

Research unleashed?

The CODESRIA-ASC Conference Series 2006: Electronic Publishing and Dissemination.

Bridging the North-South Divide in Scholarly Communication on Africa. Threats and Opportunities in the Digital era.

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Open Access stage 1 and stage 2

The international open access movement has reached a new level. In open access stage 1 we see a focus on technical issues related to open access and on gaining content for repositories. The words “open access” are important drivers in this stage. In stage 1, as Alma Swan [2006] points out, we see new technologies applied to existing processes (i.e. more of the same, faster and cheaper).

In stage 2 new technologies are integrated into existing processes (i.e. improve existing systems).[Swan, 2006] In stage 2 we see a focus on services based on repositories and the words “open access” have become less effective. Stage 2, I claim, is all about supporting scholarly communication and using technical infrastructure to be more efficient.

Both in the CODESRIA-ASC conference series title and its theme, the words “open access” do not appear. Indeed, we are focussing on scholarly communication itself.

Some of the new promising evolutions taking place in the open access stage 2 setting:

- Text mining of research for better search results as well as fact finding [Wilbanks, 2006];
- e-science where research and teaching meet [Lyon, 2003] and
- Webometrics / impact analysis¹

In this paper we will be focussing on the latter.

The Digital Divide: Two Flows

The divide between North and South is a recognized fact [Van der Werf, 2006] and consists of two barriers. One from South to North and one from North to South.

The South-North Divide: The *Matthew Effect*

Terms like “the Matthew effect”[Merton, 1968] and “The Lost Science” [Gibbs, 1995] are used to characterize the South-North divide.

Merton coins the term “the Matthew effect” [1968] inspired by Matthew XXV:29:

For unto every one that hath shall be given, and he shall have abundance: but from him that hath not shall be taken away even that which he hath.

He holds this effect, under certain conditions², to be true for misallocation of credit for individual researchers for their scientific work:

(...) the Matthew effect consists in the accruing of greater increments of recognition for particular scientific contributions to scientists of considerable repute and the withholding of such recognition from scientists who have not yet made their mark. [Merton, 1968]

¹ See work done by Stevan Harnad, Tim Brody et al [<http://www.citebase.org/>] and Johan Bollen: *A framework for assessing impact of units of scholarly communication based on OAI-PMH harvesting of usage information*. URL:

<http://indico.cern.ch/materialDisplay.py?contribId=48&sessionId=1&materialId=slides&confId=0514>

² One condition being that is research is done in a research group (collaborative work) and the most rewarded researcher gets all the credits. Another condition being ‘independent multiple discoveries’: “When approximately the same ideas or findings are independently communicated by a scientist of great repute and by one not yet widely known, it is the first (...) who ordinarily receives prime recognition.” [Merton, 1968, p 58].

as well as for science conceived as a communication system:

(...) a scientific contribution will have greater visibility in the community of scientists when it is introduced by a scientist of high rank than when it is introduced by one who has not yet made his mark. [Merton, 1968]

and even for the allocation of scientific resources:

(...) the rich get richer at a rate that makes the poor become relatively poorer. (...) Thus, centres of demonstrated scientific excellence are allocated far larger resources for investigation than centres which have yet to make their mark. [Merton, 1968]

All kinds of evidence is displayed by Merton to support these findings.

How does this relate to the South-North divide?

Only a small portion of the world's scientific and scholarly literature is published in high-ranking journals and indexed in key research tools and emanates from the South. A series of barriers is documented that maintains the imbalance in the South-North flow of information. [Britz and Lor, 2003] On top of these barriers the Matthew effect kicks in, as Jacques Gaillard concluded after studying the publications of 207 scientists working in Asia, Latin America and Africa:

(...) scientists in developing countries "are caught in an especially vicious circle, because even when their findings are published in highly influential, prestigious scientific journals, they are (...) far less often cited than writings by their colleagues from [industrial nations]." [Gibbs, 1995]

What can be learned from SciELO³ with regards to these questions? Can the South-North imbalance be changed and if so how and why?

