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## NATURE NEWS BLOG

# Key questions in the UK's shift to open-access research

03 May 2012 | 10:53 GMT | Posted by Richard Van Noorden | Category: Policy

Soon, we'll all be reading publicly funded UK research free of charge. That momentous change has been in the works since last March, and in December the British government explained why and how it would happen (yes, although you might not guess it from recent media reports, the UK open-access shift was underway well before what the *Guardian* has called this year's 'Academic Spring').

The way it will work is simple: the agencies that support UK scientists will require them to make their research papers free. They've required this since 2006; but now they're going to enforce it. Beyond a draft policy document from Research Councils UK (RCUK, the umbrella body for the United Kingdom's seven taxpayer-funded grant agencies) little said since December has been added to the government's outline, leaving open-access watchers speculating on some sticky issues around the switch.

While everyone waits for a June report from a government-commissioned working group chaired by sociologist Janet Finch, UK science minister David Willetts laid out some of these key issues yesterday (2 May) in a speech to the UK Publishers Association that's worth reading in full. They relate to open-access models, costs, what happens to publishers and the weirdness of what will happen if the United Kingdom switches and other countries don't follow. These issues are familiar old chestnuts to the experts, so Willetts also added a little teaser of his own: what does Wikipedia's Jimmy Wales have to do with all this?

### The open-access delay

The first issue: will research papers be instantly open or will publishers get to impose a delay?

Right now, some non-open-access publications let authors put up a free copy of the published manuscript after an embargo period. This is the embargoed version of what is called 'green' open access (there are plenty of other 'colours', and the UK University of Nottingham's SHERPA/RoMEO service maintains a comprehensive list of every publisher's policy.) Both the Wellcome Trust and RCUK open-access policies now permit this embargo, with a 6-month delay.

At the same time, the Wellcome Trust's Robert Kiley says that he would prefer making papers open immediately, with 'gold' open access — the catch being that gold-style publishers ask authors to pay them upfront per paper to recover lost subscription revenues. (The Wellcome Trust gives its researchers money to do this; at the moment, 55% of Wellcome Trust-funded researchers obey its open-access requirement; of

those, 85% go gold).

So, is it green or gold for the United Kingdom? Willetts is waiting for the Finch report, but grapevine indications are that the recommendation will be for a mixed, green–gold model, and that even the ‘green’ embargo period may vary between disciplines. Martin Hall, a member of the Finch working group and the vice-chancellor of the University of Salford in Manchester, reckons that, ultimately, we will see a transition to gold — so the real question is how long this will take.

### **The cost of ‘free’**

The question of green versus gold leads directly to issues around costs. Green works under the current model, in which university libraries pay subscriptions to publishers. But in gold, researchers would pay publishers directly for opening up access to their papers.

How much? Kiley says that, based on a sample of 4,000 papers funded by the Wellcome Trust for gold open access, publishers are asking authors for US\$2,500 per paper on average, ranging from \$675 at crystallography journals to \$5,000 for *Cell Reports*. Thus, if the 120,000 UK papers were all made free upfront, that process would cost \$300 million\* a year. That sounds a lot, but of course libraries may be paying just as much or more now in subscription and other fees; overall, it is less than 1% of what the country as a whole splashes out on research and development spending (£26.4 billion in 2010, according to the Office of National Statistics).

*4 May update: In the comment thread below, David Prosser, from Research Libraries UK, points out that an analysis last year of the financial implications of a move to Open Access found that if the average price for a paper were £1995 (\$3000), then the UK's transition to gold open access would be cost-neutral overall.*

For research agencies, the question is how much they would have to set aside from grants to pay for open-access publication. An example can be taken from the Wellcome Trust. That agency's £650-million (\$1-billion) annual research budget produces 5,000 papers, says Kiley. If all those papers were made free upfront, that would cost \$12.5 million — or 1.25% of the total research budget. RCUK is working with similar assumptions.

