


Electronic Journals, Prestige, and the Economics of Academic Journal Publishing

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Steven Tötösy de Zepetnek and Joshua Jia,
"Electronic Journals, Prestige, and the Economics of Academic Journal Publishing"
<<http://docs.lib.purdue.edu/clcweb/vol16/iss1/12>>

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Abstract: In their article "Electronic Journals, Prestige, and the Economics of Academic Journal Publishing" Steven Tötösy de Zepetnek and Joshua Jia discuss the current state of the academic journal publishing industry. The current state of the industry is an oligopoly based on a double appropriation model where academics produce work for at no cost only to have publishers earn significant profit margins by selling the work back to academics. Publishers are able to do this given the price inelasticity and weak bargaining power of its main consumer, university libraries. Publishers' ability to increase prices is also supported by what the authors term as the "prestige multiplier effect" and the "prestige crowd-out effect" which means the tendency for libraries to cut small publishers as large publishers raise prices because large publishers are more prestigious. To date, the usage of electronic journals has not changed this general model. Tötösy de Zepetnek and Jia argue that in order to progress towards a more equitable model of knowledge management allowing for the dissemination of knowledge globally and against the "colonialism of knowledge" a change in attitude and practices is required not only by publishers, but also by academics. Once perception changes and electronic journals obtain prestige, the publishing of scholarship electronically will replace or will be at least parallel to the prestige of print journals.

Steven TÖTÖSY de ZEPETNEK and Joshua JIA

Electronic Journals, Prestige, and the Economics of Academic Journal Publishing

Before the technology bubble in 2001, many were predicting electronic journals to be a disruptive force in the industry structure of scholarly journal publishing. Although there is evidence that electronic journals have become more popular, we have yet to observe economic impact by electronic journals on the broader academic journal publishing industry: university libraries are faced with increases of 10% every year in subscription prices for academic journals while younger scholars and students demonstrate preference for data display platforms which have browsing and searching capability (see, e.g., Rohe <<http://dx.doi.org/10.3998/3336451.0003.308>>). The academic journal publishing industry is characterized by inefficiency brought upon by a double-appropriation model, a structure of oligopoly, and price inelasticity. At the same time, the industry is unique in that the major inputs for publishers are provided for free by academics: scholars provide these inputs for free not completely out of goodwill, but in return for the "prestige" and "symbolic capital" of publishing in a well-regarded journal (on "prestige" in scholarship see Kirby <<http://thedisorderofthings.com/2013/07/25/on-rejecting-journals/>>; on "symbolic capital" and publishing scholarship see Michalski <http://scholarworks.sjsu.edu/oa-un-conference/2013_Program/Sessions/27/>; see also Bourdieu). We believe that electronic journals failed to change the economics of the industry because they are not viewed in the same class as print journals in terms of quality and prestige. Especially in the humanities senior and tenured scholars tend to treat open-access publication as complements rather than substitutes to the publication of their work in print journals. This problem is exacerbated by what we term as the "prestige multiplier effect" which leads to other issues like the high price inelasticity of demand and the savings from subscription to electronic journals not being passed onto consumers. However, as prices continue rising and the demographics shift with more tech-savvy individuals, electronic journals will begin to be viewed as substitutes rather than complements (on a positive view with regard open-access publishing in the humanities, see Meadows <<http://scholarlykitchen.sspnet.org/2014/01/02/a-brighter-future-for-the-arts-humanities-and-social-sciences/>>). This is when we will begin to observe some positive economic effects. Although we believe the "oligopoly of prestige" model will never change, the economic equilibrium will be considerably more optimal for scholarship and society altogether. In this context, we agree with what Peter Suber posits: "There are two reasons why authors rarely have to choose between prestige and OA [Open Access]. First, there is already a growing number of high-prestige OA journals. They function not only as high-prestige OA outlets for new work, but as proofs of concept, showing that nothing intrinsic to OA prevents the growth of prestige. Second, authors can self-archive. They can publish in a prestigious TA journal and then deposit their postprint in an OA repository. About two-thirds of TA [Toll Access] publishers already give blanket permission for this and many of the others will give permission on request" ("Thoughts" <<http://dx.doi.org/10.1163/095796510X546959>>).

In the sciences "well-regarded" means almost solely if the journal is indexed by Thomson Reuters. Although in the U.S. and Canada this has not happened yet in the humanities and social sciences, in Europe and Asia credit for promotion, tenure, or research funding is possible in the sciences and the humanities and social sciences only if the article is published in a Thomson Reuters indexed journal (on this and the impact factor and the humanities, see, e.g., Hauptman; Leydesdorff, Hammarfelt, Akdag Salah; Tötösy de Zepetnek, "The 'Impact Factor'"; Wheeler). Further, most science journals require an "author fee" in the "author-pay" model in the amount of several hundred dollars and in some cases over one or even two thousand dollars for the publication of an article (there have been discussions to implement the author-pay model also with humanities journals). Then publishers or aggregates of journals charge fees in exorbitant amounts for access by libraries although in many cases also by individual subscribers when "scholarly journals, like university presses, traditionally have existed as nonprofit venues in which scholarship can be published for the preservation and circulation of ideas apart from market forces" (Stevens 10) and "Ongoing dominance of the library sector by a small number of major publishers. This was the business that was supposed to go away, but if anything the largest publishers are tightening their grip on library budgets. As long as libraries have budgets for materials, a small number of companies will gobble up most of that money" (Esposito <<http://scholarlykitchen.sspnet.org/2014/01/13/publishing-viewed-from-santas-crystal-ball/>>).

