

Global Citation Patterns of Open Access Communication Studies Journals: Pushing Beyond the *Social Science Citation Index*

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Connectivity and citations, as used by a large number of scholars in different fields, are a common measure of the health of a discipline. This paper shows the citation patterns for a multinational sample of open access journals in Communication Studies. Their citations are similar to those of the main communication journals, but with more international citations. Principal component analysis and visual network analysis are used to reveal geolinguistic clusters. Direct numerical comparison to the 2007 *Journal Citation Reports (JCR)* is also used. Differences in the citation patterns are attributable to the international nature of the sampled journals, not to their open access status, with only a very small amount of error, most likely coming from the *JCR*.

Open access journals are an up and coming form of publication, but their citation patterns have not been explored. International journals are also growing more numerous in the Communication Studies field, and they are similarly in need of greater inspection. Many international journals are also open access, and the reverse is true as well; thus it is possible and, indeed, optimal to study the citation patterns of both simultaneously. An understanding of how these journals fit in the larger context of the field's academic conversation is of vital importance, as it maps and reveals the health of communication studies in terms of journal connections.

Communication Studies is a field that is reflexive, with the occasional full journal issue that examines the state of the discipline, such as *Communication Research*, 16(5) in 1989; and the *Journal of Communication*, 33(3) in 1983, 43(4) in 1993, and 58(4) in 2008. Studies of connectivity through publications can be used, essentially, as a measure of the health of a field (Herbst, 2008; Masip, 2005; Park & Leydesdorff, 2009). Much publication research focuses on citation patterns, which can reveal journal clustering, although there are many different types of data one can extract from journal articles.

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Communication Studies strives to study connections, such as those indicated by citations. Are there connections between journals from different parts of the world and between those that use different languages, or are we still disconnected, despite the Internet, international conferences, and open access journals from different parts of the world? Communication Studies journals that are open access (available for free over the Internet), even from a multinational sample, should have a citation pattern similar to non-open access Communication Studies journals. If the sample does have a citation pattern different from the more traditional journals in the field, this would indicate a lack of connectedness within the field, and such a disconnection would be problematic. It would show fractures in the field.

This study seeks to examine three issues: Do open access journals in Communication Studies have citation patterns that are similar to the mainstream Communication Studies journals? If the citation patterns reveal clustering, is this clustering a result of linguistic or geopolitical factors? If there are differences between the data generated by the study sample and more mainstream journal citation data, what are the reasons for those differences?

In order to study these questions, 2,776 citations from 305 articles were collected from a multinational sample of 17 open access communication journals. The sampled articles were published over three years, and they cited more than 1,000 journals. The data was analyzed primarily with a factor analysis. Results were expected to reveal that these journals showed geolinguistic clustering, but that their overall citation pattern would be similar to that of traditional journals in the field. If the journals in the study do not have the same citation pattern as the rest of the field's journals, then they may either be problematically disconnected from the field or, perhaps, they may be forming a new cluster within communication studies. Given that the main difference is publication method, the patterns should be the same.

Literature Review

The health of a field is something that has been linked to its relevance and connectedness across different types of items, such as its own subfields, methods, and disciplines (e.g., all of the *Journal of Communication*, 58[4]). Craig (2008) focused on how conversation can define a discipline. If we take his argument forward a step, this conversation can be studied by who is addressing whom via citations. Craig (1999) has also bemoaned the lack of a wider conversation, in terms of sub-field cross-citations, in Communication Studies, as well as that, at the time, such a narrowed conversation indicated that Communication Studies was not yet a field. Noyons, Moed, and Luwel (1999) have studied the use of evaluative bibliometric analysis to determine the research impact of scientific institutes, paralleling its use in studying disciplines and drawing on the tradition of using it to assess "the research performance of countries, universities, departments or persons" (p. 115).

Rogers and Chaffee (1993) discussed the tensions in the field between overall convergence and divergence. Citations can be used to study whether a field is converging or diverging. It is clear that citation data can reveal different types of connectivity, and thus that it can also reflect the health of the field (Lauf, 2005; Leydesdorff & Park, 2006; Leydesdorff & Probst, in press; Riecken, 1980; So, 1988). Investigating the connectivity of open access journals in Communication Studies via their citation patterns

is thus clearly an important step that can reveal not only the health of these journals as a set, but also that of the field as a whole.

Connectedness across language and nation is another important issue that can be studied with citation analysis, and it also relates to the health of a discipline in terms of its international strength. Linguistic clusters of journals have been found by researchers, such as Ingwersen, Larsen, and Noyons (2001), who studied Nordic- and English-language social science journals, finding English-language journal clustering and slight Nordic clustering using the 1999 National Science Indicators data from ISI. The English language journals cited other English language journals, but Nordic journals cited each other less frequently, indicating less geolinguistic cohesion. English language scholars tend to cite English language sources almost exclusively (Yitzhaki, 1998).

Schönbach and Lauf (2006) studied international and English-language journals and the positioning, in contrast, of national non-English journals, focusing on the German journal *Publizistik*. They found that *Publizistik* became more national over the time period, probably due in part to the greater number of international journals. This suggests that German scholars were publishing their international work in English-language journals and their national, German work in German-language journals. The ease of communication flows provided by the Internet could help overcome this problem (Masip, 2005), although there are still the issues of language and translation.

The number of international journals is increasing, although they all use English, and the majority of highly-ranked journals in Communication Studies are most likely dominated by American authors (Lauf, 2005). Park and Leydesdorff (2009) also found the same U.S.-centric focus at the journal level, saying, "communication studies are dominated by American journals" (p. 1). Schejter et al. (2008) found that, while comparative (international) communication research increased between 1982 and 2007 in Communication Studies journals, the focus of such studies was primarily on Western nations, which would most likely cite Western sources.

Park and Leydesdorff (2009) found weak and unidirectional ties between European or international communication journals and American ones. For instance, whereas *Javnost-The Public*, a European journal from Slovenia that bills itself as an international journal, cited 36 papers in a network centered on the *Journal of Communication*, none of those journals ever cited *Javnost* in the sample period. They also found that this network cited the *European Journal of Communication (EJoC)*¹ infrequently. In terms of self-citations, *Javnost* and the *EJoC* had low self-citation rates relative to the American journals, further indicating their peripheral nature in this citation network.

