Conservation Partnerships in the Commons? Sharing data and information, experience and knowledge, as the essence of partnerships

by Thomas Daniel Moritz

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The Commons

Ultimately there is but one commons, it includes nature as it existed before fences and walls, borders and laws, the high seas, the skies, the air we breathe – and its remnants are now found within the world's more than 100,000 protected areas (about 10 per cent of the earth's terrestrial surface) and in the wild populations of plants and animals that still survive – and it includes millions of years of naturally selected genetic experience carried by each human being and by our fellow organisms.

Wise stewardship of the commons, of these places, of these organisms, of our genetic heritage,

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represents the traditional 'heartland' of The International Union for the Conservation of Nature (IUCN)[1] and of the conservation movement. But it has never been more clear than in the past decade that a narrow focus on protection of this 'heartland' as a mere physical landscape overlaid with living things would fail to meet the high standard that the conservation movement has set for itself. For 'the commons' also includes our human heritage of knowledge and wisdom gained through thousands of year of learned experience by human cultures and gained through hundreds of years of the more or less methodical culture of science.

This is 'the commons', the full integrity of nature addressed in the IUCN Mission. And, to achieve effective stewardship, it must be consciously informed by the principles of equity and justice as suggested by the IUCN mission.

Yet, the commons has also been under attack for centuries…

In England, the first enclosure movement 'stole the commons out from under the goose' as one protest ballad of that era had it. The locally shared land of the real 'commons' was largely transformed into what we now consider to be 'real estate'. And in a now famous essay published in 1968, University of California Professor Garret Hardin predicted an inevitable 'Tragedy of the Commons'[2] – arguing not simply that force of numbers (in the form of human population growth) would overwhelm the capacity of the commons to sustain people but even more fundamentally and more pessimistically that individual human self-interest, selfishness, would inevitably lead to the destruction of the commons.

Recently, Professor James Boyle of Duke University Law School has warned of a second enclosure movement.[3] He describes and forecasts the emergence of an increasingly restrictive legal regime that will constrain access to all forms of data, information and knowledge.[4] In our own era not just the physical terrain of the commons but our human knowledge of the commons, the mind and heart, the intellectual and emotional substance of the commons is being relentlessly restricted and reduced.

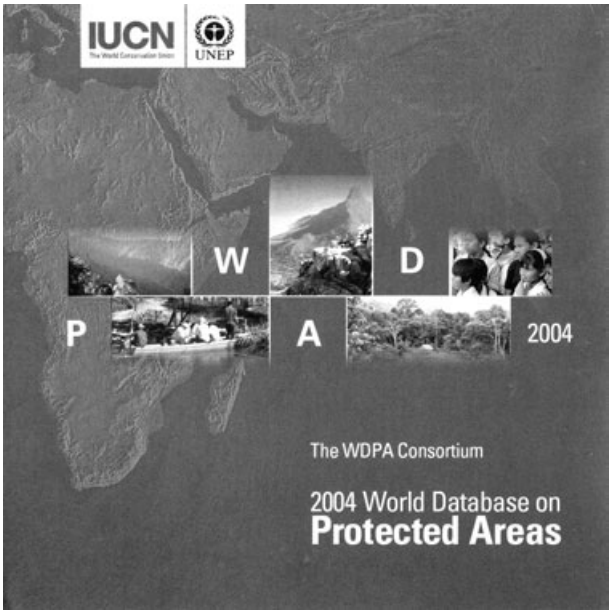
Data, information and knowledge describing the natural world is distributed worldwide in a bewildering array of formats. It exists in the form of huge specimen collections in the world's museums, herbaria, botanical gardens, zoos and aquaria. It is embedded in centuries of formal scientific publications held by the world's libraries. It exists in 'grey literature' – not formally published – by both governmental and non-governmental organizations. It exists in maps and images and recorded sounds. It exists in the form of indices such as Zoological Record (extending back to 1864). It exists in archives and collections of manuscript field and lab notes. And it exists in the observations and expertise, the experience-based knowledge, of scientists, conservationists and indigenous human cultures worldwide.