For publishers (which, in the United Kingdom, includes learned societies such as the Institute of Physics and the Royal Society of Chemistry), the question is whether their share of, say, a \$300-million UK revenue would be enough for them to survive, and it was noticeable that Willetts told his presumably jittery publishing audience that their “valuable functions” should be “properly funded”. Hall — who is also a member of the UK Open Access Implementation Group — says that publishers are talking to the Finch committee, which is doing its own modelling of costs, and that there has been a “frank and forthright discussion”.

### **How to manage the transition**

A confusing situation will arise if the United Kingdom goes open access and other countries don't follow. As Willetts said: “In future we could be giving our research articles to the world for free via open access. But will we still have to pay for foreign journals and research carried out abroad?”

Basically, British universities could end up paying twice — once to make their research open access, and again for subscriptions to the journals that they will still need to buy (because those journals will contain 94% non-British, non-open-access, research). As Willetts puts it: “If so, there would be a clear shift in the balance of funding of research between countries.” And so, he said, he'd be encouraging international action, and was talking to the European Commission for a start.

Willetts also noted that in the United States, the US Committee on Economic Development advocates building on the existing (green) open-access mandate of the National Institutes of Health. His speech hasn't gone unnoticed across the pond: on his blog Pasco Phronesis, US science-policy analyst David Bruggeman said that the United Kingdom could challenge the United States for global leadership on open access.

### **Enforcing proper open access — and Jimmy Wales**

Just being able to read a free PDF isn't actually open access. Scientists need to be allowed to content-mine the research literature with computers, using programs to pull out information from plain text and data across numerous journals. But publishers' reluctance is hindering this potential (see 'Gold in the text'? ). Willetts was firm here: "the government wants to see an environment which enables researchers to use data sets from a number of different publishers without undue costs or obstacles — and without undermining research publishing."

A final issue is how researchers and institutions would be forced to comply with open access. The RCUK draft policy on open access hasn't made it clear, but judging from what the Wellcome Trust is planning, the easy way would be to make open access a requirement for future grants. Kiley says that the Wellcome Trust is also considering asking institutions to sign a statement that papers published under its grants are compliant with its open-access policy; if they don't sign, the Trust will hold back a final installment (10%) of the grant funding.

And what about Jimmy Wales, the Wikipedia guru whom Willetts has invited to the party, and who made most of the headlines yesterday? Wales has been asked to advise on a £2-million UK 'Gateway to Research' portal (itself not new: it was announced last December). This portal, to be launched at the end of 2013, is really an access point: it would let users see which scientists have got public funding and for what research, and would link to research outputs — data sets and publications. It's particularly aimed at small and medium businesses, which say that they lose out when they can't access research, and, importantly, is going to support open-source information harvesting.

What Wales will add here is not clear (a partial explanation for his involvement is that Prime Minister David Cameron appointed him as an unpaid cross-governmental 'special adviser' in March, to help develop open technologies). But as veteran science publisher Jan Velterop posted to a discussion of Wales' appointment on an open-access mailing list: "Strict logic is not what we win the battle for open access with. Some celebrity involvement is to be welcomed. "

*\*This post was corrected on 3 May after helpful comments from alert readers. Thanks to the Royal Society of Chemistry's Richard Kidd for spotting that the notional figure for the cost of 120,000 Gold OA research papers should be \$300 million, not \$30 million as incorrectly stated. And to Southampton University's Stevan Harnad for explaining in the comment thread below that 'green' open access comes in two forms: the embargoed form and the non-embargoed form.*

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### **Comments**

03 May 2012 15:33 GMT

**Stevan Harnad said:** GREEN OPEN ACCESS MANDATES IN THE UK

I would like to answer some questions and clarify some points in Richard Van Noorden's Nature newsblog posting (NN):

— NN: “[T]he [RCUK] agencies which fund UK scientists [have] required [researchers]... to make their research papers free [online] since 2006; but now they’re going to enforce it...”

The UK has indeed led the world in mandating Open Access (OA). The UK is the first country in which all the national research funding agencies have formally required OA. (Before its funder mandates, the UK was also where the world's first OA mandate was adopted within a University, in 2002.)