Many of the newer or international journals must be studied with data from newer or international sources, such as the Internet. Bennett and Iyengar (2008) used a rather imaginative approach to measure the impact and longevity of research traditions through citations. They used the depth of Google Scholar's "cited by" feature as a general guide when discussing trends in political

¹ Journal title abbreviations are heavily used throughout this paper, but are not always explained to conserve space. Communication scholars should be able to determine the abbreviations.

communication. Meho and Yang (2007) also used Google Scholar for citation information, comparing it to the *Web of Science* citation information and Elsevier's *Scopus*; like other studies, they found problems with the ISI information.

Bibliometric Data

The ISI data is one of the most popular datasets for bibliometric work. Rice, Borgman, Bednarski, and Hart (1989) stated that ISI data is used so often for citation studies that it "represents a legitimate 'standard'" (p. 264). ISI is owned by Thomson Reuters, which makes available the citation information in both the *Sciences Citation Index (SCI)* and the *Social Sciences Citation Index (SSCI)*. Thomson Reuters also publishes the *Journal Citation Reports (JCR)*, and the data is available through the *Web of Science*.

Lauf (2005) found little work on the international makeup of Communication Studies using the *SSCI*. As both he and Funkhouser (1996) have noted, the *SSCI* is not appropriate for comparative work due to its Western, English-language focus. Van Leeuwen, Moed, Tijssen, Visser, and Van Raan (2001) found the lack of non-English coverage in the *SCI* an impediment to accurate measurement of journal impacts. They found a substantial decrease in the overall percentage of non-English language journals covered in the *SCI* during their study period, from 1980 to 1998. Thomson Reuters has somewhat sought to address this issue by the addition in 2008 of 700 "regional" journals to the *Web of Science* (it is not particularly clear what they mean by "regional"). However, this may not address the English-language problem, as two of the selection criteria are that the journals must "have English-language bibliographic information (title, abstract, keywords), and cited references must be in the Roman alphabet" (Thomson Reuters, 2008).

Leydesdorff and Park (2006) refer to the ISI data as a "mixed bag" (p. 20). Feeley (2008) reviewed journal impact ratings of communication journals and found the *SSCI* coverage lacking. Rice et al. (1989) discussed many problematic issues with citation studies using *SSCI* data and found that citation studies which use the *SSCI* may suffer from up to a 25% error rate in terms of missing citations, as did Funkhouser (1996). Meho and Spurgin (2005) found that any one publication database was not comprehensive enough for accurate publication measures. Rice, Chapin, Pressman, Park, and Funkhouser (1996) stated that errors can be mitigated by the large amount of data and overall patterns, although this may not be true for errors of omission.

Others have pointed out a variety of problems with ISI's lists, including Reardon and Rogers (1988) and Rice et al. (1989). Rice, Borgman, and Reeves (1988) point out how, in terms of Communication Studies, "some of the journals fall outside common definitions of the field, while other journals that might be included are either assigned to other fields by the *SSCI* or not covered at all by *SSCI*" (p. 261). So (1988) dropped 10 out of 20 journals that were categorized as communication in the *JCR* for his study, stating plainly, "they should not be categorized as communication journals" (p. 240). In fairness, if we, as communication scholars, cannot define our field, ISI will certainly encounter difficulties. This research does not seek to arrive at the ultimate definition of the field through a listing of journals, but it does take an a priori concept of journals in the field and works from there.

Errors aside, the *SSCI* simply does not include enough non-American journals for comparative work, and within Communication Studies, it does not include any that do not publish in English.² The *JCR* does list journals, books, dissertations, newspapers, and other various non-journal items as "cited journals," which means that, if a journal is not covered by the *JCR*, it will nonetheless appear in the cited lists of covered journals, but it also means there is a lot of noise in the data in the form of strange and incomprehensible entries.³ If we wish to study global linkages between communication studies journals, we must push beyond the *Social Science Citation Index*.

Open Access Journals

One type of journal that is found across disciplines is the open access journal. Like most academic journals, they are peer-reviewed. Unlike many traditional journals, however, they are available for free over the Internet, and they have far fewer copyright restrictions on their content, if any (Poor, 2008). As the name makes clear, the access to the content is much more open than with other journals. Readers can access content easily, and researchers can have their work widely read and, importantly, widely cited, as found by Antelman (2004) and Harnad and Brody (2004).

Research Questions

The citation pattern for the 17 open access journals in the sample should be mostly the same as that of the journals in the *JCR*, if indeed the field is connected as believed, and if it can be measured in more than one manner. Based on the literature, there should be clustering around geolinguistic factors, and American and English-language journals are expected to be at the heart of the citation space.

RQ1: What is the citation pattern for the global open access Communication Studies journals?

RQ2: Are there journal clusters that can be explained with linguistic or geopolitical factors?

The open access nature of the sample should cause no differences in the citation patterns of the sample when compared to the citation pattern of the journals in the 2007 *JCR* sample. Any differences between the sample and the *JCR* data should stem from the international aspect of the sample and should be reflected by an increased number of citations for international or non-American journals, or from data error in the *JCR*.

RQ3: Are any differences between the study sample and the *JCR* data attributable to the open access nature of the journals in the sample, the international nature of the journals in the sample, or possible data errors in the *JCR* data?

² It does include data for the supplement issue of *Javnost* in 2007, which is in Slovenian.

³ There are many examples from the 2007 *JCR*. Three for *JCMQ* are "100732662 FBI," "PHILA PU 0501," and "LIGHT TASTY." There is also one for *PoliComm* that is not particularly polite and is not the kind of thing you generally want printed.

Methodology

Sample

Determining just which journals are actually in Communication Studies, and thus which journals to choose from, is problematic enough to warrant coverage from ICA presidents (Rice & Putnam, 2007). A variety of lists were consulted, such as ISI's Communication Studies list, EBSCO's Communication and Mass Media Complete, the International Bibliography of the Social Sciences' communication and mass media list, and Redalyc and Latindex for Iberoamerican journals. NORDICOM (n.d.a, n.d.b) also maintains two journals lists.

One selection issue was that a factor analysis would not only reflect different international citation patterns, but it would also show communication sub-field clustering (Leydesdorff, 2004; Leydesdorff & Park, 2006; Park & Leydesdorff, 2009; Reeves & Borgman, 1983; Rice et al., 1988). As such, the final list of 150 journals covering all regions of the globe mostly contained mass communication, general communications, and new media journals. Some journals are nonetheless "intradisciplinary" across the different subfields of Communication Studies. All journals that were open access and had an appropriate focus were selected for analysis, leading to a convenience sample of 17 journals, two of which are covered by the *SSCI*: *JCMC* and *Javnost*. (See the Appendix for the list of journal information.)

