Open Access Overview

Focusing on open access to peer-reviewed research articles and their preprints

This is an introduction to open access (OA) for those who are new to the concept. I hope it's short enough to read, long enough to be useful, and organized to let you skip around and dive into detail only where you want detail. It doesn't cover every nuance or answer every objection. But for those who read it, it should cover enough territory to prevent the misunderstandings that delayed progress in our early days. I welcome your comments and suggestions.

If this overview is still too long, then see my very brief introduction to OA. It's available in a dozen languages and should print out on just one page, depending on your font size.

Once you're acquainted with the general idea of OA, follow new developments through my blog and newsletter, and see what you can do to help the cause.

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- Open-access (OA) literature is digital, online, free of charge, and free of most copyright and licensing restrictions.
  - OA removes price barriers (subscriptions, licensing fees, pay-per-view fees) and permission barriers (most copyright and licensing restrictions). The PLoS shorthand definition—"free availability and unrestricted use"—succinctly captures both elements.
  - There is some flexibility about which permission barriers to remove. For example, some OA providers permit commercial re-use and some do not. Some permit derivative works and some do not. But all of the major public definitions of OA agree that merely removing price barriers, or limiting permissible uses to "fair use" ("fair dealing" in the UK), is not enough.
  - Here's how the Budapest Open Access Initiative put it: "There are many degrees and kinds of wider and easier access to this literature. 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."
  - Here's how the Bethesda and Berlin statements put it: For a work to be OA, the copyright holder must consent in advance to let users "copy, use, distribute, transmit and display the work publicly and to make and distribute derivative works, in any digital medium for any responsible purpose, subject to proper attribution of authorship."
  - The Budapest (February 2002), Bethesda (June 2003), and Berlin (October 2003) definitions of "open access" are the most central and influential for the OA movement. Sometimes I refer to them collectively, or to their common ground, as the BBB definition.
  - While removing price barriers without removing permission barriers is not enough for
full OA under the BBB definition, there's no doubt that price barriers constitute the
bulk of the problem for which OA is the solution. Removing price barriers alone will
give most OA proponents most of what they want and need.

- In addition to removing access barriers, OA should be immediate, rather than
delayed, and should apply to full-text, not just to abstracts or summaries.

- OA is compatible with copyright, peer review, revenue (even profit), print, preservation,
prestige, career-advancement, indexing, and other features and supportive services
associated with conventional scholarly literature.

- The primary difference is that the bills are not paid by readers and hence do not
function as access barriers.

- The legal basis of OA is either the consent of the copyright holder or the public domain,
usually the former.

- Because OA uses copyright-holder consent, or the expiration of copyright, it does not
require the abolition, reform, or infringement of copyright law. Nor does it require
that copyright holders waive all the rights that run to them under copyright law and
assign their work to the public domain.

- One easy, effective, and increasingly common way for copyright holders to manifest
their consent to OA is to use one of the Creative Commons licenses. Many other
open-content licenses will also work. Copyright holders could also compose their
own licenses or permission statements and attach them to their works.

- When copyright holders consent to OA, what are they consenting to? Usually they
consent in advance to the unrestricted reading, downloading, copying, sharing,
storing, printing, searching, linking, and crawling of the full-text of the work. Most
authors choose to retain the right to block the distribution of mangled or
misattributed copies. Some choose to block commercial re-use of the work.
Essentially, these conditions block plagiarism, misrepresentation, and sometimes
commercial re-use, and authorize all the uses required by legitimate scholarship,
including those required by the technologies that facilitate online scholarly
research.

- For works not in the public domain, OA requires the copyright-holder's consent. Two
related conclusions follow: (1) It is a mistake to regard OA as Napster for science. (2)
For copyrighted works, OA is always voluntary, even if it is one of the conditions of a
voluntary contract, such as an employment or funding contract. There is no vigilante
OA, no infringing, expropriating, or piratical OA.

- The campaign for OA focuses on literature that authors give to the world without
expectation of payment.

- Let me call this royalty-free literature. (It's interesting that there isn't already a
standard term for this.)

- There are two reasons to focus on royalty-free literature. First, it reduces costs for
the provider or publisher. Second, it enables the author to consent to OA without
losing revenue.