With a profit-oriented model publishers add value by packaging learned journals through editing, printing, distribution processes, and indexing. Thus, publishers provide prestige for scholars and this prestige is imperative for promotion and tenure in a community that operates on the "publish or perish" philosophy (see Cavaleri, Keren, Ramello, Valli). However, the industry structure has become more of an oligopoly with fewer publishers dominating the space such as Reed Elsevier, John Wiley & Sons, Springer Science and Business Media, Wolters Kluwer, Holtzbrinck, and Informa with a combined market share of 36% (see Beverungen, Böhm, Land). To illustrate their dominance, 43 of the top 100 economics journals as per RePEc's ranking come from the three major publishers (Cavaleri,

Keren, Ramello, Valli 91). This oligopoly structure allows large publishers to enjoy high profit margins of 30-40% (Beverungen, Böhm, Land 3) and these profit margins are not anywhere close to being proportional to their economic value:

the operating profit margins for Elsevier in the Science and Medical segment are extraordinarily high. For example, in the year 2000, the operating profit margin for the Science and Medical segment was more than 8 times that of the margin for the larger industry. These high margins exist even as critics question the value provided by the journal publishers. In an investment analysis report of Reed Elsevier (referred to by its ticker symbol REL), a Deutsche Bank analyst argues that the value added to the publication process by the academic publishers is not high enough to explain the margins that are earned: "In justifying the margins earned, the publishers, REL included, point to the highly skilled nature of the staff they employ (to pre-vet submitted papers prior to the peer review process), the support they provide to the peer review panels, including modest stipends, the complex typesetting, printing and distribution activities, including Web publishing and hosting. REL employs around 7,000 people in its Science business as a whole. REL also argues that the high margins reflect economies of scale and the very high levels of efficiency with which they operate. We believe the publisher adds relatively little value to the publishing process. We are not attempting to dismiss what 7,000 people at REL do for a living. We are simply observing that if the process really were as complex, costly and value-added as the publishers protest that it is, 40% margins wouldn't be available. (Deutsche Bank AG. "Reed Elsevier: Moving the Supertanker," *Company Focus: Global Equity Research Report* [January 11, 2005]: 36). (qtd. in McGuigan and Russell <http://southernlibrarianship.icaap.org/content/v09n03/mcguigan_g01.html>)

Based on the importance of prestige, in the Western hemisphere scholars do not receive payment for their articles and this prestige has many benefits including promotion, tenure, and gaining respect within their respective fields and the university is paying academics via their salaries to win prestige both for themselves and for the university (see Kling, Spector, McKim <<http://dx.doi.org/10.3998/3336451.0008.101>>). In the latter case, prestige is important for the university to attract top students and top professors which reinforces the university's prestige in a positive feedback loop. In the case of the academic, prestige is a substitute for pecuniary payment and the university compensates the academic's publishing efforts through promotion, tenure, and awards. We should also mention the issue of peer review: as a rule — whether science or humanities and social sciences journals — peer review is done on a voluntary basis by scholars as part of the scholar's academic profile and tasks. Although there have been advocates against performing peer review for free for journals published by for-profit publishers (see, e.g., Bergstrom), the rule remains and scholars perform peer review for free (this is not the case in some places in Asia).

If we accept the premise that prestige is a substitute for money in the academic community and that it has a theoretical monetary value, then we can begin to understand why an oligopoly persists in the journal publishing industry. Publishers must be prestigious in order to incentivize and attract top scholars and prestige is a function of two factors: 1) exclusivity which is measured roughly by the difficulty of getting published and 2) the breadth of the circulation in which the number of citations serves as a proxy (see Varian <<http://dx.doi.org/10.3998/3336451.0004.105>>; we should note here that with regard to open-access journals in the humanities, as well as with regard to subscription based electronic journals there is a time lag when it comes to citations [see, e.g., Boletta 71]). Large publishers have an advantage: they are able to attract top scholars from the onset and then as they build their brand with each top academic they publish, they become more exclusive. By featuring only top articles, journals become a "must-have" and they push their university libraries to sign up for the subscription no matter what the cost. Here, expanding the circulation of the journal is subsequent to establishing exclusivity, which highlights the fundamental tenet of prestige: be exclusive and everyone will want it.