The time frame of the sample proved problematic. Many studies use a single calendar year or fixed time range as determined by the ISI data. Although defensible due to a lack of better options, this is not entirely robust. Although one year will gather articles *published* in that year, it is not clear that this approach gathers articles *written* in that year, which is the underlying assumption: the articles were published, and thus written, at the same time, therefore the articles all reflect the state of the discipline during the same time period. Articles published during a certain year will represent a large, and unknown, time frame from before and perhaps during that year. Some leeway in the sample time frame, which was needed for this study, will not unduly affect the findings.

Another problem is that, by only considering journal citation linkages, and not cited books or other material, the true measure of connectedness cannot be captured. This does not seem to be a problem in any of the other studies. Journal articles do represent the cutting edge of accepted research, and they are much easier for academics to access than conference papers.

Theme issues were another problem, in that they do not represent a typical issue for a journal. For instance, the *Westminster Papers in Communication and Culture* has a main theme for each issue, such as in 2006, 3(1), Media in China, and 3(2), Islam and the Media. Although, overall, these are representative of the journal, they are not representative on the individual issue level because there is no such thing as a single representative issue in terms of citations for this journal. Thematic articles with long reference sections could also skew a journal away from the average citation space for the journal. For instance, Jouhki (2008), in the *IJoC*, examines the field of Korean communication studies, and has 70 references to Korean journals, 39 to the *Korean Journal of Journalism and Communication Studies* alone. Typical articles do not even have 39 references to journals, let alone to just one. Another article in the

same volume (Lancaster, 2008) has zero references to journal articles. Neither article is particularly representative of journal to journal linkages for the *IJoC* or any journal, yet there is no accepted method for adjusting for this type of skewed data outside of believing these outliers will be subsumed by the large amount of data from the *SSCI* (Rice et al., 1996). Some journals also have thematic *sections* (such as *JCMC*).

Given these challenges, approximately 20 recent articles (non-themed if possible) were collected for each of the journals while trying to maintain collections of articles based on journal issue. This was further complicated by the wide variation in the number of citations per article. The point was to create a representative sample of citation data for each journal, yet to try to keep the time frame of the sample reasonable and similar enough across journals. *SSCI* studies face none of these problems, as the issues are often simply ignored. Because of these issues, articles from different spans of time for some of the journals were needed to create a representative sample of articles. This trade-off does not decrease the sample's validity, but increases it.

Table 1. *Sampled Journal Article and Citation Quantities.*

| Journal | Articles | Journals cited | | Citations to journals | |
|--------------------------|----------|-------------------|----------|-----------------------|----------|
| | | Total | <i>M</i> | Total | <i>M</i> |
| <i>Anàlisi</i> | 24 | 65 | 2.71 | 108 | 4.50 |
| <i>Asian CR</i> | 18 | 103 | 5.72 | 203 | 11.28 |
| <i>Canadian JMS</i> | 11 | 55 | 5.00 | 95 | 8.64 |
| <i>China MR</i> | 21 | 110 | 5.24 | 189 | 9.00 |
| <i>Enjeux</i> | 14 | 41 | 2.93 | 56 | 4.00 |
| <i>IJoC</i> | 32 | 277 | 8.66 | 597 | 18.66 |
| <i>Javnost</i> | 20 | 66 | 3.30 | 119 | 5.95 |
| <i>JoCS</i> | 4 | 32 | 8.00 | 49 | 12.25 |
| <i>JCMC</i> | 21 | 274 | 13.05 | 561 | 26.71 |
| <i>Keio</i> | 11 | 39 | 3.55 | 56 | 5.09 |
| <i>Kommunikation</i> | 15 | 76 | 5.07 | 109 | 7.27 |
| <i>M/C</i> | 10 | 42 | 4.20 | 59 | 5.90 |
| <i>MedieKultur</i> | 23 | 93 | 4.04 | 127 | 5.52 |
| <i>Observatorio</i> | 29 | 108 | 3.72 | 160 | 5.52 |
| <i>Prisma</i> | 19 | 39 | 2.05 | 58 | 3.05 |
| <i>Tic & Societe</i> | 10 | 73 | 7.30 | 105 | 10.50 |
| <i>Westminster</i> | 23 | 77 | 3.35 | 125 | 5.43 |
| Total | 305 | 1067 ^a | | 2776 | |
| <i>M</i> | 17.9 | 92.4 | 3.50 | 163.2 | 9.10 |

Note. The “width,” how many journals were cited, and “depth,” how many citations to journals there were, of the journals per journal have a correlation $r = .974$, which is significant at the .001 level (two-tailed). Ratios of width to depth vary from 1.37 to 2.16, with a mean of 1.63.

^aTotal number of journals cited is not a summation of the column, since many of the same journals are cited in the 17 sampled journals. Altogether, there were 1,067 journals cited in the sample. The mean (92.4) is the summation of the column divided by 17.

In the end, 305 articles from 17 different open access Communication Studies journals were collected, which altogether cited 1,067 different journals, and did so 2,776 times (Table 1). Most of the sample journals publish in English, but of the 17, there are ones that use French, German, Danish, Portuguese, Catalan, Slovenian, and one (*Observatorio*) that accepts submissions in any one of seven different European languages (Table 2). Articles were gathered from 2006, 2007, and 2008. Primarily, 2007 was the focus of the sample, in part because the 2007 data for journals was the most recent set available from the *JCR* at the time of the study. One, the *Journal of Communication Studies (JoCS)*, is very new, and as such, it had very few articles (only four) available at the point in time when the study was underway. As an outlier, it is occasionally dropped from the analysis (with the reason noted). Articles from the 2008 *IJoC* were used instead of the 2007 volume, because the *IJoC* was new in 2007, and citations from 2007 may have had undue variance, as the submitting authors and the journal editors figured out what, exactly, was appropriate for the journal, as well as because much of 2007 was a theme issue.

Since the time of the data collection and analysis, *Javnost* has begun to embargo recent articles, and as such, it does not fit the open access definition. At the time of this research and at the time the analyzed articles were written, *Javnost* did fit the open access standard, and therefore it has been kept in the analysis.

