Open Access Publishing Workshop

University of Nottingham
CREATe Project
3 February 2014

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Research Gap II: Copyright Protection and Theory

When Copyright Law and Science Collide: Empowering Digitally Integrated Research Methods on a Global Scale

Jerome H. Reichman and Ruth L. Okediji

University of Minnesota Law Review
96 U. Minn. Law Review 1362 (2012)

See also

Jerome H. Reichman & Paul F. Uhlir, *A Contractually Reconstructed Research Commons for Scientific Data in a Highly Protectionist Intellectual Property Environment*

66 LAW & CONTEMPORARY PROBLEMS 315-462 (2003)

(*When Copyright Law and Science Collide*, Reichman & Okediji)

Introduction

- **A. Potentially Boundless Scientific Opportunities in the Digital Environment**
- **B. Copyright and Related Laws as Digital Gridlock**
- **C. Nature and Scope of This Article**

I. The Growing Divide Between Copyright Law and Scientific Research in Historical Perspective

- **A. Two Conceptual Approaches in the Application of Copyright Law to Science**
  - **1. Harmonizing the Designated Limitations and Exceptions that Defend Scientific Research in the European Union**
  - **2. The Fair Use Approach in the United States**
- **B. New Boundaries Imposed by International Law**
  - **1. Normative Blindness at the World Trade Organization (WTO)**
  - **2. Potential Flexibility Under the WIPO Copyright Treaty (WCT)**
- **C. The Shrinking Realm of Scientific Users' Rights Under Either Approach**
  - **1. Impeding Scientific Research Even in the Print Media**
    - **a. Strengths and Weaknesses of the Designated Exceptions Approach**
    - **b. Limits of the Fair Use Approach**
      - **i. Inherent Methodological Uncertainties**
      - **ii. Outer Limits of the Case-by-Case Approach**
  - **2. The Coup de Grâce: Digital Locks and Database Protection Laws**
    - **a. Virtual Elimination of Limitations and Exceptions Favoring Science in the Online Environment**
    - **b. Exclusive Rights in Noncopyrightable Collections of Data**

(*When Copyright Law and Science Collide*, Reichman & Okediji)

II. Empowering Digitally Integrated Scientific Research on a Global Scale

- **A. Automated Knowledge Discovery Tools as Instruments of Massive Infringement**
- **B. The Limits of Incremental Legislative Reform to Alleviate Obstacles to Scientific Research**
  - **1. Possible Reforms of Domestic Copyright Laws**
    - **a. Improving the Information Society Directive in the European Union**
    - **b. Improving the Fair Use Approach**
  - **2. What E-science Really Needs from Any Legislative Reform**
    - **a. Broad Exemption for Scientific Research as Such**
    - **b. Breaking the Digital Locks**
    - **c. Disciplining Contractual Overrides**
    - **d. Aligning Database Protection Laws with Broad Exceptions for Science in Copyright Law**
- **C. Adjusting the International Legal Framework to Accommodate the Needs of Science**
  - **1. Reinterpreting the Three-Step Test**
  - **2. Leveraging the WIPO Development Agenda**

(*When Copyright Law and Science Collide*, Reichman & Okediji)

III. Enabling E-Science to Manage Its Own Upstream Research Assets

- **A. Reassessing the Role of Publishing Intermediaries**
  - **1. Costs and Benefits of the Traditional Approach**
  - **2. The Proper Role of Publishing Intermediaries under Current Institutional Constraints**
- **B. Funders' Ability to Contractually Regulate Access, Use, and Reuse of Scientific Literature and Data**
- **C. Integrating the Intermediaries' Functions into Transnational Digital Knowledge Environments**

Final Observations

- **A. Bridging the Disconnect Between Private Rights and Public Science**
- **B. Reconciling the Goals of Innovation Policy with the Needs of Science Policy**

Research Gap III

Economics and Business Models

Jerome H. Reichman, Paul F. Uhlir, and Tom Dedeurwaerdere

Governing Digitally Integrated Genetic Resources, Data and Literature: Global Intellectual Property Strategies for the Microbial Research Commons

Forthcoming 2014, Cambridge University Press, U.S.A.