It is important to note that prestige has a multiplier effect: in traditional business processes the raw materials and/or the supplier is paid in cash or credit and that value does not fluctuate except with regard to changes in currency exchange rates or bad debts. Unlike this model, scholars are "paid" in prestige and prestige is based on perception. Prestige, like many perceptions, exhibits a positive feedback loop in which a prestigious institution attracts prestigious scholars and this works to make the institution more prestigious. As a result, "payment" in prestige does not represent an outflow of resources for a publisher. In fact, assuming exclusivity is maintained, prestige only grows and multiplies since a prestigious article will contribute to the publisher's prestige and vice versa. This "prestige multiplier effect" is a self-confirming loop and the effect allows prestige to build faster for large publishers which have already built momentum. Armed with prestige, large publishers can charge higher prices and gain greater circulation than their smaller counterparts all the while maintaining similar if not lower costs given economies of scale. Large publishers can also raise the prices significantly every year given the demand inelasticity thus forcing libraries to cut smaller publications and increasing the large publishers' market power even more (see Landesman and Van Reenan <<http://dx.doi.org/10.3998/3336451.0006.203>>).

An oligopoly, similar to a monopoly, is not necessarily bad. In theory, they divide monopoly like profits amongst themselves and can benefit from economies of scale. Consumer surplus is often lower in an oligopoly than in a competitive market and there may be some deadweight loss, but government or institutional intervention is often not practical or effective in industries where natural oligopolies occur without collusion. A laissez-faire approach may remain optimal in these scenarios.

However, when the oligopoly practices price discrimination such as in the case of the scholarly journal publishing industry then much of the consumer surplus is extracted and the publishers earn profit materially above the oligopoly scenario with no price discrimination (see Cavaleri, Keren, Ramello, Valli). The deadweight loss to society is significant, especially if we consider the negative externalities of overpriced and over-restricted access to knowledge by industrially advanced countries. In many ways, this represents a form of "colonialism of knowledge" (our term pertaining to the humanities, but see, e.g., Cohn as well) as it restricts the dissemination of knowledge (with regard to the humanities see Tötösy de Zepetnek, "The New" 62; see also Tötösy de Zepetnek and Vasvári 18-20).

With regard to open-access journals, large publishers continue to opt against open access (see, e.g., Rochel de Camargo <http://www.scielo.org/pdf/rsp/v46n6/en_ao4154.pdf>) when "Universities are locked into buying the publishers' products. Academic papers are published in only one place, and they have to be read by researchers trying to keep up with their subject. Demand is inelastic and competition non-existent, because different journals can't publish the same material. In many cases the publishers oblige the libraries to buy a large package of journals, whether or not they want them all ... What we see here is pure rentier capitalism: monopolising a public resource then charging exorbitant fees to use it. Another term for it is economic parasitism" (Monbiot <<http://www.theguardian.com/commentisfree/2011/aug/29/academic-publishers-murdoch-socialist>>). Or, if not opting against open access entirely, author-pay fees make profit possible. We are not arguing for more government or institutional intervention as we believe that such would not be an effective way to combat publishing oligopolies. At the same time, the academic journal industry ought to be public service that already experiences support from public taxpayer money through the university system in the case of public universities and this is a factor that underlines the development of open-access publishing (see, e.g., Harley and Krzys; Odlyzko <<http://dx.doi.org/10.3998/3336451.0004.106>>; note that this is not the case with regard to private universities). Instead, what we are suggesting is that there is ample room for "electronic journals to improve the consumer surplus situation and reduce the capacity for consistent price increases and price discrimination. We can observe this price discrimination in the increasingly complex and varied pricing packages that publishers offer to different customers. For example, there are several publishers that use various multi-tariff pricing and bundling of titles in given disciplines" (Cavaleri, Keren, Ramello, Valli 92).

Most importantly, we contend that the greatest deadweight to society arises from the consistent price increases publishers enact. In recent decades, there have been increases of roughly 10% every year in subscription prices for academic journals, an amount well above inflation. Prior to the usage of electronic journals, this price inflation was even worse (see Rohe <<http://dx.doi.org/10.3998/3336451.0003.308>>). Surveys found that institutional journal subscription prices in 1997 were 30 times more expensive than those in 1970, which implies an annual increase of 13% (Thompson 99). Why are the large publishers able to exploit this mechanism so heavily to their advantage? This phenomenon is a result of the inelastic demand of publishers' main consumer, university libraries and the inelasticity of university libraries arises from two factors: the weak bargaining power of buyers and the prestige multiplier effect. As a component of Michael E. Porter's 1979 notion of five forces of business strategy, the first factor is easy to understand. Although there has been a trend towards more consortia and aggregate purchases, the bargaining power of university libraries remains weak relative to that of large publishers given their size differences (Landesman and Van Reenan <<http://dx.doi.org/10.3998/3336451.0006.203>>). Large publishers are aware that university libraries and academics alike believe they cannot find a similar level of prestige — and therefore quality — anywhere else. This leads us to our next component which is less intuitive, but more fundamental: we argue that large publishers are able to amass more prestige through a positive feedback loop and this helps justify their ability to raise prices every year considerably because of the prestige factor. Given that library budgets are not increasing nearly at the rate of the publishers' price increases and are oftentimes stagnating, the libraries' only response is to cut smaller publications (Landesman and Van Reenan <<http://dx.doi.org/10.3998/3336451.0006.203>>). These smaller publications are less prestigious or perhaps serve a smaller niche and their loss is viewed as regrettable, but acceptable by the academics affected. However, cutbacks of larger publications are often greeted by uproar, so libraries try to keep them in circulation even while prices are rising. As a result, large publishers gain even greater market power by raising prices and become even more prestigious relative to the competition. We term this effect as the "prestige crowd-out" effect. It is this effect which allows large publishers to repeat the same price increase year after year as they know they are safe from being cut when it is time for librarians to balance the budget.

