

Invisible Hand(s): Quality Assurance in the Age of Author Self-Archiving¹

Gerry McKiernan

Science and Technology Librarian and Bibliographer, Iowa State University Library,
Ames IA 50011, gerrymck@iastate.edu

*“... [A] manuscript
is marked with multiple indicators
of its likely value and trustworthiness”²*

Disclaimer

The screen prints selected for this presentation are for educational purposes and their inclusion does not constitute an endorsement of an associated product, service, place, or institution.

The views and opinions expressed in this document are those of the author and do not constitute an endorsement by Iowa State University or its Library.

¹ <http://www.public.iastate.edu/~gerrymck/Hands.ppt>

² Rob Kling, Lisa Spector, and Geoff McKim, “Locally Controlled Scholarly Publishing via the Internet: The Guild Model”, *Journal of Electronic Publishing* 8 no. 1 (August 2002). <http://www.press.umich.edu/jep/08-01/kling.html>

Invisible hand of classical peer review

“The refereed journal literature needs to be freed from both paper and its costs, but not from peer review, whose ‘invisible hand’ is what maintains its quality.” (Stevan Harnad)³

“Human nature being what it is, it cannot be altogether relied upon to police itself. Individual exceptions there may be, but to treat them as the rule would be to underestimate the degree to which our potential unruliness is vetted by collective constraints, implemented formally.”

“Remove that invisible constraint

– let the authors be answerable to no one but the general users of the Archive [arXiv.org] (or even its self-appointed "commentators") – and watch human nature take its



natural course, standards eroding as the Archive devolves toward the canonical state of unconstrained postings: the free-for-all chat-groups of Usenet... , that Global Graffiti Board for Trivial Pursuit – until someone re-invents peer review and quality control.”

“The system is not perfect, but it is what has vouchsafed us our refereed journal literature to date, such as it is, and so far no one has demonstrated any viable alternative to having experts judge the work of their peers, let alone one that is at least as effective in maintaining the quality of the literature as the present imperfect one is.”⁴



<http://www.presidentmoron.com>

– and watch human nature take its natural course, standards eroding as the Archive devolves toward the canonical state of unconstrained postings: the free-for-all chat-groups of Usenet... , that Global Graffiti Board for Trivial Pursuit – until someone re-invents peer review and quality control.”

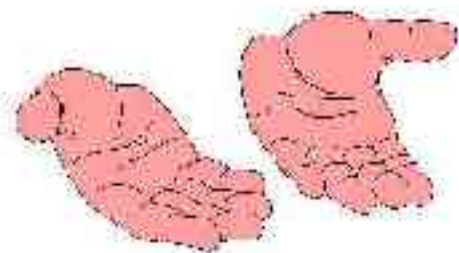
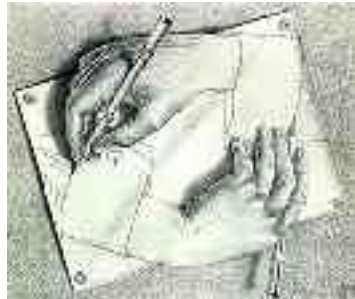
“The system is not perfect, but it is what has vouchsafed us our refereed journal literature to date, such as it is,

³ Stevan Harnad, “The Invisible Hand of Peer Review,” *Exploit Interactive* no. 5 (April 2000). <http://www.exploit-lib.org/issue5/peer-review/>

⁴ Stevan Harnad, *Ibidem*

Invisible hand(s) of peer review

There are forces, factors, and influences *other than* pending classical peer review that assure the quality of scholarship *before* formal publication.