Table 2. Journal Geolinguistic Settings.

| Journal | Geography | Language(s) |
|---------------------|---------------------|--------------------|
| <i>Anàlisi</i> | Barcelona | Catalan |
| <i>Asian CR</i> | Korea/International | English |
| <i>Canadian JMS</i> | Canada | English, French |
| <i>China MR</i> | China/USA | English |
| <i>Enjeux</i> | France | French |
| <i>IJoC</i> | USA/International | English |
| <i>Javnost</i> | Slovenia/Europe | English, Slovenian |
| <i>JoCS</i> | USA/International | English |
| <i>JCMC</i> | USA | English |
| <i>Keio</i> | Japan | English |

| | | |
|--------------------------|-----------------|------------|
| <i>Kommunikation</i> | Germany | German |
| <i>M/C Journal</i> | Australia | English |
| <i>MedieKultur</i> | Denmark | Danish |
| <i>Observatorio</i> | Portugal/Europe | 7 European |
| <i>Prisma</i> | Portugal | Portuguese |
| <i>Tic & Societe</i> | France | French |
| <i>Westminster</i> | England | English |

Note: *Observatorio* publishes articles in Portuguese, Spanish, Catalan, Galician, Italian, French and English. "Geography" is primarily the location of the editorial office, but secondarily includes scope. It is meant as a general guideline.

Data Analysis

Based on previous studies, there are three ways to analyze this data. The first is an exploratory factor analysis (EFA), which can reveal underlying factors in the citation patterns (e.g., Leydesdorff & Park, 2006), and can also show visual groupings of the citing journals by mapping two of the factors onto XY coordinates (Dunteman, 1989; Jolliffe, 1986; Leydesdorff & Cozzens, 1993; Wagner & Leydesdorff, 2005). For the factor analysis, the cited journals are the cases, and the 17 citing journals are variables. Values for the variables are "cited by" counts, where the cited journal (case) is cited by the citing journal (variable) a given number of times. This work uses principal component analysis (PCA) with varimax rotation.⁴ To determine the number of components, the standard cutoff of eigenvalues > 1 was used. Low factor loadings and low explained variance relative to psychometric studies were expected, as was multicomponent complexity, but these would not reduce the significance of findings (Leydesdorff & Probst, in press).

A second type of analysis, using the computer program Pajek — often used by Leydesdorff (e.g., Leydesdorff, 2004; Leydesdorff & Park, 2006; Wagner & Leydesdorff, 2005) — can also indicate groupings and connections. To place the journals (vertices) visually, the Fruchterman-Reingold algorithm was used (a force-directed algorithm). Because a mapping of 1,067 journals is impossible to read, only the most-cited journals (plus the 17 citing journals in the sample) were included. Except for a few clear outliers

⁴ There are disagreements in the literature over every aspect of factor analyses. See Cortina (1993); Dunteman (1989); Fabrigar, Wegener, MacCallum, and Strahan (1999); Ferguson and Cox (1993); Gorsuch (1983); Knapp and Brown (1995); Kline (1994); McCroskey and Young (1979); Park, Dailey, and Lemus (2002); and Widaman (2007).

(such as in Jouhki, 2008), any journal that was cited a total of 10 or more times, and that was also cited by more than one journal, was included. Those journals, combined with the sampled 17 journals, leads to a total of 65 journals. Connections were unweighted.⁵

Lastly, directly comparing the citation numbers from the study to the *JCR* data can reveal differences and similarities between the two, both between the study as a whole and the *JCR*, but also between the study and the *JCR* for the two journals present in both, *JCMC* and *Javnost*.

Results

PCA with varimax rotation revealed six components (Table 3), with some of the journals loading onto more than one component. The first two components are based on English language citations. Component 1 has heavier loadings from the Asian journals and international journals, while Component 2 has heavier loadings from European journals. Component 3 is clearly a Romance-language block. Component 4 is another English-language component, and Component 5 has two non-English journals that cite English-language material (*MedieKultur* in Danish, and *Anàlisi* in Catalan). Component 6 has only the German-language *Kommunikation* loading onto it. *JoCS* was dropped from this analysis because it always added an unidentifiable component (a mostly “*JoCS*” component), did not clearly load onto any one component, and had the smallest number of articles.

⁵ The decisions which were made in order to create a representative sample in turn led to the impossibility of a defensible weighting scheme for this analysis, but with the cut-off of lesser-cited journals, the network graph is still instructive. All weighting schemes suffer from some intractable issues.

Table 3. Principal Component Analysis with Varimax Rotation.

| Journal | Asian International English | and European English | Romance | International English | European non- English | German |
|----------------------|-----------------------------------|----------------------------|---------|--------------------------|--------------------------|--------|
| <i>Asian CR</i> | .74 | .13 | | .24 | -.18 | |
| <i>China MR</i> | .72 | | | | .15 | |
| <i>IJoC</i> | .64 | .26 | | .14 | | |
| <i>Keio</i> | .63 | .13 | | -.20 | .35 | |
| <i>Canadian JMS</i> | .41 | .35 | | | -.41 | -.25 |
| <i>Westminster</i> | | .81 | | | | |
| <i>Javnost</i> | .30 | .73 | | | .15 | |
| <i>Observatorio</i> | .18 | .65 | .13 | .11 | .20 | |
| <i>Enjeux</i> | | | .84 | | | |
| <i>Tic & Soc</i> | | | .70 | -.18 | -.14 | |
| <i>Prisma</i> | | | .67 | .31 | .18 | |
| <i>M/C</i> | | .18 | | .76 | | -.10 |
| <i>JCMC</i> | .33 | | | .62 | -.11 | .10 |
| <i>MedieKultur</i> | | .11 | | | .69 | -.16 |
| <i>Anàlisi</i> | .38 | .15 | | -.15 | .50 | .12 |
| <i>Komm</i> | | | | | | .94 |
| Eigenvalue | 2.43 | 1.92 | 1.68 | 1.26 | 1.22 | 1.02 |
| % of variance | 15.1 | 12.0 | 10.5 | 7.9 | 7.6 | 6.4 |
| Cronbach's alpha | | | | | | |

| | | | | | |
|--------------|------|------|------|------|------|
| Items at .40 | .568 | .661 | .575 | .127 | .226 |
| Items at .20 | .615 | .468 | | .308 | .469 |

Note. JoCS dropped from this analysis. Loadings smaller than +/- .10 not shown.

The various English-language components with English-language journals were unexpected, but the Romance, German, and English-citing from non-English-language journals components all make sense based on the literature, and begin to show that the citation patterns for the sampled journals are similar to those in ISI-based studies (RQ1). That the components can be defensibly identified by linguistic elements supports linguistic clustering (RQ2). PCA was run without rotation (Table 4), which resulted in the same number of, and similar, components, but with one large English-language grouping instead of several.