Given the above, why have electronic journals not reduced the amount of price discrimination and price inflation resulting in the deadweight loss to society we observe today? What happened to the lofty predictions of electronic journals replacing print journals entirely and with society as a whole gaining easier and cheaper access to knowledge? Electronic journals have certainly made their presence felt: according to G.E. Hynes and R.H. Stretcher, the growth of electronic journals was estimated to be between 12% to 15% per year as of 2005 and this rate is projected to increase (73) as in-

deed the case is. Many publishers today provide an array of pricing options of hybrid print and electronic subscriptions, print only subscriptions, electronic only subscriptions, and more. All this is done to satisfy both their more traditional and more tech-savvy customers, but it has not made journals noticeably cheaper in general since most savings realized from the cheaper production process are not passed on given the demand inelasticity of consumers. The only effect on pricing we have observed is that some journals have an electronic only, a print only, and a combined electronic and print option, and the electronic only option tends to be the cheapest option. However, the savings from this are still a far cry from what academics were predicting, and we believe the driving factor for more material price decreases going forward will lie in the proliferation of open-access journals.

Since the arrival of the world wide web in 1994, many open-access journals in all fields and disciplines have been started and some of these have become prominent in repositories of pre-prints, post-prints, and publisher pdf-s published in ArXiv in mathematics, PubMed Central in medicine, in the depository of the Directory of Open Access Journals, etc. It is comparatively easy to start an open-access journal, but many editors do not receive adequate support from their university and some of these journals must even be run out-of-pocket. As a result of this lack of support, the creation of open-access journals is usually done on the initiative of individual academics. However, publications in an open-access humanities journal are often viewed by both academics and university administration as not being as prestigious as in a print journal despite the fact that open-access journals provide significantly greater visibility and a wider spread of knowledge. With regard to open-access science journals, "open access reveals that scholars in diverse disciplines are adopting open-access practices at a surprisingly high rate and are being rewarded for it, as reflected in a traditional measure of research impact" (Antelman 380). This is relevant to our discussion above about the "prestige" factor of open-access publishing suggesting that said prestige factor is bound to change. Nevertheless, despite the move in the sciences towards open access, to date open-access journals are treated by the academic community not as a positive substitute for paid subscriptions, but as a complement to them or worse: "journals that originated online" are considered as "tedious and unoriginal" (Rauch 56). Although the Directory of Open Access Journals lists more than 2000 peer-reviewed electronic journals, open-access journals have failed to put any noticeable downward pressure on subscription journal prices (see Wineburgh-Freed 22) despite the fact that there is a chorus of voices arguing for open-access publishing including the humanities (see, e.g., Beals <<http://dx.doi.org/10.1080/13555502.2013.865977>>; Egan <<http://www.timeshighereducation.co.uk/comment/opinion/green-open-access-can-work-for-the-humanities/2004323.article>>; Suber, "A Field Guide" <<http://www.sparc.arl.org/resources/articles/field-guide>>, "Promoting") although there are of course counter-voices (see, e.g., Hoyle <<http://www.timeshighereducation.co.uk/comment/opinion/the-bottom-line-is-that-journals-cost-money/2004889.article>>; Osborne).