The South-North Divide: SciELO

The **Scientific Electronic Library On Line** [SciELO] is designed to meet the needs of researchers in developing nations in Latin America and the Caribbean. Articles are published in Spanish, Portuguese, with English abstracts, or in English only. Current collections are about Brazil, Chile, Cuba, and Spain, with another devoted to Public Health.⁴ SciELO is open access from 1997 and provides access to 150 peer reviewed journals (2006).

SciELO invested in visibility and availability to promote their publications to South and North. Help came from: PubMed (1999), the WOS (2000), DOAJ and especially Google (2005) – see the article downloads from SciELO below [Greene, 2006]. Most downloads come from developing countries.

year	Developed		Developing		Others	
2002	27,853	1%	1,488,399	4%	203,391	1%
2003	167,638	5%	3,846,977	9%	939,02	4%
2004	1,021,904	32%	12,204,178	29%	9,237,110	35%
2005	1,958,149	62%	24,405,696	58%	15,706,242	60%

³ See: www.scielo.br

⁴ See: http://www.idrc.ca/en/ev-60862-201-1-DO_TOPIC.html

Indexing by PubMed and Web of Science made 35 out of 150 journals truly international. All articles have an abstract in English for indexing purposes. Also about 50% of the articles are in English. Citations increased as well – see below. [Greene, 2006] - it is implied as a result of the articles visibility by the allies: PubMed and Web of Science.

Rank	title	total cites		Δ	% increase
		1998	2004		
1	BRAZ J MED BIOL RES	1008	2043	1035	103
2	MEM I OSWALDO CRUZ	937	1928	991	106
3	J BRAZIL CHEM SOC	187	790	603	322
4	PESQUI AGROPECU BRAS	367	704	337	92
5	REV SAUDE PUBL	169	474	305	180
6	BRAZ ARCH BIOL TECHN	1	87	86	-
7	DADOS-REV CIENC SOC	36	44	8	22

Finally the impact factor⁵ of some journals increased as well [Greene, 2006]:

Rank	title	Impact Factor		Δ	% Increase
		1998	2004		
1	J BRAZIL CHEM SOC	0,472	1,161	0,689	146
2	BRAZ J MED BIOL RES	0,439	0,824	0,385	88
3	MEM I OSWALDO CRUZ	0,474	0,740	0,266	56
4	DADOS-REV CIENC SOC	0,167	0,370	0,203	122
5	BRAZ ARCH BIOL TECHN	0,000	0,143	0,143	-
6	REV SAUDE PUBL	0,134	0,235	0,101	75
7	PESQUI AGROPECU BRAS	0,051	0,167	0,116	227

The findings above, combined with data on: Cited half life – ISI, Immediacy data – ISI, Ranking – ISI, lead Greene to draw four conclusions [Greene, 2006] of which I will present the first two:

⁵ See also: E. Garfield, *The Agony and the Ecstasy—The History and Meaning of the Journal Impact Factor*. 2005
 URL: <http://garfield.library.upenn.edu/papers/jifchicago2005.pdf>

1. SciELO OPEN ACCESS increased the readership and citations to scientific journals published in Brazil.
2. Until now visits to and downloads from SciELO are to a large extent Brazilian and show a definite bias to countries who speak Latin languages.

SciELO thus holds a promise for peer reviewed open access journals, indexed by key research tools and visible in Google: articles will be read and cited more.

The North-South Divide

Will the North-South perspective show different results with regards to the usage and citation effect of open access?

The Open Citation Project - Reference Linking and Citation Analysis for Open Archives has generously generated a large bibliography⁶ listing publications that support the claims that in general (1) open access has a positive effect on citations, (2) as well as downloads (hits) do. The two effects are described in more detail in [[Lawrence, 2001] and [Harnad and Brody, 2004]] and [Brody and Harnad, 2006].

