SPARC

2020 UPDATE

SPARC Landscape Analysis and Roadmap for Action

June 2020

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BACKGROUND

In early 2019, SPARC released its Landscape Analysis, an in-depth look at how academic and scholarly publishing are changing, how the leading publishers are responding to these changes, and the implications for the academic community. Later last year, the Landscape Analysis was followed by a Roadmap for Action outlining steps that the academic community might take to manage the issues that surfaced in the earlier document.

What does the landscape look like one year later? This document reviews the events of the past year and provides updates on both the academic publishing market landscape and the suggested actions for the community to consider, particularly in light of the global COVID health and economic crisis. The document also contains an appendix that reviews in more detail the market and financial performance of some key commercial publishers in 2019 and 2020, as well as their response to changes in the respective marketplaces.

The production of this updated analysis was led by Claudio Aspesi, a respected market analyst with more than a decade of experience covering the academic publishing market for international investors. Over the past two years, Claudio has collaborated closely with SPARC on this work and consulted with more than a dozen university presidents and provosts on addressing important questions of control of the future of research infrastructure.

Before working with SPARC, Aspesi was the Senior Research Analyst at Sanford C. Bernstein covering European Media Stocks from 2004 to 2016. The academic publishing market – and Reed Elsevier and Pearson in specific – was a key area focus for him during his tenure. Previously he was Global Senior Vice President of Strategy at EMI Music and was responsible for defining EMI's business model as the music industry entered the digital age. Before joining EMI in 2002, Claudio was a member of the executive team at Airclic, an Internet infrastructure company and, prior to that, a partner at McKinsey and Co., working with many leading media and entertainment companies.

Aspesi also served as lead author for the original SPARC Landscape Analysis and Roadmap for Action, produced in close collaboration with the SPARC team and after conducting interviews with dozens of key stakeholders including provosts, CIO's, library leaders, students, and higher education administrators in a wide variety of North American institutions, as well as publishers, and other market experts.

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UPDATE TO THE LANDSCAPE ANALYSIS

Market Changes in the Context of the COVID-19 Crisis

At the time of writing in May 2020, it is very difficult to formulate any realistic forecast in terms of the impact of the health and economic crisis on the markets covered by the Landscape Analysis. The impact of COVID-19 on the global economy, in particular on the United States and Canada, is starting to emerge only now; the range of forecasts both for the depth of the recession and for the shape and length of the recovery are just attempts to provide some guidance. Forecasts for the decline of the US GDP in Q2 2020 range from 10%[1] to 50%[2], a span so wide as to be essentially meaningless; forecasts for Canada show a similarly dreadful span (-15%[3] to -30%[4]).

The range of outcomes that could emerge from such broad uncertainty is vast. It is impossible to compile an exhaustive list of the uncertainties; however, a short list includes:

- Scientific uncertainty (all the questions related to the infection itself)
- Political and social uncertainty (all the questions related to possible social and political unrest; changes in cultural attitudes towards science, cooperation, and open societies)
- Economic uncertainty
- Higher education-specific uncertainties (what will happen to budgets and students/classes)

[1] https://www.credit-suisse.com/about-us-news/en/articles/news-and-expertise/the-economic-impact-of-coronavirus-202003.html

[2] https://www.bloomberg.com/news/articles/2020-03-22/fed-s-bullard-says-u-s-jobless-rate-may-soar-to-30-in-2q?utm_content=business&utm_medium=social&utm_campaign=socialflow-organic&cmpid=socialflow-twitter-business&utm_source=twitter

[3] https://www.fool.ca/2020/05/04/coronavirus-recession-should-you-sell-your-stocks-now/

[4] https://www.fxstreet.com/news/canada-gdp-growth-is-pegged-at-48-for-2020-nbf-202004071335

- Industry uncertainties (the responses of commercial vendors)
- Regulatory uncertainty (such as mandates for immediate OA of academic articles based on publicly funded research).

A document that effectively captures many of these issues is the letter that Ronald J. Daniels, President of Johns Hopkins University (JHU), sent to the JHU community[5] explaining COVID's impact on the institution and how JHU plan to address that impact.

One of the lessons of the 2008 subprime crisis and the subsequent sovereign debt crisis of 2011 is that every major crisis is different. Nonetheless, it is possible to review what we do know – and what we know we don't know.