The notion of "free" and its positive aspects in business put forward by Chris Anderson in his 2009 *Free: How Today's Smartest Businesses Profit by Giving Something for Nothing* can be applied to the economics of open-access publishing of scholarship (see also Sutton <<http://crln.acrl.org/content/72/11/642.full>>). The key reason behind the failure of electronic journals to improve the economics of the academic publishing industry and the publishing of scholarship altogether is how they are perceived, i.e., prestige as discussed above. There is still a deeply rooted perception in the academic community that print journals are more prestigious than electronic journals. There is a prestige multiplier effect that makes it particularly hard for perceptions to change and these perceptions can lag considerably behind changes in technology. Some of these perceptions are self-fulfilling, as many academics strive to get their articles published in print journals which do not allow electronic pre-prints (see Singer <<http://dx.doi.org/10.3998/3336451.0006.205>>). However, some of these perceptions are materially inaccurate. For example, there is the perception that print journals are much more difficult to get published in than electronic journals, when in reality the gap in exclusivity is not as wide as many imagine it to be (see, e.g., Fitzpatrick 348; Willinsky). Many electronic journals are just as exclusive as or more exclusive than print journals and the belief that open-access journals do not have peer review is not the case: "It has never been true that OA [Open Access] is about bypassing peer review. The OA movement focuses on OA for peer-reviewed literature. The goal is to remove access barriers, not quality filters" (Suber, "A Field Guide" <<http://www.sparc.arl.org/resources/articles/field-guide>>) and a 2007 study in the *Journal of Electronic Publishing* revealed that open-access journals in library and information science were just as complete and comparable in quality with non-open access journals in the field (see Mukherjee <<http://dx.doi.org/10.3998/3336451.0010.208>>). There is also the curious belief that many "open-access journals have author-pay fees despite the fact that "open access" is self-explanatory. It is the case, however, that author-pay fees are frequent among subscription based journals whether print or online (Wineburgh-Freed 19). The belief is with some justification, however, because of the unfortunate development that with the move towards publishing online, there is an explosion occurring with the creation of "open-access" online journals with dubious experts on their advisory boards and questionable processes with regard to peer review which require high fees. While the fees are not like

author-pay fees with science journals, these predatory open-access journals "often collect fees from authors to pay for peer review, editing and website maintenance ... the goal of predatory open-access publishers is to exploit this model by charging the fee without providing all the expected publishing services" (Butler 433; see also Beall <<http://scholarlyoa.com/2012/12/06/bealls-list-of-predatory-publishers-2013>>).

How will the perception and adoption of electronic journals change going forward? It seems natural for electronic journals to gain popularity given the demographic shifts and technological know-how in user behavior. In Western societies Generation Y has never known a life without the internet and they show a marked preference for searching for data and research online as opposed to wading through volumes of print periodicals in libraries. Although there are problems with this, it makes sense regardless: when faced with the need for research, the path of least resistance is generally taken first whether that entails Google searches, meeting with colleagues, or visiting a trusted website (see Connaway and Wicht <<http://dx.doi.org/10.3998/3336451.0010.302>>). When we consider the convenience of electronic journals' speedier production cycles, as well as the user behavior of younger generations of students and faculty, it seems hard to imagine that the next generation of academics will have the same fixation on print journals (see Sanni, Ngah, Karim, Abdullah, Waheed 5). Here is what Jonathan Bate writes in his 2014 opinion piece in the *Times Literary Supplement*: "I recently asked a group of students in my College — from a mixture of disciplines across the humanities, social sciences and sciences — whether they had ever read a journal article in hard copy in a library, as opposed to online or as a download. Not a single one of them raised their hand" (15). We argue that it is obvious that when electronic journals move to become the platform of choice, open-access journals in particular will play a role in the paradigm shift. As accessing resources online becomes standard, scholars will be compelled to check open-access sources first during their research since it represents the path of least resistance. Meanwhile, high quality open-access journals will become established with prestige as universities realize the importance of publishing their own open-access journals in order to improve their own brand image and thus reduce the cost of the exorbitant subscription fees by large publishers because as subscriptions increase, libraries will continue to cut back. As a result of these various trends, open-access sources will garner wider circulation and become an important component in any academic's toolkit going forward.

What are the economic consequences of these future trends? Should we expect any serious economic changes given today electronic journals failed to change the basic economics of the industry? Price and producer cost are the first variables, since it was the potential cost savings from circumventing the normal production process that had many academics excited with the hope it would translate into price decreases. With regard to subscription based electronic journals, however, librarians have observed that electronic access often costs more than print access (see Rohe <<http://dx.doi.org/10.3998/3336451.0003.308>>). This is because for journals with wider circulation, the savings are less than one might expect since printing and distribution represent a modest portion of the costs to begin with (see Getz <<http://dx.doi.org/10.3998/3336451.0003.115>>). Also, there are additional costs to electronic journals such as maintaining the server, purchasing and maintaining online infrastructure, running a troubleshooting team, and so on. There are also significant expenses to convert electronic submissions into a standardized, uniform format (see Varian <<http://dx.doi.org/10.3998/3336451.0004.105>>). Most publishers estimate that expenses could be reduced by 30% by switching from a print platform to an electronic platform (see Odlyzko <<http://dx.doi.org/10.3998/3336451.0004.106>>). Today we observe that any cost savings realized are often not passed down to consumers given the inelasticity of demand and the prestige crowd-out effect. At the same time, maintaining a server becomes cheaper with time and infrastructure becomes more efficient and standardized and thus the costs of running an electronic journal will go down and the cost savings will be more significant on the part of the publisher. These reduced cost savings going forward would reduce barriers to entry and the need for economies of scale, which would allow new entrants and smaller publishers to challenge the current oligopoly. With more competent and subsequently better respected smaller and medium-sized publishers, the prestige multiplier effect and the prestige crowd-out effect will not be as powerful. Therefore, all things held equal, any increased substitution towards subscription based electronic journals and away from print journals would have a downward effect on producer cost, barriers to entry, and to a certain extent price, although it will take time for these effects to be fully realized.