- The most important royalty-free literature for our purposes is the body of peer-
reviewed scientific and scholarly research articles and their preprints. (Non-
academics are often surprised to learn that most scholarly journals do not pay
authors for their articles.)

- Obviously no one writes royalty-free literature for money. Scholars write journal
articles because advancing knowledge in their fields advances their careers. They
write for impact, not for money. It takes nothing away from a disinterested desire to
advance knowledge to note that it is accompanied by a strong self-interest in
career-building. OA does not depend on altruistic volunteerism.

- Because scholars do not earn money from their journal articles, they are very
differently situated from most musicians and movie-makers. Controversies about
providing OA to music, movies, and other royalty-producing content, therefore, do
not carry over to this unique body of content.

- Royalty-free literature is the low-hanging fruit of OA, but OA needn't be limited to royalty-free literature. OA to royalty-producing literature, like monographs and novels, is possible as soon as the authors consent. But because these authors will fear losing revenue, their consent is more difficult to obtain. They have to be persuaded either (1) that the benefits of OA exceed the value of their royalties, or (2) that OA will trigger a net increase in sales. However, there is growing evidence that both conditions are met for most research monographs. Nevertheless, this is still a minor front in the larger campaign for OA to royalty-free literature.

- Nor need OA even be limited to literature. It can apply to any digital content, from raw and semi-raw data to learning objects, music, images, multi-media presentations, and software. It can apply to works that are born digital or to older works, like public-domain literature and cultural-heritage objects, digitized later in life.

- I refer to "peer-reviewed research articles and their preprints" in my subtitle because it's the focus of most OA activity and the focus of this overview, not because it sets the boundaries of OA.

- Many OA initiatives focus on taxpayer-funded research.

  - The argument for public access to publicly funded research is a strong one. That is why, for example, 30+ nations have signed the Economic Co-operation and Development (OECD) Declaration on Access to Research Data From Public Funding.

  - The campaign for OA to taxpayer-funded research usually recognizes exceptions for (1) classified, military research, (2) research resulting in patentable discoveries, and (3) research that authors publish in some royalty-producing form, such as books. Recognizing these exceptions is at least pragmatic, and helps avoid needless battles while working for OA to the largest, easiest subset of publicly-funded research.

  - The lowest of the low-hanging fruit is research that is both royalty-free and taxpayer-funded. The NIH policy to provide free online access to peer-reviewed journal articles that arise from NIH-funded research is a good example.

- OA literature is not free to produce or publish.

  - No serious OA advocate has ever said that OA literature is costless to produce, although many argue that it is much less expensive to produce than conventionally published literature, even less expensive than priced online-only literature. The question is not whether scholarly literature can be made costless, but whether there are better ways to pay the bills than by charging readers and creating access barriers.

  - As the BOAI FAQ put it: "Free is ambiguous. We mean free for readers, not free for producers. We know that open-access literature is not free (without cost) to produce. But that does not foreclose the possibility of making it free of charge (without price) for readers and users."

  - The costs of producing OA literature, the savings over conventionally published literature, and the business models for recovering the costs, depend on whether the literature is delivered through OA journals or OA archives. (Details below.)

  - OA is compatible with priced add-ons. As long as the full-text is OA, priced enhancements are compatible with OA. If the enhancements are expensive to provide, then the providers may have to charge for them; if they are valuable, then providers are likely to find people willing to pay for them. At some OA journals, priced add-ons provide part of the revenue needed to pay for the OA.

- OA is compatible with peer review, and all the major OA initiatives for scientific and scholarly literature insist on its importance.

  - Peer review does not depend on the price or medium of a journal. Nor does the value, rigor, or integrity of peer review.

  - One reason we know that peer review at OA journals can be as rigorous and honest
as peer review in conventional journals is that it can use the same procedures, the
same standards, and even the same people (editors and referees) as conventional
journals.

- Conventional publishers sometimes object that one common funding model for OA
  journals (charging fees to authors of accepted articles or their sponsors)
  compromises peer review. I've answered this objection at length elsewhere.

