There is another argument for reluctance to perform PN in T1b RCC. The EAU guideline advises not to perform PN in cases with specific pathology such as medullary RCC. At the same time, the guideline advises against a biopsy in every patient with a clinical suspicion for RCC. How do we know whether this rare pathology may be present?

Of note, the 2017 American Urological Association guideline is more restrictive in its recommendation to perform PN in patients with a suspicion of T1b RCC and advises taking the function of the contralateral kidney into account [6].

We argue that the EAU guideline should not recommend PN in T1b RCC because (1) there is no proof that the oncological results of PN are noninferior to those of RN in this group; (2) there is evidence that the benefit in OS observed in T1a is absent in T1b; and (3) the condition of the contralateral kidney is important in an individual patient and should play a role in the decision to perform PN. We disagree with the statement in the EAU guideline that "In view of the above, and since oncological safety (CSS and RFS) of PN has been proven to be similar for RN, PN is the treatment of choice for T1b RCC . . . .". As explained above, our opinion is that equivalent oncological safety has been shown for suspected T1a but not for T1b RCC. Moreover, we disagree with the recommendation to "Offer partial nephrectomy to patients with T1 tumours" and want to challenge the strength rating of strong, which in our opinion does not reflect the evidence currently available.

In our view, and based on currently available evidence, in patients with a clinical suspicion for T1b RCC, a normal contralateral kidney, and no risk factors for renal insufficiency, RN is at least an equivalent alternative to PN and in some patients it is the better alternative. Results from PN are generally excellent, but rare cases illustrate that the malignant potential of a kidney lesion is very difficult to predict. For optimal results in these patients, we propose that the paragraph on PN in the EAU guideline on RCC should be rephrased.

***Conflicts of interest:*** The authors have nothing to disclose.

## References

[1] Ljungberg B, Albiges L, Bensalah K, et al. EAU guideline on renal cell carcinoma. European Association of Urology; 2018. http://uroweb.org/guideline/renal-cell-carcinoma

[2] Van Poppel H, Da Pozzo L, Albrecht W, et al. A prospective, randomised EORTC intergroup phase 3 study comparing the oncologic outcome of elective nephron-sparing surgery and radical nephrectomy for low-stage renal cell carcinoma. Eur Urol 2011;59:543–52.

[3] Ristau BT, Handorf EA, Cahn DB, Kutikov A, Uzzo RG, Smaldone MC. Partial nephrectomy is not associated with an overall survival advantage over radical nephrectomy in elderly patients with stage Ib–II renal masses: an analysis of the National Cancer Data Base. Cancer 2018;124:3839–48.

[4] Weight CJ, Lieser G, Larston BT, et al. Partial nephrectomy is associated with improved overall survival compared to radical nephrectomy in patients with unanticipated benign renal tumours. Eur Urol 2010;58:293–8.

[5] Frank I, Blute ML, Cheville JC, Lohse CM, Weaver AL, Zincke H. Solid renal tumors: an analysis of pathological features related to tumor size. J Urol 2003;170:2217–20.

[6] Campbell S, Uzzo RG, Allaf ME, et al. Renal mass and localized renal cancer: AUA guideline. J Urol 2017;198:520–9.

[a]*Department of Urology, Erasmus Medical Center, Rotterdam, The Netherlands*
[b]*Department of Urology, Franciscus Gasthuis en Vlietland, Rotterdam, The Netherlands*

*Corresponding author. Department of Urology, Erasmus Medical Center, 's Gravendijkwal 230, Rotterdam 3015GD, The Netherlands. Tel. +31 65 1996001; Fax: +31 10 4635838.
E-mail address: p.verhagen@erasmusmc.nl (P.C. Verhagen).

January 11, 2019

https://doi.org/10.1016/j.eururo.2019.01.020

# In Peer (Artificial Intelligence) Review We Trust

***Vincent Misrai*** [a,*], ***Alexandre de la Taille*** [b], ***Morgan Rouprêt*** [c]

"Dear Dr. I would be grateful if you could review the following submission to our journal."
"If you are willing to review the paper, we ask that reviews are completed and submitted online to us within a 10 day period."
"Please make sure that your comments to authors are critical and objective but avoid personal or derogatory remarks."
"Review due. Automated mail sent on behalf of the Associate Editor."

The above sentences sound familiar if you are accustomed to reviewing articles for scientific journals. How many reviewers across the world worked for the 33 100 peer-reviewed scholarly English language journals active in 2018? Nobody knows exactly, but in 2015, 700 000 peer reviewers reviewed more than 1.8 million manuscripts across the Elsevier journals [1]. From this perspective, the average number of manuscripts reviewed per reviewer in a year appears to be very low, although the Publons 2018 Global Reviewer Survey showed that 10% of reviewers perform 50% of all reviews [2].