From a cost perspective, open-access journals can be run on a significantly lower budget than conventional print journals or subscription based electronic journals. This is especially true versus print journals where in many cases the high fixed costs of print publishing would be enough to make the project infeasible. In contrast, for an open-access journal US\$3,000 to \$10,000 per annum is enough to cover the editorial, design, and technical staff costs with a journal that publishes three to four times a year (see Lieb <<http://dx.doi.org/10.3998/3336451.0007.306>>). As a result, more open-access journals serving niche audiences can be started in situations which no private entity would step in given the prospects of low circulation and low profits. Also, academics who are frustrated with the double appropriation model and access to knowledge can easily start their own open-

access journal to compete with the large publishers using just a relatively small grant from their university. As more top academics start peer-reviewed, high quality, and well-respected open-access journals and as library budgets begin to buckle from the onslaught of subscription price increases, perceptions will gradually change and open-access journals will begin to be viewed as a viable substitute rather than merely a complement to print journals. Once this status is achieved, any significant increase in the usage of open-access journals will begin to put downward pressure on the demand for print journals and subsequently price.

Nevertheless, the opinion that open-access journal publishing is not feasible persists: "At present, the available business assessments and recommendations are all framed within an acknowledgement that a major change in how the system of academic scholarship functions is necessary before open-access journal publishing can be fully implemented. The reports also point to widespread anxieties about the implications of the global paradigm shifts underway and to uncertainties about the ways in which to engage such change" (Wodtke and Reimer 7). Contrary to this argumentation, with the replacement of print journals by electronic journals — whether subscription based or in open access — the economics of publishing will change with regard to knowledge management towards global access. Here is an example in the humanities: the peer-reviewed humanities and social sciences Purdue University Press journal *CLCWeb: Comparative Literature and Culture* <<http://docs.lib.purdue.edu/clcweb>> is published since its foundation in 1999 in open access and its use is by now widespread whereby the download count of the journal's material in 2012 was 275000 times, 334000 times in 2013, and its total download count since the journal's publication in pdf starting in 2007 has been over one million times (1999-2007 the journal was published in html; see "Annual Reports" <<http://docs.lib.purdue.edu/clcweblibrary/clcwebannualreports>>; "History of *CLCWeb*" <<http://docs.lib.purdue.edu/clcweblibrary/clcwebhistory>>). While the editors of the journal or its editorial assistants do not receive monetary compensation — as is standard in the humanities in the U.S. — the production cost of the journal is an issue because of the costs of server space, technical assistance, marketing, the subscription cost of CrossRef DOI: Digital Object Identifier, etc. Brand recognition brought to Purdue University is significant and because the journal is one of few journals double-blind peer reviewed, published in open access, full text, and its material indexed by Thomson Reuters, the journal receives large numbers of article submissions globally from all ranks of scholars. With regard to the average cost of the publication of one article in *CLCWeb: Comparative Literature and Culture* (*nota bene*: the journal is published online only), the following is the case: 1) one article's average cost with regard to publishing software, server space, maintenance, cost of DOI, and general administration by the press: 1000.00; 2) equipment, technology, and communication costs by editors and editorial assistants: 300.00; 3) cost of an article's double-blind peer review (although peer review is voluntary and part of a scholars' academic profile, we calculate 50.00/hour with an average review work time of three hours each per two evaluations): 300.00; 4) average editing work (editor's and editorial assistant's average time spent on one article of 3 day's work): 1200.00; 5) editors' and editorial assistants' various administration work related to one article published: 500.00 and thus the average cost of one article's publication in *CLCWeb* is US\$ 3300.00. This amount is less of what science journals calculate as the cost of the publication of one online article, i.e., US\$ 5000.00 (see "How Much" <http://blog.scielo.org/en/2013/09/18/how-much-does-it-cost-to-publish-in-open-access/#.U_IHQksSxQo>). With the average number of 80 articles published in *CLCWeb* per volume, the cost of the publication of the journal amounts to US\$ 264000 per calendar year whereby most of the work is carried by the editors, editorial assistants, and reviewers at no cost to the press.

