUT enforcing guidelines / technical editing is costly

- recent ‘high volume’ / author pays business models seek to cut costs
- many online journals do little or no technical editing
- rely on authors following guidelines



AND we know that authors don't read guidelines!

- Pitkin
- The rewards of reading instructions from journal editors
- *'if you have read this and call or fax our office, we will send you a gift worth \$20'*
- 17% of reviewers claimed the gift
- *NEJM* 1998;**339**:1006



Journals are happy to endorse reporting guidelines

- Hopewell *et al*
- Endorsement of the CONSORT statement by high impact factor medical journals
- *Trials* 2008;**9**:20
- 88% of journals surveyed (50/57) recommend authors should follow CONSORT



less happy to invest resources in enforcing them ...

- Scott et al *Pediatr Infect Dis J* 2012
- Completeness of reporting in RCTs of 3 vaccines: a review of adherence to the CONSORT checklist
 - 20% stated in the title that trial was randomized
 - 37% indicated a primary outcome
 - 13% reported method of allocation concealment



Similar pattern for trial registration

- Kunath *et al*
- Do urology journals enforce trial registration?
BMJ Open 2011;e000430
- 71% of RCTs published in journals requiring registration were registered

- Huic *et al*
- Completeness and changes in registered data and reporting bias of RCTs in ICMJE journals. *PLoS One* 2011;6:e25258
- 39% primary outcome field = missing
- 78% registered after recruitment started



Peer review is fundamentally unchanged

- experiments with ‘social’ review failed
- *MJA / Nature*
- difficulty obtaining reviewers



Post-publication commentary / annotation has not replaced peer review

- some developments:
 - Faculty of 1000
 - Connotea / Mendeley
 - Rapid responses
 - Social media

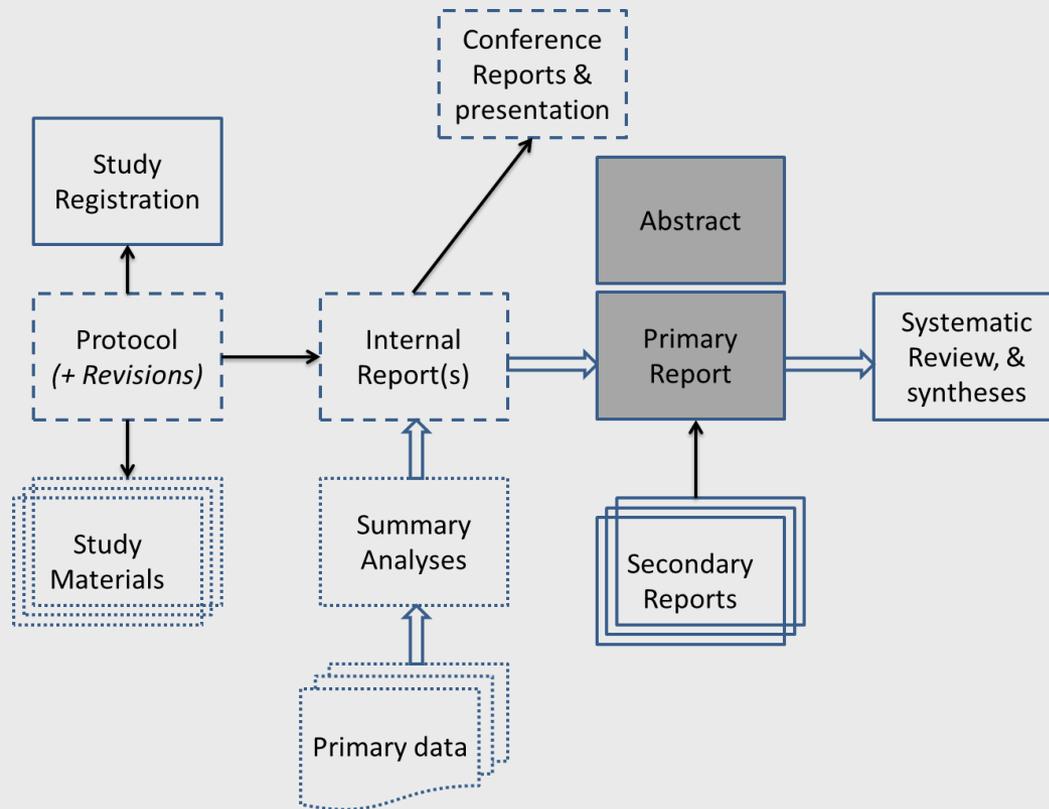


but not a panacea

- Gotzsche et al *BMJ* 2010;**341**:c3926
- Adequacy of authors' replies to criticism raised in electronic letters to the editor
- 45% of authors (47/105) responded to substantive criticisms



Resources are wasted 'repackaging' data



Very little automation

- templates
- data linkage
- figure generation



Some timid steps by publishers

■ Elsevier ‘article of the future’