- OA journals can use traditional forms of peer review or they can use innovative new
  forms that take advantage of the new medium and the interactive network joining
  scholars to one another. However, removing access barriers and reforming peer
  review are independent projects. OA doesn't presuppose any particular model of
  peer review, and all the models of peer review that are compatible with print
  journals (and many more) are compatible with OA journals.

- In most disciplines and most fields the editors and referees who perform peer review
  donate their labor, just like the authors. Where they are paid, OA to the resulting
  articles is still possible; it merely requires a larger subsidy than otherwise.

- Despite the fact that those exercising editorial judgment usually donate their labor,
  performing peer review still has costs -- distributing files to referees, monitoring
  who has what, tracking progress, nagging dawdlers, collecting comments and sharing
  them with the right people, facilitating communication, distinguishing versions,
  collecting data, and so on. Increasingly these non-editorial tasks are being
  automated by software, including open-source software.

- There are two primary vehicles for delivering OA to research articles, OA journals and OA
  archives or repositories.

  - The chief difference between them is that OA journals conduct peer review and OA
    archives do not. This difference explains many of the other differences between
    them, especially the cost and difficulty of launching and operating them.

  - There are other OA vehicles on which I won't focus here, such as personal web sites,
    ebooks, listservs, discussion forums, blogs, wikis, RSS feeds, and P2P file-sharing
    networks. There will undoubtedly be many more in the future.

  - Most activists refer to OA delivered by journals as gold OA, and to OA delivered by
    archives or repositories as green OA. The gold/green distinction is simply about
    venues, not user rights or degrees of openness.

- OA journals ("gold OA"):

  - OA journals conduct peer review.
  - OA journals typically let authors retain copyright.
  - Some OA journal publishers non-profit (e.g. Public Library of Science or PLoS) and
    some are for-profit (e.g. BioMed Central or BMC).
  - OA journals pay their bills very much the way broadcast television and radio stations
    do: those with an interest in disseminating the content pay the production costs
    upfront so that access can be free of charge for everyone with the right equipment.
    Sometimes this means that journals have a subsidy from the hosting university or
    professional society. Sometimes it means that journals charge a processing fee on
    accepted articles, to be paid by the author or the author's sponsor (employer,
    funding agency). OA journals that charge processing fees usually waive them in cases
    of economic hardship. OA journals with institutional subsidies tend to charge no
    processing fees. OA journals can get by on lower subsidies or fees if they have
    income from other publications, advertising, priced add-ons, or auxiliary services.
    Some institutions and consortia arrange fee discounts. Some OA publishers (BMC and
    PLoS) waive the fee for all researchers affiliated with institutions that have
    purchased an annual membership.

  - A common misunderstanding is that all OA journals use an "author pays" business
    model. There are two mistakes here. The first is to assume that there is only one
    business model for OA journals, when there are many. The second is to assume that
    charging an upfront processing fee is an "author pays" model. In fact, fewer than half
of today's OA journals (47%) charge author-side fees. When OA journals do charge fees, the fees are usually paid by author-sponsors (employers or funders) or waived, not paid by authors out of pocket. This misunderstanding is harmful because it makes authors wonder whether they can afford to pay the fees and gives OA opponents a chance to spread FUD. In fact there are many reasons why OA journals do not exclude the poor.

- Some use a color code to classify journals: gold (provides OA to its research articles, without delay), green (permits postprint archiving by authors), pale green (permits, i.e. doesn't oppose, preprint archiving by authors), gray (none of the above).


- We can be confident that OA journals are economically sustainable because the true costs of peer review, manuscript preparation, and OA dissemination are considerably lower than the prices we currently pay for subscription-based journals. There's more than enough money already committed to the journal-support system. Moreover, as OA spreads, libraries will realize large savings from the conversion, cancellation, or demise of subscription-based journals.

- For a list of OA journals in all fields and languages, see the Directory of Open Access Journals.