The impact of electronic journals on quantity is perhaps the most immediate and easily observed economic effect. Here, we can define quantity in different ways: the number of journal subscriptions purchased, the quantity of total journals available, and the number of individual readings in total. Only the former is relevant in the economic function, but the other two definitions are important in analyzing some of the externalities of electronic journals. Electronic journals will increase the number of journal subscriptions purchased. On the supply side, they have a cheaper marginal cost than print journals by about 30% and this will translate to somewhat cheaper prices and subsequently greater quantity demanded. The quantity of total journals available will also increase both from subscription based electronic journals and open-access journals. Both have lower costs and lower barriers than print journals and this is especially true with open-access journals. Finally, electronic journals will have the greatest impact on the number of individual readings given that electronic journals cause both an increase in quantity of journals available and an increase in the ease of accessibility. With electronic journals, scholars can experience easier navigation, linking, search capabilities, and normally faster publication processes. In connection with this easier accessibility, scholars also read more papers while expanding into wider subject areas (see Tenopir and King <<http://www.dlib.org/dlib/november08/tenopir/11tenopir.html>>). However, users of electronic journals are more likely to read an article for a shorter amount of time (see Niu, Hemminger, Lown, Adams, Brown, Level, McLure, Powers, Tennant, Cataldo 869).

What happens to the quality of scholarly journals? One of the biggest arguments against open-access journals is that they lower the average quality of the scholarly journal universe. This percep-

tion is exaggerated as there are a significant number of open-access journals with standards just as rigorous as any print journal. However, given that the electronic journal industry has significantly lower barriers to entry — especially with open-access journals — it is easier for scholars with a wider range of skillset and academic experience to start their own journal. As noted by Doh-Shin Jeon and Jean-Charles Rochet, "under open access, the journal does not internalize inframarginal readers' costs of reading, as long as they are willing to read the journal" (<http://idei.fr/doc/by/jeon/pricing_journals.pdf>). From a prestige perspective, it is more important for young academics today to gain wide readership and a large number of citations than to publish in a more exclusive print or subscription based electronic journal. Many university administrators do not understand journal rankings especially in the ever-narrowing fields of specialty that young academics must choose and the number of citations is a more impressive statistic, a statistic that tends to get higher with open-access publishing (see Varian <<http://dx.doi.org/10.3998/3336451.0004.105>>). It should also be noted that in emerging markets the cost of paying subscription prices which were designed for industrially advanced countries are prohibitive and open access can often be a primary source of research for such universities and thus reducing the colonialism of knowledge is of paramount importance. It is also important to note that price is not correlated to quality in the academic journal publishing industry. For example, some of the three most well respected journals in mathematics are from a commercial publisher, a university, and by a professional society all of which have different costs. In economics, some are arguing that the open-access journal *Theoretical Economics* has already overtaken the print journal *Journal of Economic Theory* as the top journal in microeconomic theory. Meanwhile, some of the most prestigious journals in economics are published by the American Economic Association, a professional society and they are some of the cheapest journals in the field (see Odlyzko <<http://dx.doi.org/10.3998/3336451.0004.106>>).

Seeing that quantity goes up on all definitions with a wider spectrum of quality, producer cost goes down and price goes down albeit to a lesser extent, what happens to producer and consumer surplus? With electronic journals, we see that marginal costs and therefore prices fall as electronic journals and especially open-access journals are viewed more of a substitute rather than a complement to print journals. In addition, open-access journals provide value to consumers at zero marginal cost. Therefore, we interpret the proliferation of electronic journals as increasing consumer surplus. Meanwhile, producer surplus declines as a result of the free substitute provided by open-access journals. As barriers to entry go down, the oligopoly industry structure may be somewhat challenged, although we surmise that subscription based journals will retain a general oligopoly structure albeit notably flatter. This is because the prestige multiplier effect and the prestige crowd-out effect will still continue to work in the large publishers' favor, although these effects will be smaller given the increasing number of substitutes to large publishers. The ability of publishers to raise prices at the same speed while gaining more market share will be reduced in particular once open-access journals become more popular with regard to access to scholarship and are viewed as a viable substitute to paid subscriptions. When large publishers are not able to raise prices at the same rate and not able to crowd out the prestige of other journals, this will lead to opportunity for smaller publishers who can take advantage of the lower entry costs of electronic journals to win market share for themselves. The need to spend a large amount of taxpayer money on expensive subscriptions may also be reduced when there are so many free, quality alternatives and the overall size of the paid subscription journal market will experience slowing growth and eventually stagnate or even decline. However, demand will still remain for top journals and electronic journals simply provide a wider spectrum of quality for consumers. The reduction in producer surplus from having a wider spectrum of substitutes is not as great as the increase in consumer surplus from having cheaper prices, higher quantity of resources and more open-access journals at zero marginal cost to consumers, especially since many of these consumers would not have been able to buy the higher priced print publications anyway. Consequently, the proliferation of electronic journals and in particular open-access journals increases gross surplus.