Table 4. *Unrotated Principal Component Analysis with General English Component.*

| Journal | English | Romance | Asian | C4 | C5 | German |
|---------------------|---------|---------|-------|------|------|--------|
| <i>Javnost</i> | .68 | | -.42 | | | |
| <i>IJoC</i> | .68 | -.13 | .13 | | | |
| <i>Asian CR</i> | .65 | -.15 | .33 | .24 | -.19 | |
| <i>Keio</i> | .60 | -.14 | .18 | -.42 | | |
| <i>Observatorio</i> | .58 | .22 | -.37 | | | |
| <i>China MR</i> | .57 | -.23 | .41 | -.11 | | |
| <i>Anàlisi</i> | .45 | -.12 | | -.43 | .16 | .18 |
| <i>Canadian JMS</i> | .43 | | | .19 | -.44 | -.32 |
| <i>Westminster</i> | .37 | .16 | -.68 | .13 | -.16 | |
| <i>JCMC</i> | .31 | | .34 | .51 | .18 | .15 |
| <i>MedieKultur</i> | .27 | | | -.36 | .55 | |
| <i>M/C</i> | .24 | .14 | | .56 | .48 | |

| | | | | | | |
|----------------------|------|------|-------------------|------|------|------|
| <i>Enjeux</i> | | .79 | .23 | -.13 | | .11 |
| <i>Prisma</i> | .14 | .67 | .18 | | .26 | .10 |
| <i>Tic & Soc</i> | | .64 | .20 | -.16 | -.26 | |
| <i>Komm</i> | | -.10 | | | -.25 | .90 |
| Eigenvalue | 3.14 | 1.73 | 1.35 | 1.24 | 1.07 | 1.00 |
| % of variance | 19.6 | 10.8 | 8.4 | 7.7 | 6.6 | 6.2 |
| Cronbach's alpha | | | | | | |
| Items at .40 | .658 | .575 | .449 ^a | .127 | .112 | |
| Items at .20 | .649 | .441 | .368 ^b | .328 | .203 | |

Note. *JoCS* dropped from this analysis. Loadings smaller than +/- .10 not shown.

^aIncludes all items at > .30.

^bIncludes *Prisma* (.18) because of the consistent Romance cluster.

Using the unrotated PCA and plotting the first two components onto the XY plane (Figure 1) revealed three main groups: a Romance language group, a German group, and an English group with three sub-groups, along with one outlier (*JoCS*). These groupings, although somewhat arbitrary,⁶ do agree with the rotated PCA, as well as with the geographic and linguistic groupings of the journals themselves. The clustering revealed by this analysis also suggests that the citation pattern for the sampled journals is similar to patterns in ISI-based studies (RQ1), and it shows linguistic and geographic clustering (RQ2).

⁶ Dunteman (1989) states that groupings based on factor analysis should be "aesthetically appealing" (p. 78).

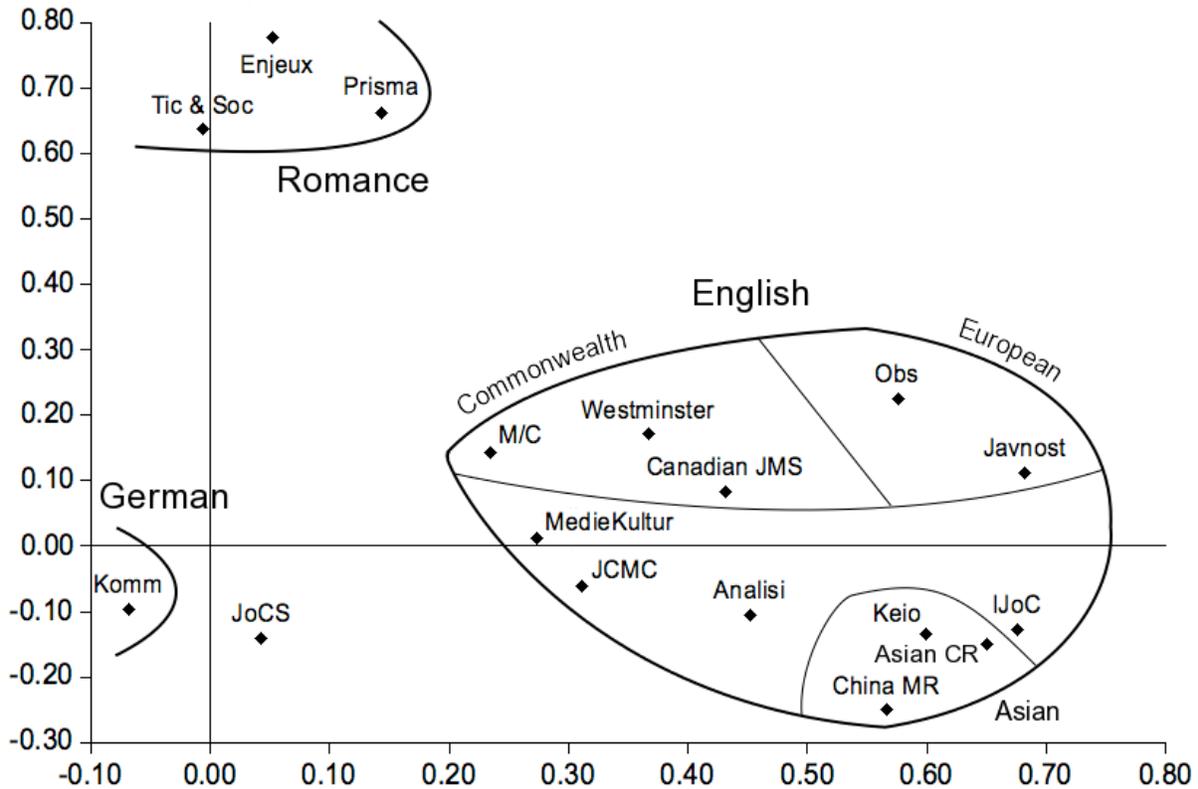


Figure 1. Citation clusters of the sample journals derived from the unrotated principal component analysis with the first two components as coordinates.