This universe of data, information and knowledge is weakly integrated[5] and efforts at integration are immediately confronted by a complex array of legal and cultural barriers to use, this cultural and legal matrix can pose serious impedance to our efforts to address the global environmental crisis.

More than ever before in human history, we have an exceptional opportunity to share our knowledge of nature in support of conservation. The convergent development of powerful technologies – computer hardware, software, networking (the Internet / the World Wide Web), imaging, digital documents, digital storage, among others – has meant that technology no longer need be a barrier to effective global communication (at least for those who can afford access). But as Professor Lawrence Lessig, of Stanford University Law School, has noted[6] there are other 'modalities of constraint' that operate to limit effective use of the Web – these constraints involve laws and policy, economic factors and perhaps most significantly cultural or normative factors. Put more simply, human beings may, for a variety of reasons, choose not to share resources even when they have access to a common global communications network and share a common vision and goals. For the global environmental conservation movement, the elimination of all barriers to effective cooperation and collaboration is critically important.

It has been my experience in a series of IUCN initiatives in the past decade that cultural factors – whether they operate at the level of individuals, social or cultural groups, professional societies, organizations, institutions, nations or international organizations – are actually the primary, most significant obstacles to effective partnerships in conservation. The perception that personal or collective interest is best served by controlling and restricting access and use of conservation data, information or knowledge defeats our common purpose – and effective use of data, information, expertise, knowledge and technology for research and education and applied conservation practice.

Most often there is a perceived advantage to controlling access to data, information or knowledge that is under proprietary control. Individuals may seek to advance themselves in order to secure jobs or promotions, reputations or professional stature. Individuals may also fear that recognition of their deserved priority of discovery will be appropriated without proper attribution or that the integrity of their works will be distorted. Professional societies may be dependent on information assets for revenue to sustain their membership or other activities. Non-governmental organizations may seek competitive advantage with funders – whether individual donors or



12

12. The Cd-Rom cover of World Database on Protected Areas 2004, prepared on behalf of the WDPA, which is the largest repository of global information on protected areas. See http://sea.unep-wcmc.org/wdbpa/download/wdpa2004/.

private foundations, governmental aid agencies or international programmes. Institutions may be under pressure to optimize every available source of revenue, at times even in disregard of the institutions' fundamental mission. Commercial publishers, given the proprietary incentive of 'perfect monopolies'[7] over scientific knowledge and driven by the profit motive, may impose unsustainable costs on users[8]. Governments may feel politically obliged to defend themselves against internal or external criticisms of their environmental policies. All of these factors (and others) may limit willingness to share.

There are, however, costs of restricting access to our information resources. The World Bank is perhaps the most prominent exemplar of this effect. Spurred by criticism of environmentally disastrous policy decisions – taken in apparent ignorance of on-the-ground environmental factors – the Bank recognized its absolute requirement for more fully developed sources of environmental knowledge. In fact, recognizing the importance of information resources, World Bank President James Wolfensohn, has proposed redefining the Bank as a 'knowledge bank'.[9]

But there is yet another and less obvious cost of restrictions on access to conservation knowledge. Effective sustainability depends on the full involvement of local peoples in the most critically threatened, biologically mega-diverse areas of the world. Without access to basic information and to interpretation of that information from the perspective of conservation, local peoples may not make balanced and informed judgments about their own resource use. The benefits of direct informed communication between peoples are also restricted. Each year millions of young people – particularly in emerging economies – reach maturity without access to essential knowledge of their national biodiversity, of their natural patrimony.

The framework for sharing: public domain and commons

In a letter written almost two hundred years ago, U.S. President Thomas Jefferson – author of the Declaration of Independence – proclaimed: 'The field of knowledge is the common property of all mankind'.[10]

This principle found embodiment in the Constitution of the United States, particularly in its provisions for copyrights and patents and their reversion to free public use after prescribed periods of time. These forms of 'intellectual property' are placed in the 'public domain' for use – including commercial use – by all. Some scholars have perceived in these provisions a fundamental source of the United States' great successes in technical and scientific innovation.