But adopting an OA mandate is not enough. The real challenge is in formulating and implementing the mandate in a way that ensures compliance. That is where attention is focused right now.

— NN: “[W]ill research papers be instantly open, or will publishers get to impose a delay?...[S]ome [publishers] let authors put up a free copy of the published manuscript after an embargo period. This is known as ‘green’ open access... RCUK open-access policies currently permit this embargo, with a six-month delay.”

There are two ways to provide OA:

Green OA is provided by publishing in any suitable peer-reviewed journal, and then making the paper OA by self-archiving it in the author's institutional OA repository (or an institutional-external repository).

Gold OA is provided by publishing in an OA journal that makes the paper OA.

The majority of journals (over 60%, including the top journals in most fields) endorse the author providing immediate (unembargoed) Green OA.

A minority of journals (less than 40%) embargo Green OA. To accommodate this, some mandates have allowed an OA embargo of 6 months (or longer). To fulfill would-be users' immediate research needs during the embargo, however, institutional repositories have a semi-automatic “email eprint request” Button: The user can request an eprint with a click and the author can comply with a click.

— NN: “[T]he recommendation will be for a mixed green-gold model... ultimately we will see a transition to gold – so the real question is how long this will take.”

Among the implementation problems of some of the OA mandates today is precisely this mixture of Green and Gold. Only Green OA can be mandated. (Authors cannot be forced to choose a journal based on the journal's cost-recovery model rather than its quality and suitability.) Funds (if available) can be offered to pay the Gold OA publishing fee, if there is a suitable Gold OA journal in which the author wishes to publish; but Green OA self-archiving needs to be mandated first, cost-free.

My own view is that it is a mistake to press too hard for Gold OA now, while subscriptions are still paying the costs of publication, the top journals are not Gold OA, the price of Gold OA is still high, and Green OA mandates (cost-free) are still too few. Once Green OA mandates by funders and institutions have made OA universal, the resulting availability of Green OA to everything will drive the transition to Gold

OA publishing, at a much lower price, as well as releasing the subscription funds to pay for it.

— NN: “British universities could end up paying twice – once to make their research open access, and again for subscriptions to the journals that they will still need to buy, because those journals will contain 94% non-British, non-open-access, research.”

This is precisely why the mixed Green/Gold model is not a good idea. The press should be for Green OA self-archiving mandates by research funders and institutions worldwide. The transition to Gold OA will then take place naturally of its own accord — and meanwhile the world will already have 100% OA.

— NN: “[T]he UK could challenge the US for global leadership on open access.”

It's the other way 'round! The UK is in the lead, but if the US passes the FRPAA, then the US will have taken over the UK's lead.

<https://plus.google.com/109377556796183035206/posts/Jz62Vr5hcP2>

— NN: “Just being able to read a free PDF isn't actually open access.”

Yes it is. Gratis OA means free online access and Libre OA means free online access plus certain re-use rights. Just as Green OA has to come before Gold OA, Gratis OA has to come before Libre OA. The barriers are much lower. (All the OA mandates are for Gratis OA.)

— NN: “[R]esearchers and institutions would be forced to comply with open access.... mak[ing] open access a requirement for future grants... asking institutions to sign a statement that papers published under its grants are compliant with its open access policy; and if not... hold back a final instalment... of the grant funding.”

And the most important implementation detail of all: All mandates (funder and institutional) should be convergent and collaborative rather than divergent and competitive:

(1) Both funders and institutions should require author self-archiving in the author's institutional repository (not in an institutional-external central repository). Central repositories can then harvest from the institutional repository, authors only have to deposit once, institutions can monitor and ensure compliance with funder OA mandates and they will also be motivated to adopt OA mandates of their own, for all of their research output, funded and unfunded, in all discipline.

(2) Both funders and institutions should require immediate deposit (not just after an allowable embargo period).

(3) The deposit mandate should be fulfilled by the mandatee (the author), not by publishers (3rd parties who have an interest in delaying OA and are not bound by the mandate). This will also make the monitoring of compliance much easier and more effective.