PDF (7 pages) E-mail Export More Display mode

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Acta Tropica

Volume 114, Issue 2, May 2010, Pages 116-122



Malaria vectors in the Republic of Benin: Distribution of species and molecular forms of the *Anopheles gambiae* complex

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Research highlights

- Large scale sampling of *Anopheles gambiae* complex was carried out in various bioclimatic areas of Benin (West Africa)
- *Anopheles gambiae* s.s. was present in all 30 samples, the *Anopheles arabiensis* was observed in less than half of the samples (13/30 sites)

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Article extras

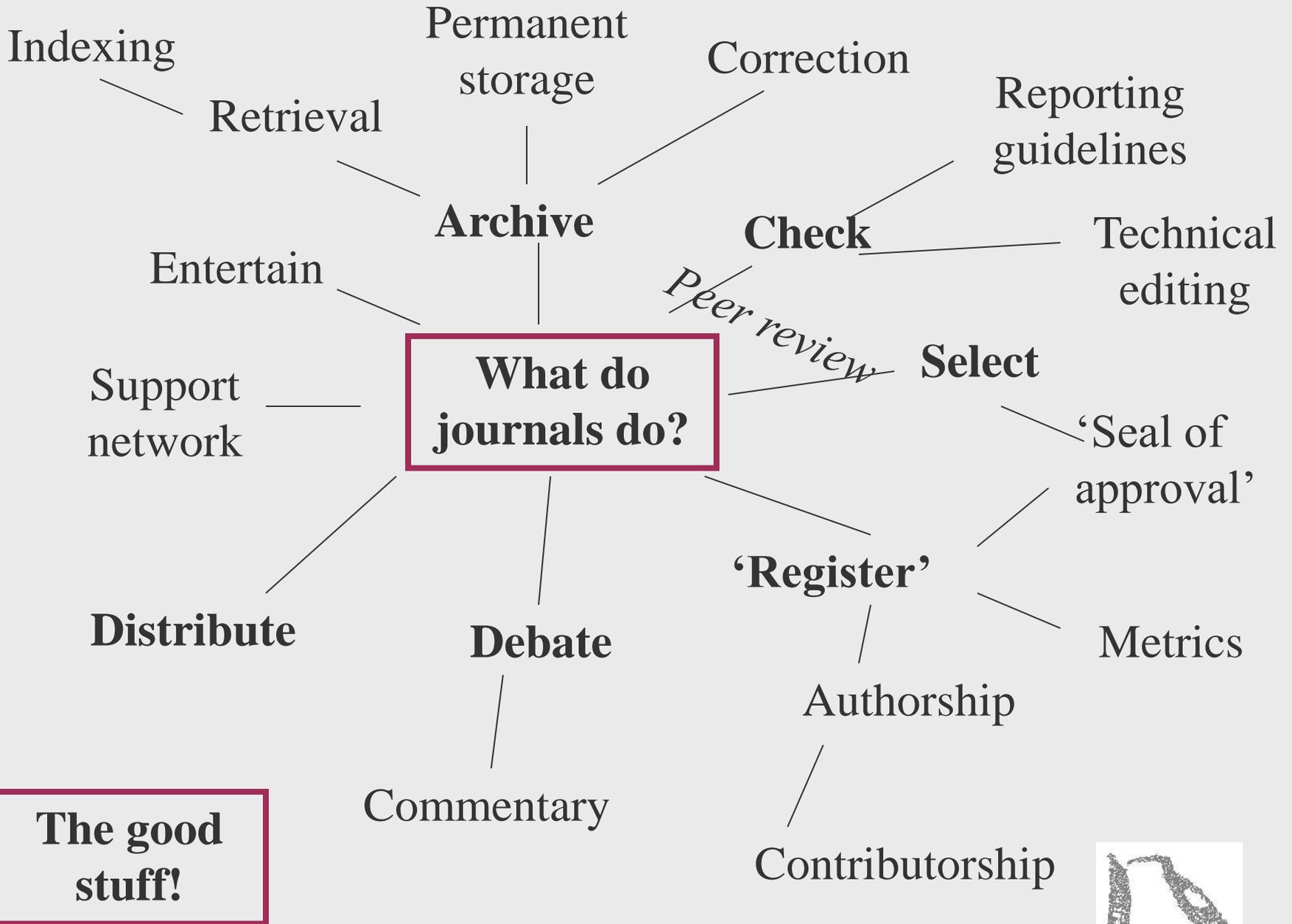
Interactive maps:

- Figure 1

This article contains the following additional content and features:

- Author information (8)
- Related articles (5)
- Figures (2)
- Tables (2)





Don't want to curate data

Retractions
not clear /
not done

Archive

Delay

Impose
house style

Promote
society /
group
products

**What do
journals do?**

Peer review

Bias

Favour positive
findings

**Restrict
access**

**Enforce
copyright**

**Favour
controversial
findings**

Favour new
findings

**The bad
stuff!**

Prevent translation / adaptation



Search engines

Cloud storage

Automatic templates

Retrieval

Archive

Check

Do we still need journals?