Furthermore, Greene didn't focus on a Journal's Impact Factor alone, to establish the effect of SciELO open access. Brody and Harnad likewise encourage to take all relevant factors into consideration to determine a paper's impact, of which the paper's citation rate is just one. In www.citebase.org, a search and citation analysis tool by Brody and Harnad, one finds an impressive demonstration tool for the theories proclaimed.

⁶ See: <http://opcit.eprints.org/oacitation-biblio.html>

The North-South Divide: Connecting Africa

Analysis of usage statistics with regards to the open access publications of the African Studies Centre⁷ in Leiden (ASC), available from the Leiden University institutional repository, should give us some indication on how effective the information flow is from North to South for these publications.

Two collections are relevant for the African Studies Centre in Leiden: The ASC-collection, which consists of 198 publications and the collection Africanists at Leiden University, which consists of 249 publications.

Some important differences between SciELO and Connecting Africa collections:

	SciELO	Connecting Africa
Publication type	Peer reviewed articles	Peer reviewed articles, newsletters, chapters, monographs
Publication type	Journals with an impact factor	No journals
Publication type	-	Collections of publications of selected authors
Open access	Fully	Partially

Crunching numbers

Downloads ASC collection July 2006				
rank	url	number/ perc	author	title
1.	http://hdl.handle.net/1887/473	86 (0.11)	African Studies Centre, Leiden	African Studies Abstracts Online: number 3, 2003
2.	http://hdl.handle.net/1887/3484	35 (0.04)	Abbink, G.J.	Identiteit, strijd en continuïteit in trans-modern Afrika : een kritisch-realistische benadering
3.	http://hdl.handle.net/1887/3483	34 (0.04)	Abbink, G.J.	Reconstructing Southern Sudan in the post-war era: Challenges and prospects of 'Quick Impact Programmes'
4.	http://hdl.handle.net/1887/3016	28 (0.04)	African Studies Centre, Leiden	African Studies Abstracts Online: number 11, 2005
5.	http://hdl.handle.net/1887/475	28 (0.04)	African Studies Centre, Leiden	African Studies Abstracts Online: number 7, 2004
6.	http://hdl.handle.net/1887/485	24 (0.03)	Vries, Jacqueline de	Catholic mission, colonial government and indigenous response in Kom (Cameroon)
7.	http://hdl.handle.net/1887/425	23 (0.03)	Mung'ong'o, C.G.	Coming full circle : agriculture, non-farm activities and the resurgence of out-migration in Njombe district, Tanzania
8.	http://hdl.handle.net/1887/483	22 (0.03)	African Studies Centre 1Leiden	Nutrition survey in Murang'a District, Kenya: Part 2: Nutritional cognition and the food consumption of pre-school children
9.	http://hdl.handle.net/1887/486	22 (0.03)	Kariuki, S.M.	Creating the black commercial farmers in South Africa
10.	http://hdl.handle.net/1887/484	22 (0.03)	African Studies Centre, Leiden	African historiography written by Africans, 1955-1973 : the Nigerian case
11.	http://hdl.handle.net/1887/488	22 (0.03)	Kariuki, S.M.	Failing to learn from failed programmes? South Africa's Communal land Rights Act (CLRA 2004)
12.	http://hdl.handle.net/1887/487	21 (0.03)	African Studies Centre, Leiden	African Studies Abstracts Online: number 6, 2004
13.	http://hdl.handle.net/1887/387	20 (0.03)	Foeken, D.W.J.	Urban agriculture in Africa : a bibliographical survey
14.	http://hdl.handle.net/1887/471	20 (0.03)	African Studies Centre, Leiden	African Studies Abstracts Online: number 1, 2003
15.	http://hdl.handle.net/1887/386	19 (0.02)	Klaver, W.	Crop cultivation in Nakuru town, Kenya : practice and potential
16.	http://hdl.handle.net/1887/456	19 (0.02)	Laan, E.Ch.W. van der	Irriguer pour subsister : une analyse sociologique de l'agriculture irriguée des Halpulaar de la rive gauche du fleuve Sénégal
17.	http://hdl.handle.net/1887/403	19 (0.02)	Kessel, I. van	Aspects of the apartheid state : a bibliographical survey
18.	http://hdl.handle.net/1887/402	19 (0.02)	Steenbergen, W. van	Nutrition survey in Murang'a District, Kenya: Part 1: Relations between ecology, economic and social conditions, and nutritional state of pre-school children