Invisible hand(s)

- Personal Reputation
- Institutional Review
- Professional Respect
- Peer Pressure
- Critical Peer Response
- Invisible College
- Institutional Repositories
- Self-Correcting Dynamics
- Self-Archiving-Process-Itself
- Action Learning
- Total Quality Scholarship

Personal Reputation

“ ... [An] author’s reputation and his research approach ... influence the trust that readers place in a research manuscript.”⁵

“When the Physics community uses the unrefereed preprints in ... [arXiv.org], it is doing what it used to do in the paper medium too: Certain people's work you know can be trusted, and you want to know about and build on it as soon as it is available.”⁶

Institutional Review – Guild Model

The Guild Publishing model is “based on the practice of academic departments and research institutes publishing their own locally controlled series of working papers, technical reports, research memoranda, and occasional papers.”

⁵ Rob Kling, Lisa Spector, and Geoff McKim, “Locally Controlled Scholarly Publishing via the Internet: The Guild Model”, *Journal of Electronic Publishing* 8 no. 1 (August 2002). <http://www.press.umich.edu/jep/08-01/kling.html>

⁶ Stevan Harnad, “Re: Publication at LANL as Involving Peer Review”, Posting to *American-Scientist-E-PRINT-Forum*, July 13, 1999. <http://www.ecs.soton.ac.uk/~harnad/Hypermail/Amsci/0333.html>

“The quality of research represented in these manuscripts series relies on the professional status of the sponsoring guild.”

“The reputation of a guild is as likely an indicator of the quality of the research manuscripts it publishes as the reputation of a journal is of the manuscripts it publishes.

”⁷

Guild Model Examples⁸

- [Berkeley Roundtable on the International Economy Working Papers](#)
- [DZero Physics Papers](#) (Fermi National Accelerator Laboratory)
- [Harvard Business School Working Papers](#)
- [University of Western Ontario Population Studies Centre Discussion Paper Series](#)

Guild Model Benefits⁹

- Rapid access to new research
- Quality indicators through restricted guild membership
- Localized, easy setup
- Compatibility with other forms of online and journal publishing
- Relatively low cost

Institutional Review – Institutional Purgatory

“This level does not generally exist in our institutions but ... its presence could do a great deal to help universities and research labs regain a better control over the evaluation of their own researchers. In effect, each institution could decide that it stands behind all the publications that are located at this level.”¹⁰

⁷ Rob Kling, Lisa Spector, and Geoff McKim, “Locally Controlled Scholarly Publishing via the Internet: The Guild Model”, *Journal of Electronic Publishing* 8 no. 1 (August 2002). <http://www.press.umich.edu/jep/08-01/kling.html>

⁸ Rob Kling, Lisa Spector, and Geoff McKim, *Ibidem*

⁹ Rob Kling, Lisa Spector, and Geoff McKim, *Ibidem*

¹⁰ Jean-Claude Guédon, “Open Access Archives: From Scientific Plutocracy to the Republic of Science”, *IFLA Journal* 29 no. 2 (2003): 129-140. <http://www.ifla.org/V/iflaj/ij-2-2003.pdf>

“In so doing, it would have to decide whether it will simply rest on the traditional tools (peer review of established journals, impact factors, etc.) or whether it wants to set up particular procedures that would amount to creating an independent evaluation process for pieces of work that local faculty would submit for acceptance at that level.”

“A given university, for example, might decide to set up an internal jury to deal with these selections, or it could build a mixed jury with external members from other universities, as is already the case for the defence of theses and dissertations. In short, it could devise whatever policy it wants to bring pieces of work to this level, but the important point is that, once admitted at that level, this particular piece of work would have the full backing of the institution.”

“The point here is that the institution would consciously decide how to evaluate its members rather than lazily delegating the task to outside entities such as journals, with all ... [their] attendant problems and ambiguities...”¹¹

Institutional Review – Paradise

“The way to achieve [an evaluation process that is demonstrably the best possible] is to constitute extremely prestigious, international, juries that pass judgement on submitted papers with the utmost rigour. For example, the top schools of the world in any given field form a consortium to evaluate economics papers or sociological papers and they publish their procedures, their minutes and their results so as to create the greatest possible transparency.”