It is also the case that the ethos of science strongly supports open access to scientific data, information and knowledge. Sir Isaac Newton gave voice to this fundamental ethic of science when he wrote: 'If I have seen further it is by standing upon the shoulders of Giants.'[11] In 1942, R.K. Merton of Columbia University offered a more analytical expression of this ethos: 'The substantive findings of science are a product of social collaboration and are assigned to the community. They constitute a common heritage in which the equity of the individual producer is severely limited.'[12] But in

recent years, with intensified advocacy of proprietary control on knowledge[13] many owners of data, information and knowledge have become less willing to see their resources exploited or actually claimed by others. The public domain has ceased to be a fully trusted repository for the common good.

Placement of scientific data, information and knowledge into the public domain for free and open use by all, poses a dilemma – for it permits economic exploitation by commercial enterprises. And there is a strong and growing sensitivity about such development on the part of those who have historically lost economic or cultural control of their own resources. This concern has found focus in the World Intellectual Property Organization (WIPO),[14] in the ongoing evolution of the Convention on Biological Diversity,[15] the evolution of 'TRIPS'[16] agreements and in collective expressions of concern (such as the 2002 'Cancun Declaration').[17]

Proposed solutions

Concern for protection of the knowledge of indigenous peoples or of the national biodiversity patrimony of developing countries has led to a proposed alternative as a complement to the pure public domain. A 'knowledge commons' defines a 'zone of free and equitable use for data, information and knowledge' or a 'zone of fair use'. The model is an intermediate proposal for a conditional (or 'impure') domain of use compatible with the existing legal regime of intellectual property rights and with the global market-based economy. It is made possible by certain unique properties of digital resources. Digital resources are both non-rivalrous (of near zero cost for additional increments of use) and non-exclusive (of potentially universal benefit).[18] These special properties of the digital commons effectively defeat Hardin's arguments for the inevitability of the 'tragedy' of the commons.

The Conservation Commons Concept and IUCN's recent responses

The development of a 'Conservation Knowledge Commons'[19] (or more simply a 'Conservation Commons') is consistent with the spirit of the Universal Declaration on Human Rights[20] as well as the international Convention on Biological Diversity[21] – now ratified by virtually all countries in the world[22] (currently excepting the United States). And the commons model while making data, information and knowledge available for conservation, research and educational uses, fully protects the knowledge of indigenous peoples and the biodiversity patrimony of developing nations from commercial expropriation. We should stress that we do not believe that advocacy of a focused 'conservation commons' precludes larger and more inclusive development of a 'global science commons' or even of a 'global knowledge commons'; we believe that the 'conservation commons' represents an intermediate – immediately achievable – goal.

It is worth noting that since 1987 (at least) IUCN has routinely made its formal publications available through a commons-style permission statement printed on the page following the title page. This permission states: 'Reproduction of this publication for educational or other non-commercial purposes is authorized without permission from the copyright holder, provided the

source is cited and the copyright holder receives a copy of the reproduced material. Reproduction for resale or other commercial purposes is prohibited without prior written permission of the copyright holder.' But in the mid-1990s, seeking a more consciously strategic approach to sharing, IUCN – with significant support from the Center for Applied Biodiversity Sceince at Conservation International – formed BCIS (The Biodiversity Conservation Information System).[23] BCIS was a substantial and sustained effort to draw together international conservation NGOs and IUCN Commissions in consciously fostering partnership and collaborative sharing of data, information and knowledge. For a number of reasons, BCIS produced mixed results – it did succeed in building working relationships of trust among major conservation organizations but failed to evolve a stable, sustainable 'business model' for ongoing partnership. Nevertheless, it marked the first time that such a broad group of partners from the international conservation community had sought to create a common framework for sharing of data and information.