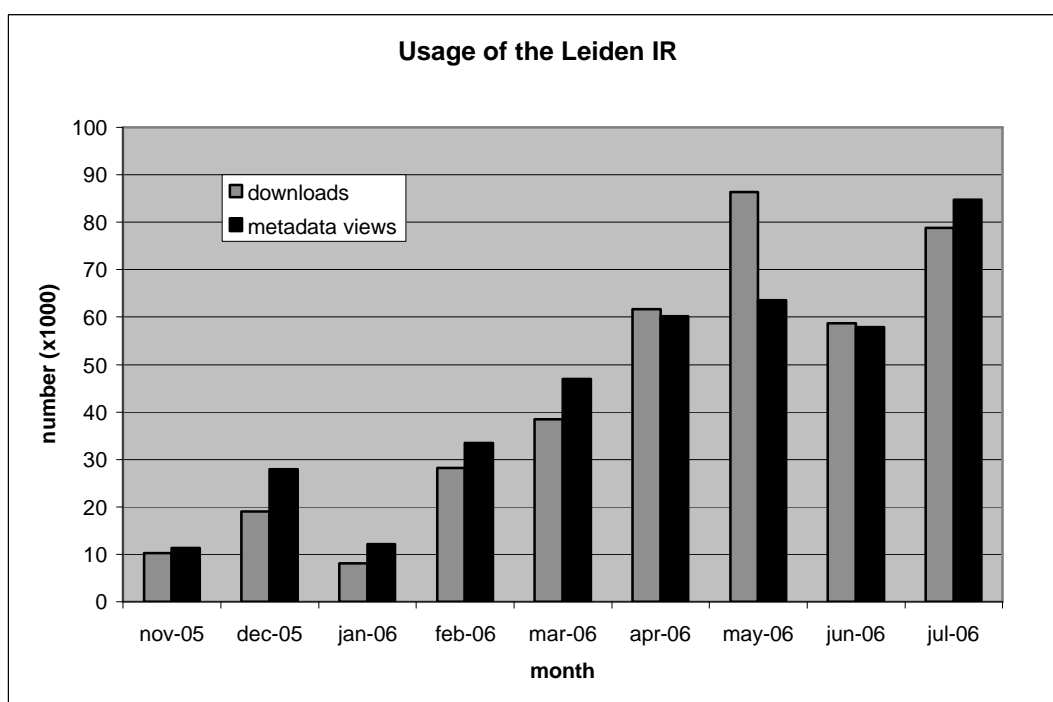
⁷ See: <http://www.ascleiden.nl/>

19.	http://hdl.handle.net/1887/376	19 (0.02)	Abbink, G.J.	The total Somali clan genealogy : a preliminary sketch
20.	http://hdl.handle.net/1887/379	18 (0.02)	Bryceson, D.F.	African rural labour, income diversification and livelihood approaches : a long-term development perspective