With the Pajek analysis (Figure 2), *JCMC* and *IJoC* are located in the middle, as is *JoC*. *Kommunikation* and *JoCS* are both outliers. *AsianCommRes* and *ChinaMediaRes* cluster together somewhat (and are on the same side of the network as the third Asian journal, *Keio*), as do the three from the Romance component (*Enjeux*, *Prisma*, and *Tic & Société*) which are also off to one side. This, again, suggests that the citation patterns here are similar to the ISI data (RQ1), because the English-language journals tend to be in the middle. This analysis also shows linguistic and geographic clustering (RQ2).

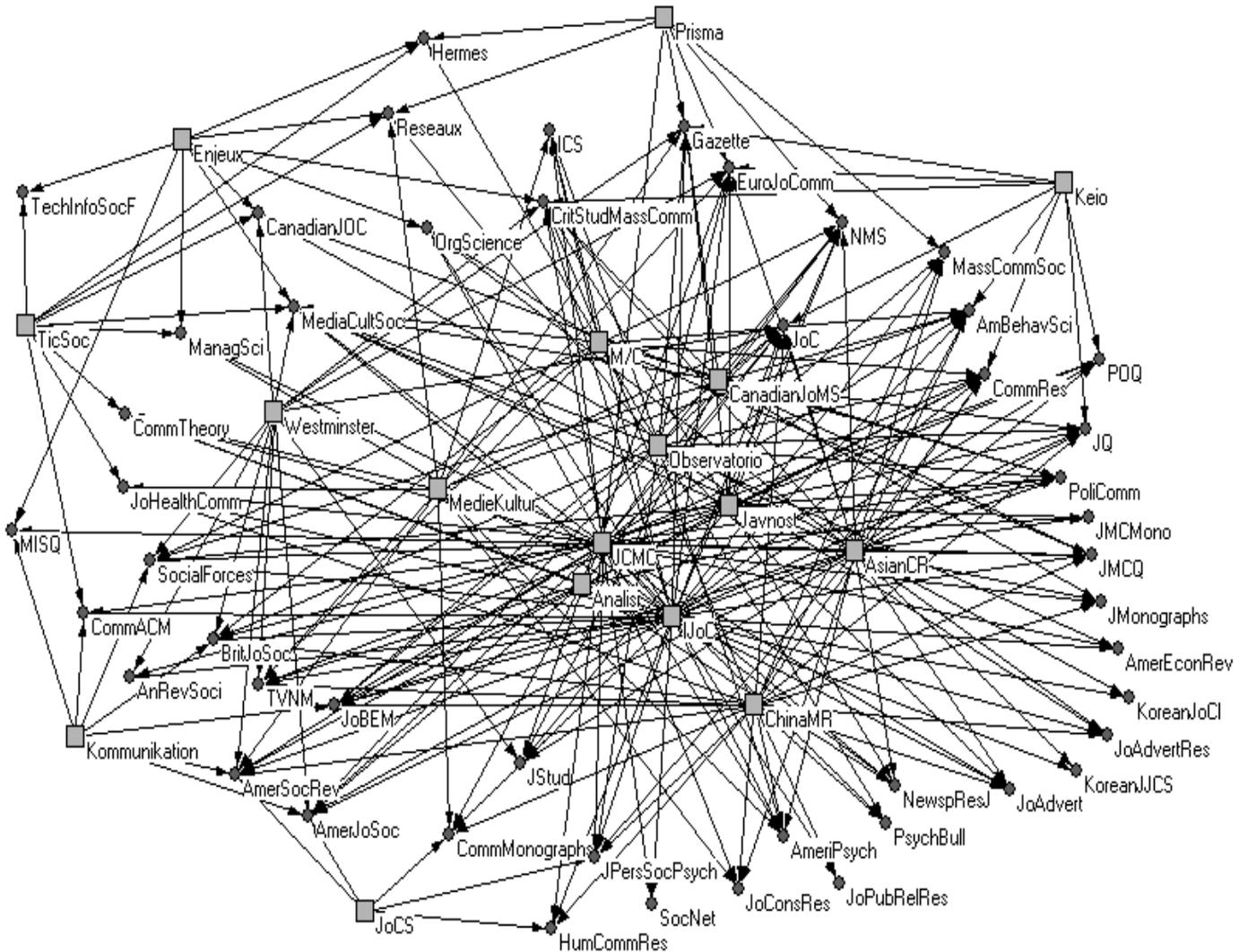


Figure 2. Pajek analysis of the dataset with the Fruchterman-Reingold algorithm, cited journals with ten or more cites and with cites by more than one sample journal. Some vertices moved slightly for clarity (relative positions maintained). Vertices and connections unweighted.

Lastly, direct numerical comparisons were used in two different ways. The first was to compare the sample numbers for *Javnost* and *JCMC* to their citation numbers in the *JCR* data. The *JCMC* sample used in the study is not the full 2007 output of *JCMC*, and comparing the numbers was not fruitful. For *Javnost*, the samples were most likely the same (although there are some contradictory numbers and information in the *Web of Science* for the *Javnost* data), as the majority of the numbers are the same, and some only vary by one or two, falling within the boundaries for permissible error, although it is not particularly clear where the error resides (even after some double- and triple-checking). However two examples have sizable differences: *Public Opinion Quarterly*, which has 4 citations in the study sample,

but 10 in the *JCR* data, and *Communication*, which has 1 citation in the study sample, but 12 in the *JCR* data. The differences may be due to measurement error in the *JCR* (RQ3).

The second direct numerical approach was to compare the top-cited journals from the sample with the top-cited journals from the communication journals in the *JCR* in order to see if the overall pattern was similar (Table 5). The top cited journals are indeed similar, with the addition of three European journals in the sample list. This finding suggests that the differences are not due to the open access nature of the journals in the study, but instead to the international nature of the study sample (RQ3).