Peer review

Select

Search engines

Distribute

Debate

'Register'

Altmetrics

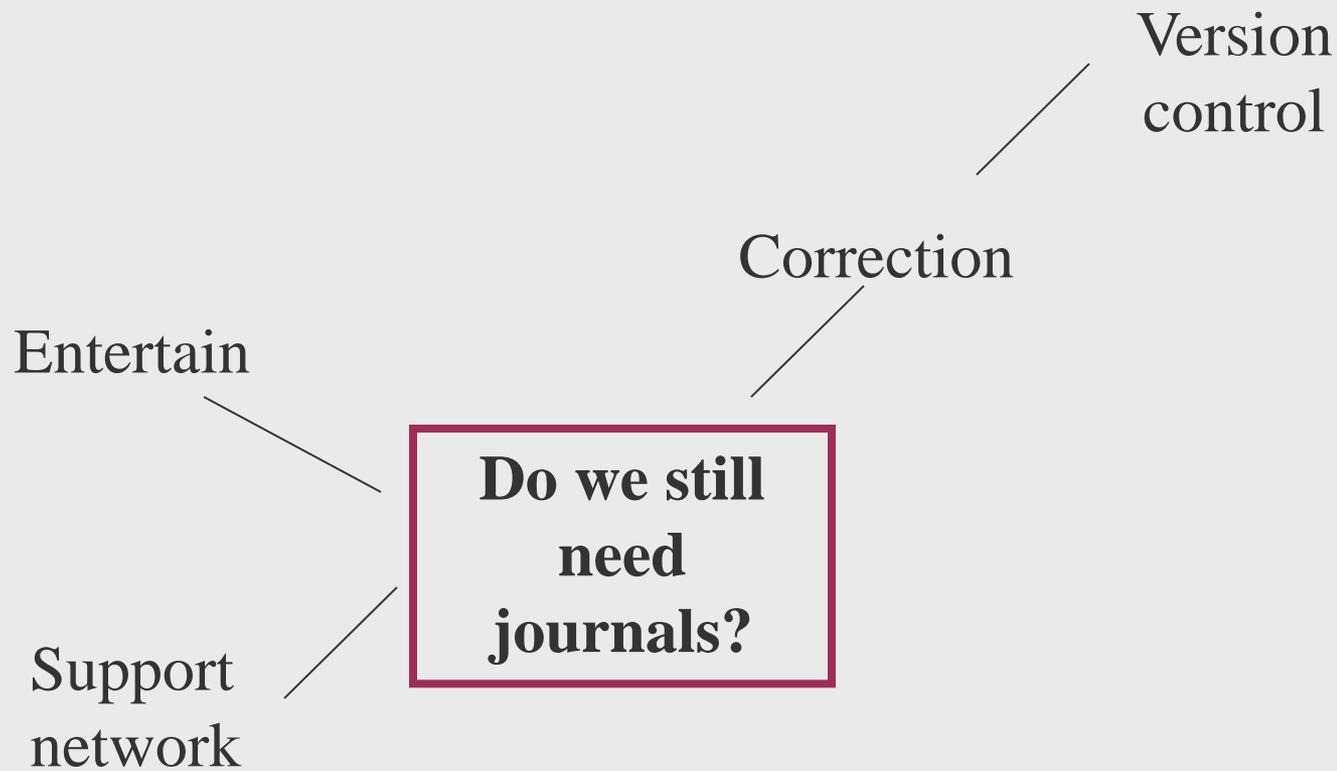
Repositories

Social media

Repositories

Google Scholar





BMJ obituaries were the most widely read section ...



Words of wisdom from Richard Smith

It took me many years to realise that I completely misunderstood what journals did. I imagined that doctors opened their *BMJs* on Friday mornings, read of some innovation, and used it on the next relevant patient. Many still seem to cling to this naive view of the function of journals. In fact words on paper rarely lead directly to change—and thank goodness they don't, considering the rubbish that journals often publish.³ What journals do best is what the rest of the media do best: stir up, prompt debate, upset, probe, legitimise, and set agendas. They are good at telling readers what to think about but not what to think, and theme issues may be particularly successful in putting important but neglected subjects to doctors. Increasingly I wonder as well if there isn't something fundamentally misguided in sending ordinary clinicians, who are not scientists, piles of original papers that they mostly don't read, often aren't relevant to them, and they are not trained to appraise.⁴ If we were clearer about the purpose of journals then we might redesign them completely.

'What journals do best is ... stir up, prompt, debate, upset, probe, legitimise, and set agendas'

BMJ 2004;**329**:242-4