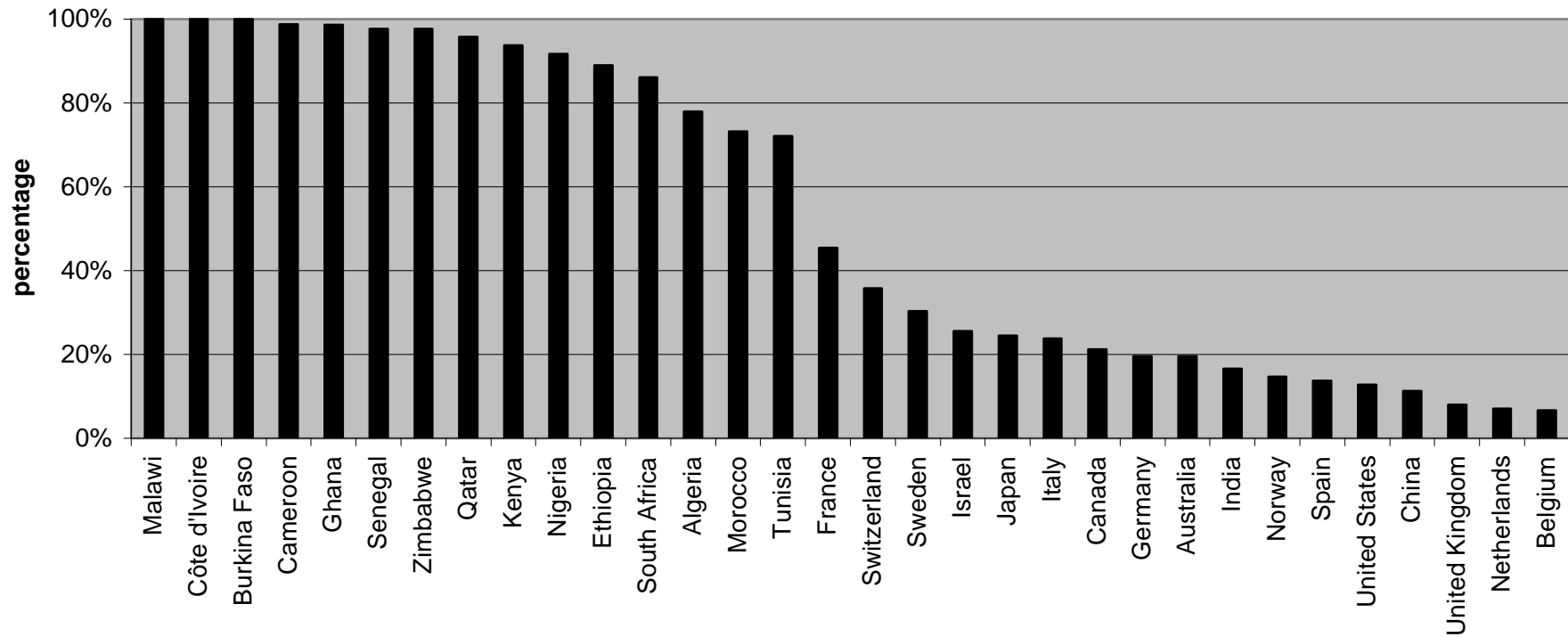
Downloads collection Africanists at Leiden University July 2006				
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rank	url	number/ perc	author	title
1.	http://hdl.handle.net/1887/4187	70 (0.09)	Ross, R.J.	Cape of Torments: Slavery and Resistance in South Africa,
2.	http://hdl.handle.net/1887/4293	29 (0.04)	Kraamer, M.	Colourful Changes : two hundred years of design and social history in the hand-woven textiles of the Ewe-speaking regions of Ghana and Togo (1800-2000)
3.	http://hdl.handle.net/1887/4293	28 (0.04)	Kraamer, M.	Colourful Changes : two hundred years of design and social history in the hand-woven textiles of the Ewe-speaking regions of Ghana and Togo (1800-2000)
4.	http://hdl.handle.net/1887/4148	27 (0.03)	Bezzazi, A.	Berber sprookjes uit Noord-Marokko
5.	http://hdl.handle.net/1887/2761	25 (0.03)	Tamboura, B.	L'Épopée de Sunjara, d'après Lansine Diabate de Kela
6.	http://hdl.handle.net/1887/4245	25 (0.03)	Elbourne, E.	Combatting Spiritual and Social Bondage: early missions in the Cape Colony
7.	http://hdl.handle.net/1887/2760	24 (0.03)	Tamboura, B.	Het Sunjata-Epos, zoals vertaald in Kela (Mali)
8.	http://hdl.handle.net/1887/4241	23 (0.03)	Ross, R.J.	Abolitionism, the Batavian Republic, the British and the Cape Colony
9.	http://hdl.handle.net/1887/2778	22 (0.03)	Jansen, J.A.M.M.	History, Oral Transmission and Structure in Ibn Khaldun's Chronology of Mali Rulers
10.	http://hdl.handle.net/1887/4111	21 (0.03)	Santen, J.C.M. van	Basisartikel Feministische Antropologie (twee delen)
11.	http://hdl.handle.net/1887/4226	21 (0.03)	Ross, R.J.	The Cape of Good Hope and the World Economy, 1652 - 1835
12.	http://hdl.handle.net/1887/4293	18 (0.02)	Kraamer, M.	Colourful Changes : two hundred years of design and social history in the hand-woven textiles of the Ewe-speaking regions of Ghana and Togo (1800-2000)
13.	http://hdl.handle.net/1887/4157	18 (0.02)	Kossmann, M.G.	La conjugaison des verbes CC à voyelle alternante en bebère
14.	http://hdl.handle.net/1887/2784	18 (0.02)	Zobel, C.	Kinship as Political Discourse: the representation of Harmony and Change in Mande
15.	http://hdl.handle.net/1887/4151	17 (0.02)	Kossmann, M.G.	Les premiers emprunts arabes en berbère
16.	http://hdl.handle.net/1887/2730	17 (0.02)	Hulst, H. van der	Transparant consonants
17.	http://hdl.handle.net/1887/4229	17 (0.02)	Ross, R.J.	The Top Hat in South African history: the changing significance of an article of material culture
18.	http://hdl.handle.net/1887/4155	17 (0.02)	Kossmann, M.G.	La spirantisation dans les parlers Zénètes
19.	http://hdl.handle.net/1887/4153	16 (0.02)	Kossmann, M.G.	Les verbes en i final en zénète
20.	http://hdl.handle.net/1887/2736	15 (0.02)	Mous, M.P.G.M.	The position of the Object in Tunen