The global World Database on Protected Areas (WDPA) Consortium, formed in 2002, was a direct result of the BCIS partnership. The Consortium has evolved with a common mission to produce the World Database on Protected Areas.[24]

This initiative was a watershed development for major conservation organizations who, it seems fair to say, had often considered each other (at best) as 'friendly rivals', if not outright competitors. Within the WDPA Consortium framework, these major organizations agreed to share proprietary data for a common good and, with a landmark commitment by Dr. Mark Collins, Director of the UNEP World Conservation Monitoring Centre (in Cambridge, United Kingdom), the core WDPA dataset was placed in the public domain and released publicly at the World Parks Congress in Durban South Africa in 2003. A new version with substantial improvements was released at the Council of the Parties of the Convention on Biological Diversity in Kuala Lumpur in 2004. The benefits to the conservation community are yet to be fully measured but among the early results are:

- a critical review of the dataset by a far broader international community than ever before possible,
- dramatic improvements in both the quantity of records and the quality of records (and particularly the inclusion of GIS files for many of the protected areas represented),
- the possibility of performing global, regional, national or local scale analyses (for example, see the GAP analysis done at global scale for the World Parks Congress – http://www.conservation.org/xp/frontlines/species/strategy24-2.xml.

The WDPA Consortium prototype is important for at least two reasons:

First, operationally, it recognizes that no single member of the international conservation community is likely to be able to supply accurate, up-to-date information adequately at comprehensive global scale and that there are real benefits to collaborative approaches. This is particularly true in the Web environment where it is possible to involve a full community of conservation practitioners who are widely

distributed geographically and yet can contribute constructively to the compilation and review process. Secondly the decision to place the core dataset in the public domain reflects a realization that certain types of data are essential public goods that are the common heritage of all peoples. This recognition is consistent with an emerging international consensus that there are a range of public goods – particularly those concerning public health, environmental conservation and agriculture and specifically including scientific data, information, expertise, technology and knowledge that must be shared among all peoples.

The Conservation Commons: part of a global movement

Many individuals and institutions worldwide are contributing to a global commons. The 'open source' software movement, the Global Biodiversity Information Facility[25] (GBIF), the GenBank[26] initiative to share genetic sequence data, open access publishing initiatives like BioMedCentral,[27] Public Library of Science[28] and the self-archiving[29] movement in science – and many others – are all important contributors to this trend. UNESCO does the same in its respective fields of competence. IUCN has recently taken its next step towards building the global framework for conservation partnership. At a meeting in Switzerland in May 2004, attended by representatives of many sectors of the conservation community, a decision was taken to promote and develop the 'Conservation Knowledge Commons'. This initiative will be formally inaugurated at the World Conservation Congress[30] in Bangkok, Thailand in November 2004.

NOTES

1. The IUCN Mission: 'To influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable'. See: http://www.iucn.org/about/index.htm.

2. Garrett Hardin, 'The Tragedy of the Commons' *Science*, New Series, Vol. 162, No. 3859. (13Dec. 1968), pp. 1243–1248.

3. James Boyle, 'The second enclosure movement and the construction of the public domain.' *Law and Contemporary Problems*, Winter/Spring, 2003, vol 66:33–74.

4. For working definitions see: Tom Moritz, 'Building the Biodiversity Commons,' D-Lib Magazine, June 2002:http://www.dlib.org/dlib/june02/moritz/06moritz.html.

5. *The Role of Scientific and Technical Data and Information in the Public Domain: Proceedings of a Symposium*. Julie M. Esanu and Paul F. Uhlir, Eds. Steering Committee on the Role of Scientific and Technical Data and Information in the Public Domain Office of International Scientific and Technical Information Programs Board on International Scientific Organizations Policy and Global Affairs Division, National Research Council of the National Academies, p. 8.

6. Lessig, Lawrence, *Code and other laws of cyberspace*. NY, Basic Books, 1999, pp. 86–90.

7. Carl T. Bergstrom and Theodore C. Bergstrom. 'The costs and benefits of library site licenses to academic journals.' *Proceedings of the National Academies of Sciences*, 20 Jan. 2004, Vol. 101, No. 3: pp.897–898. [http://www.pnas.orgcgidoi10.1073pnas.0305628101].