- OA archives or repositories ("green OA"):
  - OA archives can be organized by discipline (e.g. arXiv for physics) or institution (e.g. eScholarship Repository for the University of California). When universities host OA archives, they are usually committed just as much to long-term preservation as to open access.
  - OA archives do not perform peer review. However, they may limit deposit to pieces in the right discipline or authors from the right institution.
  - OA archives can contain preprints, postprints, or both.
    - A preprint is any version prior to peer review and publication, usually the version submitted to a journal.
    - A postprint is any version approved by peer review. Sometimes it's important to distinguish two kinds of postprint: (a) those that have been peer-reviewed but not copy-edited and (b) those that have been both peer-reviewed and copy-edited. Some journals give authors permission to deposit the first kind of postprint but not the second kind in an OA repository.
  - OA archives can be limited to eprints (electronic preprints or postprints of journal articles) or can include theses and dissertations, course materials, learning objects, data files, audio and video files, institutional records, or any other kind of digital file.
  - OA archives can provide OA by default to all their contents or can let authors control the degree of accessibility to their works.
  - Authors need no permission for preprint archiving. When they have finished writing the preprint, they still hold copyright. If a journal refuses to consider articles that have circulated as preprints, that is an optional journal-submission policy, not a requirement of copyright law. (Some journals do hold this policy, called the Ingelfinger Rule, though it seems to be in decline, especially in fields outside medicine.)
  - If authors transfer copyright in the postprint to a journal, then they need the copyright holder's permission to deposit it in an OA archive. Most journals (now about 70%) already allow postprint archiving. But if a journal does not allow it, then the author can still archive the preprint and the corrigenda (the differences between the preprint and the postprint).
  - For a searchable database of publisher policies about copyright and archiving, see Project SHERPA. Also see the Eprints journal-level supplement to SHERPA's publisher-
level data.

- Journals that do not wish to convert to OA, or to provide their own OA content, can still support OA by permitting their authors to deposit postprints of their articles in OA archives. Most journals already permit this. The burden is then on authors to take advantage of the opportunity. This means that authors may publish in virtually any journal that will accept their work (OA or non-OA) and still provide OA to the published version of the text through an OA archive.

- The most useful OA archives comply with the Open Archives Initiative (OAI) protocol for metadata harvesting, which makes them interoperable. In practice, this means that users can find a work in an OAI-compliant archive without knowing which archives exist, where they are located, or what they contain. (Confusing as it may be, OA and OAI are separate but overlapping initiatives that should not be mistaken for one another.)

- Every university in the world can and should have its own open-access, OAI-compliant repository and a policy to encourage or require its faculty members to deposit their research output in the repository. A growing number do precisely this.

- We can be confident that OA archives are economically sustainable because they are so inexpensive. There are many systems of open-source software to build and maintain them. Depositing new articles takes only a few minutes, and is done by individual authors, not archive managers. OA archives require only a small part of a technician’s time, primarily at the launch, and some server space, usually at a university. Universities already support less essential software and already give more server space to less essential content. In any case, OA archives benefit the institutions that host them by enhancing the visibility and impact of the articles, the authors, and the institution.

- There is no definitive list of OA, OAI-compliant archives. But I maintain a list of the good lists.

- For detail on setting up an institutional repository, see the SPARC Institutional Repository Checklist & Resource Guide.

- For more details on OA archiving, see the BOAI Self-Archiving FAQ.

- The OA project is constructive, not destructive.

- The purpose of the campaign for OA is the constructive one of providing OA to a larger and larger body of literature, not the destructive one of putting non-OA journals or publishers out of business. The consequences may or may not overlap (this is contingent) but the purposes do not overlap.

- Even though journal prices have risen four times faster than inflation since the mid-1980s, the purpose of OA is not to punish or undermine expensive journals, but to provide an accessible alternative and to take full advantage of new technology—the Internet— for widening distribution and reducing costs. Moreover, for researchers themselves, the overriding motivation is not to solve the journal pricing crisis but to deliver wider and easier access for readers and larger audience and impact for authors.

- Publishers are not monolithic. Some already provide full OA, some provide hybrid models, and some are considering experiments with it. Among those not providing OA, some are opposed and some are merely unpersuaded. Among the unpersuaded, some provide more free online content than others. OA gains nothing and loses potential allies by blurring these distinctions.

- Most publishers and most journals already permit author-initiated OA archiving. Since self-archiving is a bona fide form of OA, authors who fail to take advantage of the opportunity are actually a greater obstacle to OA than publishers who fail to offer the opportunity.