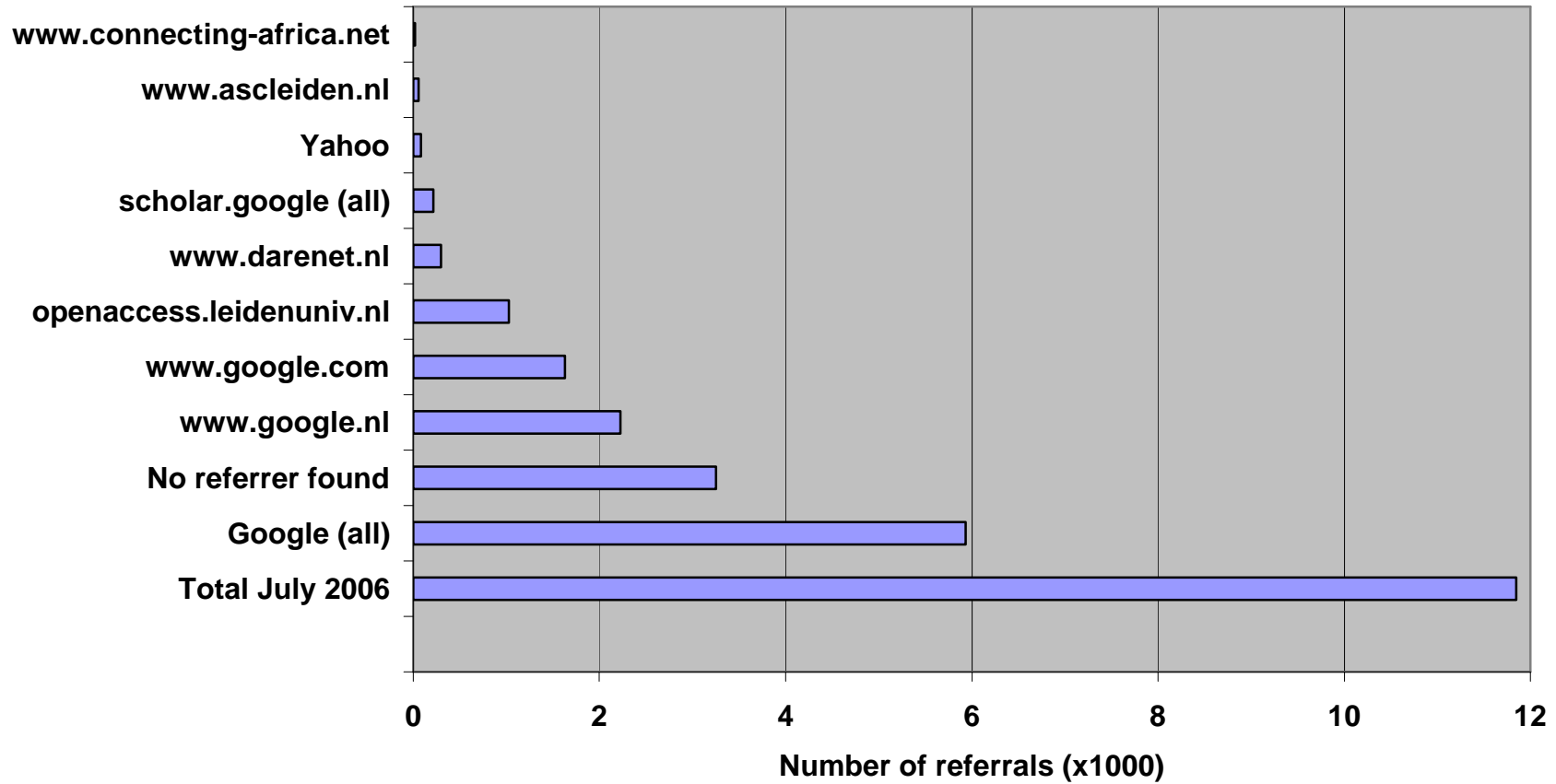
Downloads all collections IR Leiden University July 2006				
rank	url	number/ perc	author	title
1.	http://hdl.handle.net/1887/1211	910 (1.16)	Schomerus, H.	Andreev levels in a single-channel conductor
2.	http://hdl.handle.net/1887/4381	290 (0.37)	Jungmann, N.	De Wsnp : bedoelde en onbedoelde effecten op het minnelijk traject
3.	http://hdl.handle.net/1887/602	220 (0.28)	Boot, G.C.	Arbeidsrechtelijke bescherming
4.	http://hdl.handle.net/1887/602	193 (0.25)	Boot, G.C.	Arbeidsrechtelijke bescherming
5.	http://hdl.handle.net/1887/1023	111 (0.14)	Jonge, H.J. de	Erasmus and the Comma Johanneum
6.	http://hdl.handle.net/1887/556	105 (0.13)	Kapiteijn, Ellen	Advances in treatment and new insights in molecular biology of rectal cancer
7.	http://hdl.handle.net/1887/1853	101 (0.13)	Kortlandt, F.H.H.	l.-E. palatovelars before resonants in Balto-Slavic. Recent developments in historical phonology
8.	http://hdl.handle.net/1887/3749	99 (0.13)	Vermeulen, Eric	Physiotherapeutic treatment and clinical evaluation of shoulder disorders
9.	http://hdl.handle.net/1887/2328	90 (0.11)	IJzendoorn, M.H. van	Adult attachment representations, parental responsiveness, and infant attachment: a meta-analysis on the predictive validity of the adult attachment interview