“Structuring an institutional repository in this fashion would clearly indicate that not only is open access of the essence, but that evaluation is also a central concern of such a repository.”¹²

¹¹ Jean-Claude Guédon, “Open Access Archives: From Scientific Plutocracy to the Republic of Science”, *IFLA Journal* 29 no. 2 (2003): 129-140. <http://www.ifla.org/V/iflaj/ij-2-2003.pdf>

¹² Jean-Claude Guédon, “Open Access Archives: From Scientific Plutocracy to the Republic of Science”, *IFLA Journal* 29 no. 2 (2003): 129-140. <http://www.ifla.org/V/iflaj/ij-2-2003.pdf>

Professional Respect

[Authors] “want the respect of the people they respect most, who are not the reviewers whom a journal editor may someday assign but rather the people who will be reading the preprint. Those peers who use ... [arXiv.org] are the people whom the author is primarily addressing, and there is good reason for them to be in top professional form since their future might be more influenced by the opinion of their peers there than by the opinions that might be generated in the future by the formal publication of the paper.”¹³

“The invisible hand is just an awareness of a future contingency..., and I am confident that the researchers using the... [arXiv.org] system are not normally thinking about that contingency but rather about the far more pressing reality that consists of the people who will be downloading and reading the preprint; for they are the peers whose acceptance counts first of all ...”¹⁴

“What ... [authors] fear, if they fear anything, is not the future peer reviewers but the disapproval of their peers who will be downloading and critically inspecting what they make available ... [in arXiv.org]. Fear is not really the right name for it, of course: the desire to be respected by those whom one respects comes much closer to it, and it implies no abasement because this is peer respect, which is the respect equals have for equals.”¹⁵

Professional Respect

[While arXiv.org] “doesn’t incorporate peer review proper it certainly incorporates peer critical control in quite as direct a way as does the traditional system of peer review in connection with the journals.”¹⁶

¹³ Joseph M. Ransdell, “Publication at LANL as Involving Peer Review”, Posting to *American-Scientist-E-PRINT-Forum*, July 13, 1999. <http://www.ecs.soton.ac.uk/~harnad/Hypermail/Amsci/0332.html>

¹⁴ Joseph M. Ransdell, “Re: Publication at LANL as Involving Peer Review”, Posting to *American-Scientist-E-PRINT-Forum*, July 14, 1999. <http://www.ecs.soton.ac.uk/~harnad/Hypermail/Amsci/0334.html>

¹⁵ Joseph M. Ransdell, “Re: Publication at LANL as Involving Peer Review”, Posting to *American-Scientist-E-PRINT-Forum*, July 15, 1999. <http://www.ecs.soton.ac.uk/~harnad/Hypermail/Amsci/0336.html>

¹⁶ Joseph M. Ransdell, “Publication at LANL as Involving Peer Review”, Posting to *American-Scientist-E-PRINT-Forum*, July 13, 1999. <http://www.ecs.soton.ac.uk/~harnad/Hypermail/Amsci/0332.html>

Critical Peer Response

“The people who download the preprints are peers and they do critically review it. ...to avoid merely verbal dispute let us call it something else: ‘critical peer response’. ... [I]t is not the invisible hand of peer review that accounts for the maintaining of quality in the ... [arXiv.org] preprint server system but rather the prospect of encountering the manifest reality of critical peer response.”¹⁷

“The practice of primary publication ... [in arXiv.org] as elsewhere certainly includes taking a critical stance on what is published there, and may generate critical assessment of it both of a private and a public nature along with subsequent correction or defense, and of course the only kind of critical stance that the users of the system are interested in is criticism from people whom they regard as their peers.”¹⁸

“... [T]here is no reason why the physicists depositing in the archives should fear future filters when the publication of their work in an unfiltered form can provide the basis for corrective improvements by eliciting critical feedback.”¹⁹

Invisible College

“Scholarly activity - research - creates a need to spread and share information about the results, methods, new processes and products. The findings are shared and evaluated by colleagues and students. There is a need for both informal and formal communication, both locally and on a world-wide scale.”²⁰

A widespread network of personal contacts is of great importance for gathering information. Research workers are particularly interested in obtaining the most recent information about developments within their own subject fields. Informal verbal communication is valued for the speed of information transfer. Established research workers gradually build up "the invisible college," an informal communication network.