— NN: “What Wales will add here is not clear... Some celebrity involvement is to be welcomed.”

OA means Open Access to peer-reviewed research. Wikipedia is not peer-reviewed research and indeed it is rather negative on expertise and answerability. So Wales has a lot to learn. But if he does learn what needs to be done to make Green OA mandates effective, he may be able to see to the adoption of the implementation details that are needed, if he has David Willetts' confidence...

03 May 2012 15:53 GMT

**Richard Van Noorden said:** Thanks, Stevan, for adding your expertise here. As you say, the focus is on how the research councils (and also the Wellcome Trust) will enforce compliance of the open access policies they already hold.

Regarding 'green' open access and embargoes. Thanks for pointing out that there are 'embargo' and 'immediate' variants of green open access. A key point which I'm clarifying on the post.

03 May 2012 18:56 GMT

**Stevan Harnad said:** Richard, just one other important correction: There aren't multiple varieties of Green OA. Green (Gratis) OA means free, immediate, permanent, full-text online access. There is no "immediate vs. embargoed" variant of Green OA: Embargoed Green OA means no Green OA until the embargo has elapsed! (Hence the need for the institutional repository's email-eprint-request Button, to provide "Almost-OA" during the embargo.)

I should also have added that although SHERPA/Romeo is an invaluable resource for ascertaining whether or not a publisher endorses immediate Green OA self-archiving, its rainbow of colour codes [yellow, green, blue...] is superfluous and causes no end of gratuitous confusion — in no small measure because "SHERPA-green OA" does not mean the same thing as Green OA!

SHERPA-yellow means the publisher endorses OA self-archiving of the unrefereed draft only; SHERPA-blue means the publisher endorses OA self-archiving of the refereed draft only; and SHERPA-green means the publisher endorses OA self-archiving of both the unrefereed and the refereed draft.

As a consequence, both SHERPA-blue and SHERPA-green mean Green OA...

(And I should also have added that OA is in no way married to PDF [let alone the publisher's PDF]. It refers to the refereed, accepted final version of the article, regardless of format.)

03 May 2012 23:54 GMT

**Richard Van Noorden said:** Stevan – again thanks for your clarifications! But when you say: "Green (Gratis) OA means free, immediate, permanent, full-text online access. There is no "immediate vs. embargoed" variant of Green OA". Well that may be the correct view, but it's just not how Willetts is talking about it, right? In his words, there's green OA – delayed, subscription-as-usual – or there's gold OA – immediate, upfront payment. For the UK politically, that is the big choice here, no?

04 May 2012 16:30 GMT

**Stevan Harnad said:** ———

## THE IMPORTANCE OF UPGRADING THE RCUK GREEN OA MANDATES TO REQUIRE IMMEDIATE INSTITUTIONAL DEPOSIT

Richard, No, delayed Green OA or else Gold OA are not the only options, either politically or practically. Mr. Willetts has unfortunately misunderstood the options.

The options that Mr. Willetts describes — delayed Green OA or Gold OA — are not about OA, or about Green OA. They are about current RCUK OA policy — precisely the policy whose formulation and implementation urgently requires upgrading in order to make it work!

RCUK (and Wellcome) mandate Green OA, but only after an allowable publisher embargo has elapsed.

The majority of journals (over 60%, including most of the top journals in almost all disciplines) endorse immediate, unembargoed Green Gratis OA — on condition that the deposit is institutional, not institution-external (and the version deposited is the author's peer-reviewed final draft, not the publisher's PDF).

These are two of the many reasons both funders and institutions need to mandate institutional deposit (of the author's final draft) rather than institution-external deposit. (They're OA webwide either way, and their metadata are harvestable by institution-external repositories.)

And even for the <40% of deposits that are embargoed, would-be users can have Almost-OA during the embargo by using the email-eprint-request Button — but again only if the deposit itself is immediate and institutional.

Let us hope that Jimmy Wales can grasp this, and then convince David Willetts that these implementational tweaks on RCUK policy do need to be done.