10.	http://hdl.handle.net/1887/4329	88 (0.11)	Punselie, Elisabeth Charlotte Christina	Voor een pleegkind met recht een toekomst : Een studie naar de (rechts)positie van (pleeg)ouders en (pleeg)kinderen in geval van langdurige uithuisplaatsing
11.	http://hdl.handle.net/1887/473	86 (0.11)	African Studies Centre, Leiden	African Studies Abstracts Online: number 3, 2003
12.	http://hdl.handle.net/1887/4426	85 (0.11)	Jongbloed, Monica Reina Maria	Development of the cardiac conduction system and cardiac anatomy in relation to genesis and treatment of arrhythmias
13.	http://hdl.handle.net/1887/4411	82 (0.10)	Graaf, Tycho de	Exoneraties in (ICT-)contracten tussen professionele partijen
14.	http://hdl.handle.net/1887/645	76 (0.10)	Daalder, E.J.	Toegang tot overheidsinformatie. Het grensvlak tussen openbaarheid en vertrouwelijkheid.
15.	http://hdl.handle.net/1887/4423	75 (0.10)	Bosch, Johannes Gijsbertus	Automated contour detection in echocardiographic images
16.	http://hdl.handle.net/1887/4187	70 (0.09)	Ross, R.J.	Cape of Torments: Slavery and Resistance in South Africa,
17.	http://hdl.handle.net/1887/3557	70 (0.09)	Gaalman, A.A.B.	Arbeidsrecht
18.	http://hdl.handle.net/1887/516	68 (0.09)	Dhondt, Steven	Systemische netwerken van organisaties
19.	http://hdl.handle.net/1887/4427	67 (0.09)	Fa-Si-Oen, Patrick Regnier	Mechanical bowel preparation in elective open colon surgery
20.	http://hdl.handle.net/1887/4426	67 (0.09)	Voermans, W.J.M.	Toedeling van bevoegdheid