¹⁷ Joseph M. Ransdell, “Re: Publication at LANL as Involving Peer Review”, Posting to *American-Scientist-E-PRINT-Forum*, July 15, 1999. <http://www.ecs.soton.ac.uk/~harnad/Hypermail/Amsci/0336.html>

¹⁸ Joseph M. Ransdell, “Publication at LANL as Involving Peer Review”, Posting to *American-Scientist-E-PRINT-Forum*, July 13, 1999. <http://www.ecs.soton.ac.uk/~harnad/Hypermail/Amsci/0332.html>

¹⁹ Joseph M. Ransdell, “Re: Publication at LANL as Involving Peer Review”, Posting to *American-Scientist-E-PRINT-Forum*, July 15, 1999. <http://www.ecs.soton.ac.uk/~harnad/Hypermail/Amsci/0336.html>

²⁰ Nancy Fjallbrant, “Communication in Science and Technology - An Introduction. Chapter 3. Channels for Scientific and Technological Communication”, *EDUCATE Course*, 1994. <http://internet.unib.ktu.lt/physics/TEXTS/communication/chap3.htm>

“The term *invisible colleges* is used to indicate personal informal communication networks between research workers. This term was coined by Robert Boyle for a small group of intellectuals in seventeenth century England”²¹

“ ... [T]he learning set is not a substitute for review by experts in the relevant discipline. The two are entirely complementary, so all authors should be encouraged to get expert comment from colleagues within their discipline and to do this in parallel with the activities of the learning set. Advice from experts outside the set and advice from non-experts within the set will both alert authors to important points that need to be attended to...”²²

Self-Archiving-Process-Itself

“It does raise the question of whether it might be best to recognize that there is in fact something happening in the inquiry process mediated by the [arXiv.org] machine... that involves a kind of internalisation of the peer review function ...”²³

Institutional Repositories

“...[I]f most of the major research libraries begin to build institutional depositories... and if... evaluative schemes begin to develop, the distributed power of such institutional networks can quickly become so enormous as to become the defining criterion of excellence.”²⁴

“...[T]he creation of the open access archives accompanied by a suitable evaluation scheme holds the promise of relocating the center of scientific evaluation

²¹ Nancy Fjallbrant, “Communication in Science and Technology - An Introduction. Chapter 3. Channels for Scientific and Technological Communication”, *EDUCATE Course*, 1994. <http://internet.unib.ktu.lt/physics/TEXTS/communication/chap3.htm>

²² Robert Brown, “Write Right First Time”, *Literati Club, Articles on Writing and Publishing, Special Issue for Authors and Editors* 1994/1995. <http://www.emeraldinsight.com/rpsv/literaticlub/authors/articles11.htm>

²³ Joseph M. Ransdell, “Re: Publication at LANL as Involving Peer Review”, Posting to *American-Scientist-E-PRINT-Forum*, July 14, 1999. <http://www.ecs.soton.ac.uk/~harnad/Hypermail/Amsci/0334.html>

²⁴ Jean-Claude Guédon, “Open Access Archives: From Scientific Plutocracy to the Republic of Science”, *IFLA Journal* 29 no. 2 (2003): 129-140. <http://www.ifla.org/V/iflaj/ij-2-2003.pdf>

squarely within academic and research environments. The peer review process is, after all, done by peers that belong to our institutions: why abandon... this important role to ... [profit-based companies] that share few, if any, of the basic academic values.”²⁵