03 May 2012 16:16 GMT

**Mike Taylor said:** Thanks, Stevan, for some useful clarifications. Just one point of disagreement — and though it's merely nomenclatural, it's foundational. The original article said "Just being able to read a free PDF isn't actually open access", to which you replied "Yes it is. Gratis OA means free online access and Libre OA means free online access plus certain re-use rights."

As you know (I think you were one of the signatories), the term "open access" was coined by the Budapest Open Access Initiative, and defined on its first use as follows:  
<http://www.earlham.edu/~peters/fos/boaifaq.htm#openaccess>

"By 'open access' to this literature, we mean its free availability on the public internet, permitting

any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited.”

So the Nature News article is absolutely correct going by that original definition. It's true (though regrettable) that some parties have muddied the waters by abusing the term “open access” to refer to a much weaker freedom — in some cases, I suspect, out of a desire to obfuscate; in others, with the best intentions. But it is certainly also true that the BOAI intended OA to mean much more than just the freedom to read an article online, and the term is used in this stronger sense by most of the people writing about open access today.

That's not to say that “gratis OA” is not a good thing. Of course, it is. But it's a different good thing from the one that the BOAI coined and defined, and I wish that when people had wanted to start talking about it, they'd picked a new term instead of diluting an existing one.

03 May 2012 18:07 GMT

**Stevan Harnad said:** OPEN ACCESS: GRATIS AND LIBRE

The original BOAI statement — drafted online collectively by the original BOAI 2001 attendees, but authored mostly by Peter Suber — was something new that we were improvising as we went along. It became clear, as subsequent years went by, that practical developments since 2001 necessitated some rethinking, revising and updating.

The revised, refined definition was formulated in 2008:

<http://www.earlham.edu/~peters/fos/newsletter/08-02-08.htm#gratis-libre>

I might add that I have been working toward (what we eventually dubbed) “OA” since the early 1990's, and for me the first and foremost goal had always been (and still is) immediate, permanent, toll-free online access to 100% of peer-reviewed journal articles, i.e., “Gratis OA”. I also have to note that we did not have 100% Gratis OA in 1994, when I made my “Subversive Proposal” for providing it, and we still do not have 100% Gratis OA today, almost two decades later, even though it is fully within reach. We are only at about 20%, except where it is mandated, in which case it jumps to 60% and then climbs steadily toward 100% (if the mandate is effectively formulated and implemented!).

Now, to ask for Libre OA (Gratis OA plus some re-use rights, not yet fully agreed upon) today is to ask for more than Gratis OA at a time when authors are not even providing Gratis OA (except if mandated). Libre OA also brings with it numerous unresolved complications, among them the fact that although all authors want users to have free access to their papers (even though they don't bother — or dare — to provide it unless mandated), not all authors want to grant users further re-use rights,; nor is it agreed yet what those further re-use rights should be. In addition, publishers, the majority of whom have given their green light to Gratis OA, are far from agreeing to Libre OA.

Yes, further re-use rights are important, and desirable, in many (not all) cases. But they are even harder to agree on and provide than Gratis OA, and we have not yet even managed to mandate that in anywhere sufficient numbers. And access itself — “mere” access — is not just important, but essential, and urgent, for all peer-reviewed research.

Yet 100% Gratis OA is fully within reach (and has been for years): All institutions and funders need do is grasp it, by mandating it.

Instead, we have been over-reaching for years now — for Libre OA, for Gold OA, for copyright reform, for publishing reform, for peer review reform — and not even getting what is already fully within reach.

So I appreciate your point, Mike, that getting much more than Gratis Green OA would be better than getting just Gratis Green OA.

But I also think that it's time to stop letting the best get in the way of the better: Let's forget about Libre and Gold OA until we have managed to mandate Green Gratis OA universally.

After that, all the other good things we seek will come into reach, and will come to pass.

But not if we keep trying, like Stephen Leacock's horseman, to ride off in all directions, while we just keep getting next to nowhere...