8. Data from the Association for Research Libraries indicates that in the 1986–2002 time period the Consumer Price Index increased 64% while serial [journal] unit costs increased 227%. *ARL Statistics 2001–2002*. Association of Research Libraries, Washington, DC. http://www.arl.org/newsltr/218/costimpact.html; "…figures released by the largest publisher of scientific journals – Amsterdam-based Elsevier – help explain why many scientists and others are frustrated. Its 1,700 journals, which produce $1.6 billion in revenue, garner *a remarkable 30 percent profit margin*. [emphasis added] Rick Weiss, "A Fight for Free Access To Medical Research," *The Washington Post*, 08/05/2003 (Section: Nation, A01).

9. http://info.worldbank.org/etools/bSPAN/presentationView.asp?EID=311&PID=629.

10. Thomas Jefferson writing to Henry Dearborn (1807).

11. Letter to Robert Hooke, 5 February 1676.

12. Robert K. Merton, 'A Note on Science and Technology in a Democratic Order,' *Journal of Legal and Political Sociology*, Vol. 1, No. 1–2, (October, 1942), pp. 115–126.

13. SEE for example: Julian Birkinshaw and Tony Sheehan, 'Managing the Knowledge Life Cycle,' *MIT Sloan Management Review*, 44 (2) Fall 2002: 77.

14. http://www.wipo.int/.

15. *Access and benefit-sharing as related to genetic resources. Progress report on the implementation of decisions V/26 A-C*, CONFERENCE OF THE PARTIES TO THE CONVENTION ON BIOLOGICAL DIVERSITY Sixth meeting The Hague, 7–19 April 2002. UNEP/CBD/COP/6/19, 9 January 2002. http://www.biodiv.org/doc/meetings/cop/cop-06/official/cop-06-19-en.pdf.

16. http://www.wto.org/english/tratop_e/trips_e/trips_e.htm.

17. http://www.semarnat.gob.mx/internacionales/reunion/doc/CANCUN-DECLARATION.doc.

18. Reichman, Jerome H. and Paul F. *Uhlir, Promoting Public Good Uses of Scientific Data: A Contractually Reconstructed Commons for Science and Innovation*. http://www.law.duke.edu/pd/papers/ReichmanandUhlir.pdf.

19. Gladys Cotter, 'Biodiversity Informatics Infrastructure: an Information Commons for the Biodiversity Community,' 26th International Conference on Very Large Databases, September 2000. http://www.vldb.org/archive/vldb2000/presentations/cotter.pdf; Thomas Moritz, 'Building the Biodiversity Commons', *D-Lib Magazine*, June 2002 , v8:6. http://www.dlib.org/dlib/june02/moritz/06moritz.html; Jonathan Adams, Frank Biasi, Colin Bibby, Martin Sneary, 'The Biodiversity Knowledge Commons,' *Conservation in Practice*, Fall 2002, v.3:4.

20. Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers. [emphasis added] http://www.un.org/Overview/rights.html.

21. http://www.biodiv.org/convention/articles.asp See for example Article 17: 'Exchange of Information' Section 2: 'Such exchange of information shall include exchange of results of technical, scientific and socio-economic research, as well as information on training and surveying programmes, specialized knowledge, indigenous and traditional knowledge as such and in combination with the technologies referred to in Article 16, paragraph 1. It shall also, where feasible, include repatriation of information.' (emphasis added)

22. http://www.biodiv.org/world/parties.asp?lg=0.

23. http://www.biodiversity.org/simplify/ev.php.

24. See for example: http://maps.geog.umd.edu/WDPA/WDPA%20info/WDPA%20Consortium.html.

25. http://www.gbif.org/.

26. http://www.ncbi.nlm.nih.gov/Genbank/.

27. http://www.biomedcentral.com/.

28. http://www.publiclibraryofscience.org/.

29. http://www.eprints.org/self-faq/.

30. http://www.iucn.org/congress/index.cfm.