It should be noted that we can only analyze the issue of surplus from a rhetorical perspective and not from the textbook method of measuring the top and bottom areas of intersection between supply and demand. Some complexity and ambiguity is added to the analysis of surplus given that authors supply articles and journals demand them and at the same time journals supply articles and readers demand them. In this manner, academic journals are a two-sided market. One important feature of two-sided models is that they can be optimal even in a profit maximizing situation to charge a specific group a free or even negative price (see White <<http://dx.doi.org/10.1057/9780230226203.3885>>). In the case of electronic journals especially, it rarely makes sense to pay someone to view a journal, but it can sometimes make sense to give an esteemed academic free electronic access to a subscription journal in the hope that they cite it and improve its visibility if the academic had no intention of buying it otherwise. In fact, assuming a world of no cannibalization, zero or near-zero marginal costs, and perfect price discrimination, it could be profitable for an electronic journal to give out their journals for free or at a significantly lower price to

those who could not afford it. This would result in a greater number of citations and greater visibility leading to a network effect.

It is the network effect, the two-sided platform, and also the status of academic journals as a public good which make the analysis of externalities important to assessing the impact of electronic journals on social good: "Given that open access has demonstrated how a much wider and more equitable access to the journal literature can be achieved, the issue is no longer about a return to reasonable pricing for journal subscriptions. Rather, at issue is a greater understanding of the potential implications of this approach to the access question, as opening access stands to further the scientific and public quality of research and scholarship" (see Borgman; Willinsky). Broadly speaking, the externalities of subscription based and open-access electronic journals are positive: 1) they save trees (although the production costs of electricity and its use is a matter to consider), 2) the proliferation of knowledge has positive consequences for education, new product development, stimulating public policy debates, and developing new knowledge (see Getz <<http://dx.doi.org/10.3998/3336451.0003.115>>), 3) as scholars are able to do more readings at the touch of their fingertips, they are able to produce better research, and 4) with open-access quality journals more scholars in developing countries are able to access knowledge. Downsides are that 1) even at cheaper prices, subscription costs by large publishers remain prohibitive and 2) the archiving and the potential loss of knowledge: file formats change, websites change or become inactive, infrastructure and platforms no longer function on newer operating systems, and a host of other technological issues can affect the archiving of electronic journals. However, we believe that this is still preferred to storing a physical copy of a journal, the present value of which is estimated to be between \$25.00 to \$40.00 (see Varian <<http://dx.doi.org/10.3998/3336451.0004.105>>), and 3) the time lag of prestige acquisition by electronic journals whether subscription based or in open access particularly in the humanities and social sciences. The net effect of these externalities is resoundingly positive especially with regards to open access. Jeon and Rochet note that "open access is socially optimal because the marginal cost of providing access to a reader is zero. If subsidizing reading were feasible, it would be even optimal to do so because each reader exerts positive externalities on the rest of society" (<http://idei.fr/doc/by/jeon/pricing_journals.pdf>). In combination with the lowering of prices and the increase in gross surplus, the overall effect of the externalities we observe result in open-access journals contributing to a socially optimal outcome.

In conclusion, the current state of the academic journal publishing industry is an oligopoly based on a double appropriation model where academics produce work at no cost to large publishers only to have publishers sell the work back to academics while earning high monetary profit. This oligopoly is able to extract much of the consumer surplus through 10% price increases every year, as well as price discrimination. Large publishers are able to do this given price inelasticity and weak bargaining power of its main consumers, university libraries. Publishers' ability to increase prices is also supported by the prestige multiplier effect and the prestige crowd-out effect which is the tendency for libraries to cut small publishers as the large publishers raise prices because large publishers are more prestigious and cutting them is a last resort. To date, the usage of electronic journals has not changed this general model and we submit that a change in attitude and practices is required not only by publishers, but also by academics themselves in general and in the humanities in particular towards a more equitable model of knowledge management and the dissemination of knowledge globally. However, this remains to date problematic because in 2013 "For journals, the shift from print to electronic collecting has been, from a budget allocation perspective, nearly completed. Library directors tend to be more comfortable than are faculty members with the print to electronic" (Long and Schonfeld <<http://www.sr.ithaka.org/research-publications/ithaka-sr-us-library-survey-2013>>). Perhaps the most important question is whether open-access publishing can be based in/on sustainable financial model. However, as Martin Paul Eve suggests, the lack of "current models [of financing] cannot afford the opportunity costs of being left behind as open access gains increasing traction" (76; see also Adema and Ferwerda). We believe open access has the potential to change the "poverty" of journal publishing because open-access journals represent a source of knowledge with no marginal cost to the reader and allow for more widespread access and dissemination of knowledge worldwide. Through the network effect, the increased usage and visibility of open-access journals will compound and the prestige multiplier effect will begin to work in favor of open-access journals which are run by recognized academics and have a rigorous peer-review process. There will be more highly recognized open-access journals, a trend we are already seeing in many fields. By providing academics a wider scope of knowledge they otherwise would not have, open-access journals will both grow and will reduce the colonialism of knowledge. Most importantly, once perception changes and open-access publishing obtains prestige and symbolic capital, this type of publishing scholarship will replace or it will be at least parallel to the prestige of print journals and subscription based electronic journals.

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