Research Gap III.1

Open University, Open Education, and Open Educational Resources

Examples of Incipient Open Knowledge Environments on the Frontiers of Microbiology

- The Genetic Standards Consortium (GSM) Interactive Portal and Open Access Journal
- The Community Cyber-Infrastructure for Advanced marine Microbial Ecology Research and Analysis (CAMERA)
- The system Biology Knowledgebase (Kbase) of the U.S. Department of Energy
- The Sloan Foundation's Program on the Microbiology of the BUILT Environment (MoBE)

Source: Reichman, Uhlir, & Dedeurwaerdere, Governing Digitally Integrated Genetic Resources, Data and Literature, Chapter 8.

OKEs for MDGs

Existing digital commons models and emerging open knowledge environments (OKEs):

- Open-source software movement (e.g., Linux and 10Ks of other programs worldwide, many of which originated in academia for research applications);
- Open data centers and archives (e.g., GenBank, SAEON);
- Federated open data networks (e.g., World Data Center System, Global Biodiversity Information Facility);
- Open access journals (e.g., > 5500 scholarly journals, in both more and less developed countries—i.e., SciELO, Bioline International);
- Open repositories for an institution's scholarly works (+ > 400 formally registered globally on Open DOAR, plus 1000s more not registered)
- Open repositories for publications in a specific subject area (e.g., the physics arXiv, CogPrints, PubMedCentral in US and UK);
- Free university curricula and lectures online (e.g., the MIT OpenCourseWare);
- E-government initiatives (Data.gov in US, many others worldwide); and
- Emerging discipline or applications commons, peer production of info, and integrated thematic open knowledge environments (e.g., virtual observatories, wiki encyclopedias, subdiscipline OKEs).

Moving Toward Open Knowledge Environments (OKEs) for Promoting Progress on the United Nations' Millennium Development Goals (MDGs)

CODATA Conference
Stellenbosch, South Africa
25 October 2010

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OKEs for MDGs

Vision for open knowledge environments (OKEs) at universities

The restructuring of the print paradigm journal system through the formation of thematic OKEs in all universities:

- Organized around OA resources—journals, gray literature, databases, OSS, and peer production of information in a focused thematic area.
- Supporting and integrating the university mission of public knowledge creation, dissemination and use, and of education.
- Common-use licensing of content and tools (e.g., Creative Commons, GNU), and technically optimized (Web 2.0, semantic web) for broad access and reuse.
- In-house and external OA content augmented by interactive collaboration tools in OKE, coupled with effective social networking and outreach.
- Managed by academic departments that integrate domain discipline(s), computer engineers, information scientists, libraries, and other collaborating departments at one or more universities (a consortium).
- Involving professors, students, and possibly external consultants and services (e.g., STM publishers, but that do not capture the content).

OKEs for MDGs

OKEs for MDGs

Limitations on creating OKEs at universities:

- Implementation and acceptance of new policy and institutional frameworks, frequently with conservative management and socio-cultural milieu.
- Development of adequate incentives for participation in OKE formation and use at the individual, community, institutional, and governmental levels.
- Long-term financial sustainability of different OKE models (university OKEs should have low cost and high positive externalities).
- Overcome pressures in universities to commercialize the OKE (e.g., by University Presses).
- In all cases, must balance with legitimate countervailing values and legal restrictions (protection of national security, privacy, confidentiality, and IPRs in bona fide commercial opportunities).

OKEs for MDGs

Additional works on this topic (all available freely online):

- *Bits of Power: Issues in Global Access to Scientific Data (NAS, 1997)*
- *The Role of S&T Data and Information in the Public Domain (NAS, 2003)*
- *Reichman, J.H. and Paul F. Uhlir, "A Contractually Reconstructed Research Commons for Scientific Data in a Highly Protectionist Intellectual Property Environment, 66 Law & Contemporary Problems 315-462 (2003)*
- *UNESCO Policy Guidelines for the Development and Promotion of Governmental Public Domain Information (2004)*
- *Open Access and the Public Domain in Digital Data and Information for Science (NAS, 2004)*
- *Strategies for Open Access to and Preservation of Scientific Data in China (NAS, 2006)*
- *Uhlir & Schröder, "Open Data for Global Science", Data Science Journal, CODATA, (2007).*
- *Reichman, J.H., Paul F. Uhlir, andTom Dedeurwaerdere "New Strategies for Accessing, Managing, and Using Essential Public Knowledge Assets" (Yale University Press, forthcoming).*