Table 5. Comparison of the Top 20 Cited Journals from the Study and the 2007 *JCR*.

| Journal | Study rank | 2007 <i>JCR</i> rank |
|---|-------------------|-----------------------------|
| <i>Journal of Communication</i> | 1 | 2 |
| <i>Communication Research</i> | 2 | 1 |
| <i>Media Culture & Society</i> | 3 | 19 |
| <i>European Journal of Communication</i> | 4 | 23 |
| <i>New Media & Society</i> | 5 | 20 |
| <i>Journal of Computer-Mediated Communication</i> | 6 | 16 |
| <i>Journalism & Mass Communication Quarterly</i> | 7 | 9 |
| <i>Gazette</i> | 8 | - |
| <i>Journal of Broadcasting & Electronic Media</i> | 9 | 5 |
| <i>Political Communication</i> | 10 | 10 |
| <i>Public Opinion Quarterly</i> | 11 | 6 |
| <i>American Journal of Sociology</i> | 12 | 26 |
| <i>Réseaux</i> | 13 | - |
| <i>Human Communication Research</i> | 14 | 4 |
| <i>Journalism Quarterly</i> | 15 | 7 |
| <i>Journal of Advertising</i> | 16 | 30 |
| <i>American Behavioral Scientist</i> | 17 | 25 |
| <i>American Sociological Review</i> | 18 | 34 |
| <i>American Psychologist</i> | 19 | 22 |
| <i>Journal of Personality & Social Psychology</i> | 20 | 3 |

Note. The sample list excludes outliers, meaning that the Korean journals heavily cited by Jouhki (2008) are not included. Although *Gazette* and *Réseaux* are listed as cited journals in the *JCR*, they were cited infrequently, so they are not ranked here. The *JCR* list is compiled from 20 of the communication journals in the *JCR* list (dropping journals that are not in communication).

Discussion

The overall citation pattern for the open access international journals, as measured in a variety of ways, did fall within the range of expected outcomes based on the literature and the ISI data. The two samples primarily cite the same journals: 9 of the top 10 journals from the *JCR* sample are found in the study sample's top 20 (all but #8, *Communication Monographs*), and 8 of the top 10 in the study sample are similarly found in the *JCR* sample's top 20, with the exception of two European journals, the *EJoC* (which is at #23 on the *JCR* list) and *Gazette* (which is much farther down on the *JCR* list).

The differences in the citation patterns are clearly due to the international leaning of the study sample, and the open access nature of the study sample appears to play no part in these differences. Indeed, it is unclear what differences open access journals would cause, unless they cited other open access journals more frequently, but the only open access journal in the top 20 of either sample is *JCMC*.

Given the dissension in the literature for EFA and PCA, and the relative power of today's desktop computers, it was simple to run a variety of EFA and PCA analyses with various types of rotation (or none). The general patterns were all the same, with six factors or components across the 16 journals (dropping *JoCS*) sporting an eigenvalue greater than 1. Given that this study is not constructing psychological scales, the exact factor or component loadings are irrelevant; the pattern and clusters are the only issue. The unrotated PCA showed a general English factor, a Romance factor, and a German factor. Rotated solutions for both EFA and PCA showed several English factors which were somewhat correlated under oblique rotations, suggesting a general English factor. The Romance factor was present across all of these analyses, and often *Observatorio* loaded slightly onto the Romance factor. Three journals, *Javnost*, *Westminster*, and *Observatorio*, often loaded together onto an English factor, as did *M/C* and *JCMC*. The German component was always present in PCA, but it was not present as a factor in EFA, because EFA seeks to measure common variance across items, and *Kommunikation* shares too few citations with other journals to load onto any factors with them.

Some of the clustering is initially surprising. The orthogonally rotated PCA breaks apart the journals that use English in an unexpected manner, but the component loadings are defensible for this type of study. The Romance block is, at first, somewhat surprising, because it includes two French journals and one Portuguese journal (*Prisma*), but not *Anàlisi*, which is a Catalan journal from Barcelona; not the *Canadian JoMS*, which is a dual English and French journal; and not *Observatorio*, which is based in Portugal. *Anàlisi*, instead, groups with *MedieKultur*, which is Danish. Looking at the actual citations and the Pajek visual analysis shows why this is so. *Anàlisi* and *MedieKultur*, although citing from their own linguistic areas, also cite a fair amount into the English language space. The Romance block journals cite a few of the same journals enough to form the block in question. Two of these cited journals are *Hermès*

and *Réseaux* (both of which publish in French), cited by all three of the Romance block journals, and several other journals are cited by both of the French journals.

The outlier status for *Kommunikation* was at first a surprise; it was expected to cluster with *MedieKultur*, since they both use Germanic languages. However, as pointed out by Schönbach and Lauf (2006), the German journal they studied (*Publizistik*) became more German over the period of their study. Possibly, German scholars are using German journals for work in German and citing German sources in such work, while they publish work that ties into English-language sources in journals that use English, such as the international communication journals.

That *JoCS* was an outlier was also a surprise. It may be due to the small sample size, since there were only four articles available at the time of the study. It also has the fewest number of cited journals (32), but not substantially fewer than several other journals in the sample (the next four have 39, 39, 41, and 42) (see Table 1). One reason is that the journals cited by *JoCS* do not include any of the top 10 most-cited journals of the sample (the highest ranked journal it cites is *AmerJoSoc*, #12). In this respect it is clearly an outlier.

The 2D mapping of the PCA components was rewarding. Like the principal component analysis itself, there is the Romance block, the German block, and *JoCS* is an outlier. Everything else is grouped into an English-language-citing space, albeit with one generic group and three subgroups. There is a Commonwealth group, a European but with articles in English group, and an Asian group that publishes in English. In the middle are the two massively-citing journals, *IJoC* and *JCMC*, along with two that do not publish in English, *Anàlisi* and *MedieKultur*. As discussed previously, these two cluster together in the rotated PCA, and cite into the English-language space, but any citations into Catalan or Danish have no other journals in the sample with which to cluster, group, or connect. They are linguistic isolates in the sample, but they are not outliers like *Kommunikation*.

Observatorio could bridge between different linguistic areas, as it publishes articles in seven mostly Romance languages, and it does load onto the Romance component (albeit weakly) in both the varimax and unrotated principal component analyses, doing so more than any other journal outside the Romance cluster.

Given that *Observatorio* is based in Portugal, it is a surprise that it did not group with *Prisma* in any of the analyses. This is probably for two reasons. One, because *Observatorio* publishes articles in seven different languages, any drawing of material from the Portuguese-language space is minor. It is more international than Portuguese. Two, if *Observatorio* and *Prisma* do not cite any of the same journals (Portuguese or not), then they will not cluster, regardless of whether or not they cite any of the same Portuguese books, newspapers, or other material, because journals are the only measure here. Although studying cited journals does reveal patterns that need to be explored, such a sample cannot fully get at connectivity.