- Promoting OA does not require the boycott of any kind of literature, any kind of journal, or any kind of publisher. Promoting OA need not cause publisher setbacks, and publisher setbacks need not advance OA. To focus on undermining non-OA journals and publishers is to mistake the goal.
- Open-access and toll-access literature can coexist. We know that because they coexist now. We don't know whether this coexistence will be temporary or permanent, but the most effective and constructive way to find out is to work for OA and see what happens to non-OA providers, not to detour from building OA to hurt those who are not helping.

- Open access is not synonymous with universal access.
  - Even after OA has been achieved, at least four kinds of access barrier might remain in place:
    1. **Filtering and censorship barriers.** Many schools, employers, and governments want to limit what you can see.
    2. **Language barriers.** Most online literature is in English, or just one language, and machine translation is very weak.
    3. **Handicap access barriers.** Most web sites are not yet as accessible to handicapped users as they should be.
    4. **Connectivity barriers.** The digital divide keeps billions of people, including millions of serious scholars, offline.
  - Even if we want to remove these four additional barriers (and most of us do), there's no reason to hold off using the term "open access" until we've succeeded. Removing price and permission barriers is a significant plateau worth recognizing with a special name.

- OA is a kind of access, not a kind of business model, license, or content.
  - OA is not a kind of business model.
    - There are many business models compatible with OA, i.e. many ways to pay the bills so that readers can reach the content without charge. Models that work well in some fields, niches, and nations may not work as well in others. No one claims that one size fits all.
    - There are many differences among the disciplines that affect the funding of OA. We should not expect OA to make progress in all disciplines at the same rate, any more than we should expect it to make progress in all countries at the same rate. Most of the progress and debate is taking place in the STM fields (science, technology, and medicine), but OA is just as feasible and useful in the humanities.
    - New OA business models are evolving, and older ones are being tested and revised, all the time. There's a lot of room for creativity in finding ways to pay the costs of a peer-reviewed OA journal or a general-purpose OA archive, and we're far from having exhausted our cleverness and imagination.
  - OA is not a kind of license. There are many licenses compatible with OA, i.e. many ways to remove permission barriers for users and let them know what they may and may not do with the content. See the sections on permission barriers and licenses above.
  - OA is not a kind of content. Every kind of digital content can be OA, from texts and data to software, audio, video, and multi-media. The OA movement focuses on peer-reviewed research articles and their preprints. While most of these are just text, a growing number integrate text with images, data, and executable code. OA can also apply to non-scholarly content, like music, movies, and novels, even if these are not the focus of most OA activists.

- OA serves the interests of many groups.
  - **Authors:** OA gives them a worldwide audience larger than that of any subscription-based journal, no matter how prestigious or popular, and provably increases the visibility and impact of their work.
  - **Readers:** OA gives them barrier-free access to the literature they need for their research, not constrained by the budgets of the libraries where they may have access privileges. It increases their convenience, reach, and retrieval power. OA also
gives barrier-free access to the **software** that assists readers in their research. Free online literature is free online data for software that facilitates full-text searching, indexing, mining, summarizing, translating, querying, linking, recommending, alerting, "mash-ups" and other forms of processing and analysis.

- **Teachers and students**: OA puts rich and poor on an equal footing for these key resources and eliminates the need for permissions to reproduce and distribute content.
- **Libraries**: OA solves the **pricing crisis** for scholarly journals. It also solves what I've called the **permission crisis**. OA also serves library interests in other, indirect ways. Librarians want to help users find the information they need, regardless of the budget-enforced limits on the library's own collection. University librarians want to help faculty increase their audience and impact and thereby help the university raise its research profile.
- **Universities**: OA increases the visibility of their faculty and institution, reduces their expenses for journals, and advances their mission to share knowledge.
- **Journals and publishers**: OA makes their articles more visible, discoverable, retrievable, and useful. If a journal is OA, then it can use this superior visibility to attract submissions and advertising, not to mention readers and citations. If a subscription-based journal provides OA to some of its content (e.g. selected articles in each issue, all back issues after a certain period, etc.), then it can use its increased visibility to attract all the same benefits plus subscriptions. If a journal permits OA through postprint archiving, then it has an edge in attracting authors over journals that do not permit postprint archiving. Of course subscription-based journals and their publishers have countervailing interests as well and generally oppose OA. But it oversimplifies the situation to think that *all* their interests pull against OA.
- **Funding agencies**: OA increases the return on their investment in research, making the results of the funded research more widely available, more discoverable, more retrievable, and more useful. OA serves public funding agencies in a second way as well, by providing public access to the results of publicly-funded research.
- **Governments**: As funders of research, governments benefit from OA in all the ways that funding agencies do (see previous entry). OA also promotes democracy by sharing government information as rapidly and widely as possible.
- **Citizens**: OA gives them access to peer-reviewed research (most of which is unavailable in public libraries) and gives them access to the research for which they have already paid through their taxes. It also helps them indirectly by helping the researchers, physicians, manufacturers, technologists, and others who make use of cutting-edge research for their benefit.