Self-Correcting Dynamics

“Indeed it seems a bit odd on the face of it that one would want to present a version [of a manuscript] to be assessed by referees without taking advantage of the opportunities that might be available for correcting it first, following upon preprint distribution and criticism.”²⁶

Action Learning

“The obvious solution ... [is] to intervene closer to the point of assembly to help authors get their thoughts into better focus and to do it before they ... [write] their first draft.” Action Learning Involves Face-to-Face Reviewing

“Manuscripts are traditionally reviewed by experts at arm's length ... [and] [r]eviews by journals are usually anonymous. Only occasionally does an author have the chance to work through a paper in person with a reviewer so that they can elaborate on points and explore alternatives, and it is rare to do this as a group exercise where reviewers can build on each other's comments.”

“A learning set is a group that meets regularly to talk about common problems and to look for solutions. A learning set of authors provides face-to-face reviewing by friends, most of whom lack preconceptions about the content of a paper or its context. This approach has strengths that blind refereeing can never provide. It provides an immediacy and support that allows authors to get deeper into their papers than they would otherwise do.”²⁷

²⁵ Jean-Claude Guédon, “Open Access Archives: From Scientific Plutocracy to the Republic of Science”, *IFLA Journal* 29 no. 2 (2003): 129-140. <http://www.ifla.org/V/iflaj/ij-2-2003.pdf>

²⁶ Joseph M. Ransdell, “Re: Publication at LANL as Involving Peer Review”, Posting to *American-Scientist-E-PRINT-Forum*, July 14, 1999. <http://www.ecs.soton.ac.uk/~harnad/Hypermail/Amsci/0334.html>

²⁷ Robert Brown, “Write Right First Time”, *Literati Club, Articles on Writing and Publishing, Special Issue for Authors and Editors* 1994/1995. <http://www.emeraldinsight.com/rpsv/literaticlub/authors/articles11.htm>

Total Quality Management

"In TQM [Total Quality Management], the most elementary trap is to try to inspect (edit) in quality at the end of the assembly-line rather than building it in at the outset."²⁸



Deming's Fourteen Points

"*Point 3.* Cease reliance on mass inspection to achieve quality. Eliminate the need for inspection on a mass basis by building quality into the product in the first place."²⁹

"The first thing we need to change is our thinking. To achieve quality does not mean inspection 100%. ... Inspection takes time and we are looking for better timing, better delivery. We have to think in quality on Product Design not at the end of the production process but at the very beginning: when a product or service is designed. Quality assurance must be considered since the first stage of production; and probably at the end of the process no inspection will be necessary."³⁰

Total Quality Scholarship (TQS)

"...[E]ditorial peer review is a form of inspection ... and represents a quality assurance mechanism of an earlier era, and ... perhaps internal, institutional, or individual quality improvement mechanisms hold potential for [augmenting, improving,

²⁸ Robert Brown, "Write Right First Time", *Literati Club, Articles on Writing and Publishing, Special Issue for Authors and Editors* 1994/1995. <http://www.emeraldinsight.com/rpsv/literaticlub/authors/articles11.htm>

²⁹ W. Edwards Deming Institute "Condensation of the 14 Points for Management," *Teachings*, c2000. <http://www.deming.org/theman/teachings02.html>

³⁰ Blanca Vargas, Roberta (Bobbie) Wortman, and Eugenia Zavala, "Interpretations of Deming's 14 Points of Management," *International Competitiveness INTB 4365, College of Business Administration University of Texas-Pan American*, Spring 1996. <http://www.baclass.panam.edu/courses/intb4365/students/team8.html>

or replacing] classical peer review in the era of TQM and OAI [the Open Archives Initiative].”³¹

Version 1.0, August 10, 2003

³¹ Gerry McKiernan, “Total Quality Scholarship”, Posting to *Web4Lib*, July 29, 2003. <http://sunsite.berkeley.edu/Web4Lib/archive/0307/0254.html>