The comparison of the *Javnost* samples reveals two curious items. The *Javnost* Web site has 26 articles for volume 14, issues 1-5, and two reviews which are not easily retrievable. Issue 5 is a

"supplement" issue in Slovenian. Because it is a supplement, it was judged to be an outlier and was not included in the study, except for when comparing the sample data and the *JCR* data, and the six articles in it do not have any citation surprises.⁷ Most of the numbers across the two samples, as stated, are the same or similar enough. It is not at all clear why *Public Opinion Quarterly* should have, as far as I can tell, only 4 citations, yet *JCR* should list 10. The study sample was double-checked with a computer-based search, but the original numbers were accurate. I do not believe it would be cited six times across the two book review pieces and the few, short, editorial-type pieces that were not included in the study sample, since reviews and editorials typically don't include citations. The citing of *Communication* is a little more curious, since the difference is so great (1 versus 12). It is highly unlikely that I missed 11 instances of it across the 26 total articles while achieving counts on the other journals that agree with the *JCR* numbers. "Communication" is a common word in communication articles, so it is possible that ISI's citation-counting method is pulling erroneous results from the articles.

The end result is that there does appear to be some error in the *JCR* list, but it is probably an acceptable level within large studies (RQ3). As Rice et al. (1996) stated, such errors are probably minimized by the large size of the overall dataset. ISI does have a data correction process, but they do not use error correction on non-indexed journals such as *Communication*. By analyzing indexed journals, and by using a cut-off for the long tail of lesser-cited items (which Leydesdorff often does, e.g., Leydesdorff, 2004; Leydesdorff & Cozzens, 1993), there is little reason for concern over data accuracy in the ISI data.

More generally, given that this global sample of open access journals roughly cites the same material as the journals in the ISI list, using the ISI list should give an accurate picture of the citation space in the citing direction for the field. I am, nonetheless, hesitant to make that recommendation. Subtleties and changes over time would be missed. The reason for the similar citations appears to be from the databases used by scholars, which often include a large amount of English-language material or are the very same databases. When I asked some of my international colleagues about this issue, they indicated that their universities subscribed to the same huge databases that American universities do.

Conclusion

The citation pattern of these open access journals is the same as that for non-open access journals, which is how it should be if open access journals are going to be of the same quality as more established, non-open access journals (recall that open access does require peer-review). The journals in the sample are not in a separate citation space, and they take part in the larger conversation of the field. As such, this indicates, to a certain extent, the health of these journals (they are not isolates in the citing direction), which, in turn, is a decent indicator for the health of the field.

⁷ There were 33 total journals cited 48 times across the six articles. There were only three journals that received more than two citations apiece: *Media, Culture and Society* had three, *Theory, Culture and Society* had four, and *New Media and Society* had seven.

The international journal scene is still dominated by the English language, but this does not necessarily mean it is dominated by American journals. Although there are journals which are clearly American, determining when a journal ceases to be American and becomes international or multinational is not straightforward (considering intent, language, authors, editors, and other factors).

Language is an issue of the utmost importance, but one that both connects and divides us. English is indeed, currently, the primary language: international journals use it, journals that use more than one language use it, and journals that do not use English have articles that cite English-language journals. We are connected through communication, but there are linguistically isolated clusters, and the direction and strength of the communication flows are not equal across the network. Western and English-language journals are a source of information, but do not always reach out to non-English or non-Western journals in return. With the Internet, open access journals, and a greater number of international journals, perhaps the information flow will trend toward greater balance. For now, however, it will still have to be in English.

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Appendix: Journal Information.

| Journal Title / URL | Abbreviation | ISSN | Sample |
|--|---------------------|-----------|--|
| <i>Anàlisi: Quaderns de Comunicació i Cultura</i> http://www.raco.cat/index.php/Analisi | <i>Anàlisi</i> | 0211-2175 | 2007-2008: 35-36 (longer articles) |
| <i>Asian Communication Research</i> http://www.ksjcs.or.kr/journals/search.asp | <i>Asian CR</i> | 1738-2084 | 2006-2008: 3(2), 4(1-2), 5(1) |
| <i>Canadian Journal of Media Studies</i> http://cjms.fims.uwo.ca/ | <i>Canadian JMS</i> | 1911-4281 | 2007-2008: 2-3 |
| <i>China Media Research</i> http://www.chinamediaresearch.net/ | <i>China MR</i> | 1556-889X | 2007: 3(2-3) |

| | | | |
|--|--------------------|-----------|--|
| <i>Les Enjeux de l'information et de la communication</i> http://w3.u-grenoble3.fr/les_enjeux/ | <i>Enjeux</i> | 1778-4239 | 2006-2007 |
| <i>International Journal of Communication</i> http://ijoc.org | <i>IJoC</i> | 1932-8036 | Some of 2008: 2 (rolling publication) |
| <i>Javnost - The Public</i> http://www.javnost-thepublic.org/ | <i>Javnost</i> | 1854-8377 | 2007: 14(1-4) |
| <i>Journal of Communication Studies</i> http://www.marquettejournals.org/communicationstudies.html | <i>JoCS</i> | 1940-9346 | 2008: 1(1) |
| <i>Journal of Computer-Mediated Communication</i> http://www.blackwell-synergy.com/loi/jcmc | <i>JCMC</i> | 1083-6101 | 2006-2007: 12(1, 3) |
| <i>Keio Communication Review</i> http://www.soz.uni-frankfurt.de/K.G/ | <i>Keio</i> | 0388-7596 | 2007-2008: 4-6 |
| <i>Kommunikation@Gesellschaft</i> http://www.soz.uni-frankfurt.de/K.G/ | <i>Komm</i> | 1616-2617 | 2006-2008: 7-9 |
| <i>M/C Journal</i> http://journal.media-culture.org.au/ | <i>M/C</i> | 1441-2616 | 2007: 10(1) |
| <i>MedieKultur</i> http://ojs.statsbiblioteket.dk/index.php/mediekultur/ | <i>MedieKultur</i> | 0900-9671 | 2007-2008: 42/43, 45 |
| <i>Observatorio</i> http://obs.obercom.pt/ | <i>Obs</i> | 1646-5954 | 2007: 1(1, 2) |

| | | | |
|---|--------------------|-----------|-------------------|
| <i>Prisma.com</i> http://prisma.cetac.up.pt/ | <i>Prisma</i> | 1646-3153 | 2007-2008: 4-6 |
| <i>Tic & Société</i> http://revues.mshparisnord.org/ticsociete/ | <i>Tic&Soc</i> | 1961-9510 | 2007-2008: 1-2 |
| <i>Westminster Papers in Communication and Culture</i> http://www.wmin.ac.uk/mad/page-880 | <i>Westminster</i> | 1744-6716 | 2007: 4(1-4) |

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