The peer review process remains the cornerstone of evidence-based medicine and the gold standard for evaluation of scientific merit. Referees play a pivotal role: they cross-examine manuscripts, track for flaws, and recommend improvements, and are commissioned by an

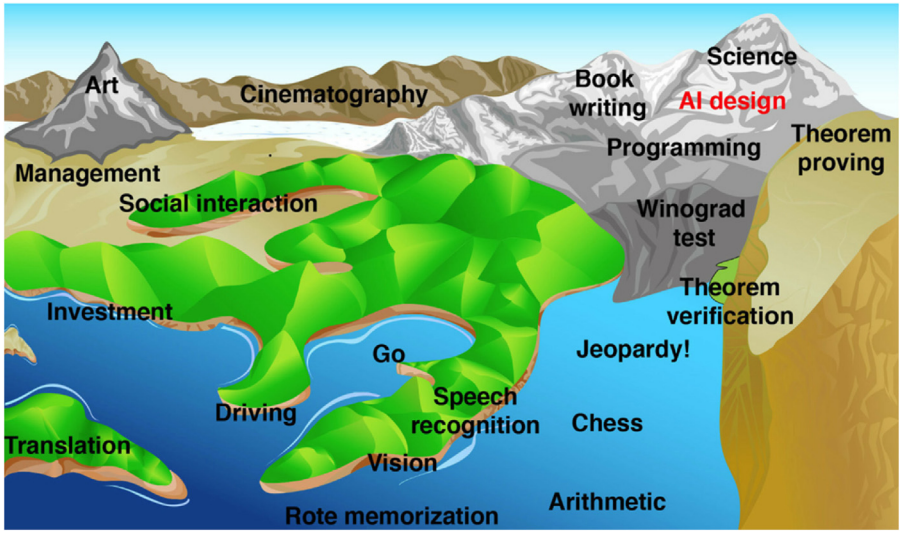


**Fig. 1 – Hans Moravec's description of computer performance in the landscape of human competence [12].**

editor according to their knowledge of the field, usually based on the quality and number of previous personal peer-reviewed publications in the same field. Thus, authors become reviewers while continuing to be reviewed in a sort of virtuous circle. Although the opportunity to review for a prestigious journal is always rewarding, one must understand that the number of reviewers for a specific topic cannot be increased indefinitely. This means that top experts always have an enormous workload, which can lead them to decline reviewing tasks in the long run. Under the deluge of papers, 75% of journal editors report that identifying reviewers and getting them to accept review invitations is the hardest part of their job, but is just the tip of the iceberg. Should the reviewing process be single-blinded or double-blinded? What is the optimum number of reviewers? [3]. How should a reviewer's disclosures be obtained? Should reviewer names be shared and published? Should a reviewer be rewarded? [4]. What is the optimal length of a review report? How should a systematic statistical review be carried out? [5]. Should technical, ethical, and methodological aspects be reviewed? [6]. Why might two experts fail to agree on the merits of a manuscript?

As early as 1985, Bailar and Patterson [7] called for peer review improvement while acknowledging the lack of feasible alternatives to the system. Peer review is an ongoing focus of criticism [8] and concerns [9], but has gained global transparency in recent years [10]. As evidence, peer review has been scrutinized every 4 yr since 1989 during the International Congress on Peer Review and Scientific Publication and now has a dedicated journal, *Research Integrity and Peer Review*, published by Springer.

The peer review process, which all stakeholders consider a barrier to prevent fake publications and substandard works, is a highly complex task requiring up-to-date knowledge, time, a statistical background, responsiveness, and, above all, rigorous neutrality [9]. However, as in any human-driven process, there are still some limitations and subjectivity, as shown by the increasing retraction of publications that failed to be screened accurately. In fact, the peer review process can be compared with democracy: a system full of problems, but the least worst that we have [11].

Artificial intelligence (AI) is a general term that implies the use of a computer to model intelligent behaviour without (or with minimal) human intervention. In other words, it involves training computers to do things that at present humans can do better. It has not escaped our notice that AI currently touches our lives more than we expected years ago. In 1999, Hans Moravec [12] predicted that machines would attain human levels of intelligence by the year 2040 and described the evolution of computer performance as water slowly flooding the landscape of human competence (Fig. 1). Some 20 yr later, the rising water level has caught up. AI has sparked a numbers of innovations in different fields, including speech recognition, human behaviour analysis, autonomous driving, and deep medicine [13]. AI is not only essential for the handling of massive amounts of data but also can now accomplish more subjective tasks, such as writing a book, painting, and conversing with humans. AI can be divided into stages: stages 1, 2, and 3 are already here to stay. AI stage 4—reasoning machines with a “theory of mind”—is no longer a myth and is currently under development.