04 May 2012 11:16 GMT

**Mike Taylor said:** I can only half agree with you, Stevan.

That half is this — that it's just fine to have Green OA rather than Gold. In practice, all we lose by accepting the Green compromise is the publisher's official page-numbering, which is a price I am prepared to pay.

Where I can't agree is with your contention that Gratis is an adequate substitute for Libre. To make full use of our research — most notably in mining, though there are many other applications — we need full BOAI-compliant open access. By accepting less than that now, we place ourselves in the position where even when we've “won” by getting ubiquitous Gratis OA, we'll need to fight all the same battles over again to get truly useful access. I dread the thought that in ten years' time we'll still be trying to persuade Elsevier that we can mine their “open access” articles.

And by the way, there is no controversy over which additional re-use rights are wanted beyond gratis OA. Those rights were explicitly stated ten years ago in the Budapest declaration — and have since been conveniently incarnated in the Creative Commons Attribution licence [CC BY] that the Big Two open-access publishers, BMC and PLoS, both use.

Finally, what disappoints me most about the current situation is that it's difficult for us even to have a coherent conversation about it because the meaning of the terms has been so muddled. While I agree that Gratis OA is an important concept and a valuable (if suboptimal) goal, all of our lives would be better if it had been called

something different.

04 May 2012 15:50 GMT

**Stevan Harnad said:** —

A MATTER OF PRACTICAL PRIORITIES

Mike, I did not say Gratis OA was an adequate substitute for Libre OA.

I said that Gratis OA is (1) already one of the conditions of Libre, (2) much more urgent than Libre, (3) faces far fewer practical obstacles than Libre, and (4) is already within reach via mandates.

I also believe that mandating Gratis Green OA is also the surest and fastest way to reach Libre OA (and Gold OA).

But not if we keep over-reaching instead of grasping what is already fully within our reach.

04 May 2012 12:18 GMT

**David Prosser said:** In 2011 CEPA published an analysis of the financial implications of a move to Open Access. They found that a cost-neutral transition to gold OA would be achieved if all the UK's researcher was published in gold OA at an average price per article of £1995 (roughly \$3000). If the average cost was actually \$2500 per paper as reported above we would see system-wide savings for the UK. The full report can be found here:

<http://www.publishingresearch.net/documents/RINHeadingforopenroadDynamicsoftransition.pdf>

David Prosser, RLUK

04 May 2012 12:32 GMT

**Richard Van Noorden said:** Thanks David. I've added your comment to the main blog too.

04 May 2012 16:03 GMT

**Stevan Harnad said:** —

## MANDATING GREEN OA HAS A MUCH BIGGER BENEFIT/COST RATIO THAN CONVERTING TO GOLD OA

See: Harnad, S. (2010) The Immediate Practical Implication of the Houghton Report: Provide Green Open Access Now. *Prometheus*, 28 (1). pp. 55-59.  
<http://eprints.ecs.soton.ac.uk/18514>

**ABSTRACT:** Among the many important implications of Houghton et al's (2009) timely and illuminating JISC analysis of the costs and benefits of providing free online access ("Open Access," OA) to peer-reviewed scholarly and scientific journal articles one stands out as particularly compelling: It would yield a forty-fold benefit/cost ratio if the world's peer-reviewed research were all self-archived by its authors so as to make it OA. There are many assumptions and estimates underlying Houghton et al's modelling and analyses, but they are for the most part very reasonable and even conservative. This makes their strongest practical implication particularly striking: The 40-fold benefit/cost ratio of providing Green OA is an order of magnitude greater than all the other potential combinations of alternatives to the status quo analyzed and compared by Houghton et al. This outcome is all the more significant in light of the fact that self-archiving already rests entirely in the hands of the research community (researchers, their institutions and their funders), whereas OA publishing depends on the publishing community. Perhaps most remarkable is the fact that this outcome emerged from studies that approached the problem primarily from the standpoint of the economics of publication rather than the economics of research.

10 May 2012 05:18 GMT

**omics group said:** The Government of UK had passed rule the research cost should be free in upcoming years. is it true?

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