Number of ASC downloads as percentage of ASC+OAL downloads
for countries with >30 ASC downloads (Jan-Jun 2006)



Referrers to Leiden University IR in July 2006



From the data above we may conclude that:

1. Usage (downloads) from the Leiden University IR is steadily growing.
2. Publications from the collections relevant to the ASC show up in the monthly top 20 downloads for the whole IR.
3. The downloads from the collections relevant to the ASC mainly come from African countries indeed
4. Google is the largest referrer to the publications from the collections relevant to the ASC

Connecting Africa⁸ may not be the largest referrer to the publications from the collections relevant to the ASC, but I would dare to formulate the following hypothesis. Connecting Africa is a platform for Africanists around the world: as such it serves as a hub for the Africanist community. As such it is the human interface that does bridge the North-South divide.

Work to be done

The hypothesis formulated above should be tested.

Comparing downloads to citation impact would be one of the next steps. Another one would be to set up a system for registering citations to books or book chapters, currently nowhere registered, in order to analyse impact of open access on material other than articles. One last thing would be to compare these data to collections alike and draw some conclusions.

Further work will also lead on some point or other to open access stage 3, where we infuse and diffuse new technologies to create new processes with regards to scholarly communication.

Conclusions

Connecting Africa is a hub for the Africanist community around the world. The open access available publications it provides access to are downloaded dozens of times a month individually. As such it is to be expected to facilitate scholarly communication in African Studies and, to my mind, is an example of open access stage 2.

The South- North divide as seen in the case of SciELO indicates that open access indeed does have an impact on usage of and citations to the oa publications. Also in the North-South perspective the same effects are to be found. Based on these examples one could hold that open access is a means to bridging the divide between North and South. It needs allies like Google and key research tools that make publications visible and available. Whether visibility and availability will diminish the Matthew effect remains to be seen.

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URL: http://www.lub.lu.se/ncsc2006/presentations/wilbanks_pres.pdf

Liz Lyon: *eBank UK: Building the links between research data, scholarly communication and learning*, containing the famous *Scholarly Knowledge Cycle* diagram.

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