**OA in historical perspective:**

- Scholarly journals do not pay authors for their articles, and have not done so since the first journals were launched in London and Paris in 1665. (See Jean-Claude Guédon, *In Oldenburg's Long Shadow.*
  - Journals took off because they were more timely than books. For readers, journals were better than books for learning quickly about the recent work of others, and for authors journals were better than books for sharing new work quickly with the wider world and, above all, for establishing priority over other scientists working on the same problem. They gave authors the benefit of a fast, public time-stamp on their work. Because authors were rewarded in these strong, intangible ways, they accepted the fact that journals couldn't afford to pay them. Over time, journal revenue grew but authors continued in the tradition of writing articles for impact, not for money.
  - OA was physically and economically impossible in the age of print, even if the copyright holder wanted it. Prices were not only unavailable for print journals, they were even affordable until the 1970's, when they began to rise faster than inflation. Prices have risen four times faster than inflation since 1986. Fortuitously, just as journal prices were becoming unbearable, the Internet emerged to offer an
alternative.

- It doesn't matter whether we blame unaffordable journals on excessive publisher prices or inadequate library budgets. If we focus on publishers, it doesn't matter whether we blame greed or innocent market forces (rising costs and new services). Blame is irrelevant and distracting. The volume of published knowledge is growing exponentially and will always grow faster than library budgets. In that sense, OA scales with the growth of knowledge and toll access does not. We've already (long since) reached the point at which even affluent research institutions cannot afford access to the full range of research literature. Priced access to journal articles would not scale with the continuing, explosive growth of knowledge even if prices were low today and guaranteed to remain low forever.

- The pricing crisis itself is just one factor in the rise of OA. Even if scholars did not turn to OA in order to bypass unaffordable access fees, they'd turn to it in order to take advantage of the Internet as a powerful new technology for sharing knowledge instantly, with a worldwide audience, at zero marginal cost, in a digital form amenable to unlimited processing.

- For a schematic history of OA, see my timeline of the open-access movement.

Useful links

This is a very selective list. For more links, browse my blog archive or newsletter archive. Or search them both, and my other OA writings:

Search my pages about OA

More overview

- What you can do to promote open access
- Timeline of the open access movement
- Conferences and workshops related to the open access movement
- Discussion forums devoted to OA issues
- Creating an Information Commons Through Open Access. My longer, slower introduction to OA (soon to exist in an HTML edition).
- Create Change, from ARL, ACRL, and SPARC
- (Mis)Leading Open Access Myths, from BioMed Central
- Open Access Bibliography, from Charles W. Bailey, Jr.

Major OA statements (in chronological order; for more, see my timeline)

- Budapest Open Access Initiative and its FAQ. February 14, 2002
- ACRL Principles and Strategies for the Reform of Scholarly Communication, August 28, 2003
- Wellcome Trust position statement on open access. October 1, 2003
- Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities, October 22, 2003
- OECD Declaration on Access to Research Data From Public Funding, January 30, 2004
- IFLA Statement on Open Access to Scholarly Literature and Research Documentation, February 24, 2004
- Australian Group of Eight Statement on open access to scholarly information, May 25, 2004

http://www.earlham.edu/~peters/fos/overview.htm

1/7/2009
First put online, June 21, 2004.

Return to the Blog.

Return to the Newsletter.

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http://www.earlham.edu/~peters/fos/overview.htm  
1/7/2009