Deep learning models are now ready to be applied in cancer detection and challenge radiologists to improve image interpretation and spot early diseases [14]. Beyond the ethical question about how a computer could judge human work, the ultimate goal of AI review would be to improve the overall quality of publications and to succeed (ie, to spot flaws) where peer reviewers fail. As the need for high-quality reviewers increases with the growing competition among the expanding pool of scientists publishing 2.5 million articles annually [15], the peer review process

will become more and more difficult and it may no longer be realistic to expect that peer reviewers can review everything. It seems likely that AI will progress to performing this task in the not too distant future, without bias, on request, and in a minimum timeframe.

That said, unresolved technical questions will obviously arise with the development of peer AI review. Should a reviewer deep learning algorithm be developed for each journal or will a unique machine fit for all? Will the use of program developers lead to a new type of conflict of interests? Will two different computers agree on the merits of the same manuscript? One thing is arguably clear: before it can provide a rational, fair, and objective decision, AI will have to succeed in several tasks. It will need to understand human natural language and its ambiguities (ie, the Winograd schema challenge), read and comprehensively analyse scientific journal archives (reviewers' comments), and discern the evolution of manuscripts from initial submission to an editor's final decision. It is rational to believe that AI peer review will be achieved in the future, but we are currently not able to predict its real scientific consequences [1].

***Conflicts of interest:*** The authors have nothing to disclose.

## References

[1] Stockton N. If AI can fix peer review in science, AI can do anything. Wired 2017;21(February).
[2] Publons. Global state of peer review. 2018 https://publons.com/community/gspr
[3] Snell RR. Menage a quoi? Optimal number of peer reviewers. PLoS One 2015;10:e0120838. http://dx.doi.org/10.1371/journal.pone.0120838.
[4] Oransky I, Marcus A. We should reward peer reviewers. But how? STAT 2016;26(August) www.statnews.com/2016/08/26/reward-peer-reviewers-how/
[5] Assel M, Sjoberg D, Elders A, et al. Guidelines for reporting of statistics for clinical research in urology. Eur Urol 2019;75:358–67. http://dx.doi.org/10.1016/j.eururo.2018.12.014.
[6] Superchi C, González JA, Solà I, Cobo E, Hren D, Boutron I. Tools used to assess the quality of peer review reports: a methodological systematic review. BMC Med Res Methodol 2019;19:48. http://dx.doi.org/10.1186/s12874-019-0688-x.
[7] Bailar JC, Patterson K. The need for a research agenda. N Engl J Med 1985;312:654–7. http://dx.doi.org/10.1056/NEJM198503073121023.
[8] Manchikanti L, Kaye AD, Boswell MV, Hirsch JA. Medical journal peer review: process and bias. Pain Phys 2015;18:E1–4.
[9] Rennie D. Let's make peer review scientific. Nature 2016;535:31–3. http://dx.doi.org/10.1038/535031a.
[10] Groves T. Is open peer review the fairest system? Yes. BMJ 2010;341:c6424. http://dx.doi.org/10.1136/bmj.c6424.
[11] Jefferson T, Alderson P, Wager E, Davidoff F. Effects of editorial peer review: a systematic review. JAMA 2002;287:2784–6.
[12] Moravec HP. Robot: mere machine to transcendent mind. Oxford, UK: Oxford University Press; 2000.
[13] Topol E. Deep medicine: how artificial intelligence can make human healthcare human againBasic books. 2019.
[14] Yasaka K, Abe O. Deep learning and artificial intelligence in radiology: current applications and future directions. PLoS Med 2018;15:e1002707. http://dx.doi.org/10.1371/journal.pmed.1002707.
[15] Ioannidis JPA, Klavans R, Boyack KW. Thousands of scientists publish a paper every five days. Nature 2018;561:167–9. http://dx.doi.org/10.1038/d41586-018-06185-8.

[a]*Clinique Pasteur, Toulouse, France*
[b]*Hôpital Henri Mondor, AP-HP, Université Paris Est Créteil, Créteil, France*
[c]*Hôpital Pitié-Salpêtrière, AP-HP, Sorbonne Université, Paris, France*

*Corresponding author. Clinique Pasteur, 31300 Toulouse, France.
Fax: +33 5 62213327.
E-mail address: v.misrai@clinique-pasteur.com (V. Misrai).

April 11, 2019

https://doi.org/10.1016/j.eururo.2019.04.011