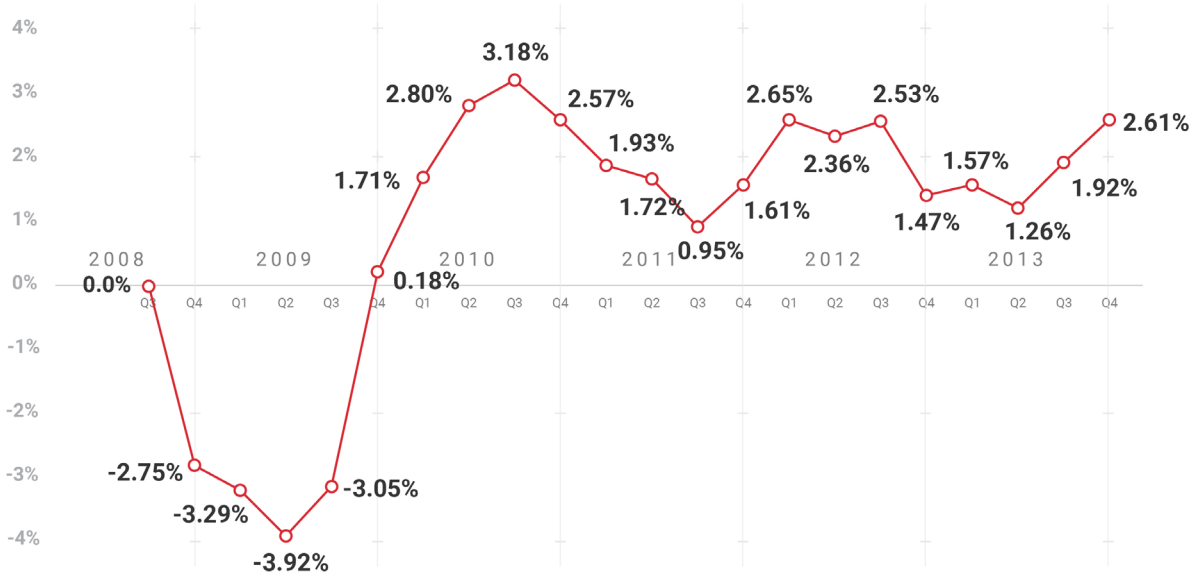
In general terms, the most significant unknown is the duration of the COVID-19 crisis. Until now, most countries have elected to issue short-term rather than long-term travel bans and stay-at-home orders. At this point, it is impossible to formulate realistic timelines; while there is always the hope of bringing the pandemic under control sooner rather than later, the psychological impact of issuing long-term bans would probably aggravate the economic downturn.

Financial markets are trying to predict whether the global economy (as well as the economy of the wealthiest countries) will experience a V-, U- or L-shaped recovery. These terms indicate, respectively, a very fast rebound, a period of stagnation at lower levels of activity before recovery starts, or a long period of depressed economic activity. The high volatility in the equity markets reflects how uncertain any of these scenarios is, and it is virtually useless to make predictions today.

Past experience, however, shows that the willingness to provide incremental relief to support prolonged growth tends to decline once recovery sets in. Looking at US GDP growth, we see that after the financial crisis of Q3 2008, the US economy did not return to growth until Q4 2009 (Exhibit 1). Growth then accelerated for three quarters before starting to decline again. Therefore, even in a "V-shaped" scenario, after an initial lag, recovery would be fast but then possibly slow down again relatively soon – what some economists call a W-shaped recovery.

[5] https://hub.jhu.edu/novel-coronavirus-information/financial-implications-and-planning/

Exhibit 1: US Real GDP Growth by Quarter, 2008 - 2013



Source: US Bureau of Economic Analysis, Federal Reserve Bank of St. Louis

A more pessimistic scenario suggests that it will take until sometime in 2021 to bring the pandemic under control, aggravating the economic impact well beyond what current stimulus programs launched in various regions of the world can cope with. In this case, the survival of many companies will be a function of the willingness of governments to support them with further cash. This will probably need to take the form of direct subsidies and grants or even de facto nationalization (partial or total), should the cash be disbursed in exchange for equity. Because of the uncertainty surrounding the likely depth and length of the recession, this may not be the best time for companies to head into a collision course with their respective governments, since they may become dependent on rescue programs for their survival.

The Impact on Scholarly Journal Publishers

In the near term, scholarly journal publishers seem to believe that subscription revenues will be partially insulated by their long-term contracts with academic libraries.[6] However, the leading commercial publishers may be overly optimistic in formulating their outlook. Management teams may well be basing these relatively upbeat statements on the experience of the 2008 financial crisis: RELX's STM business, for example, delivered organic revenue growth of +4% and +2% in 2009 and 2010, respectively. With an average contract length ranging between three and five years, management teams may be assuming that many academic libraries will cope with shrinking budgets by cutting other services first, rather than by stopping payments on their existing subscriptions. On the other hand, some libraries have "financial hardship" clauses they may decide to trigger, while the ones that have contracts expiring in 2020 and 2021 may well decide to demand significantly lower spending, or even choose to abandon collection subscriptions altogether to save cash.

Going forward, academic libraries will likely demand more favorable conditions when renewing their contracts, and signing complex transformative deals may take longer than it already does. The crisis will exacerbate the problem of radically reallocating costs to "publish-intensive" institutions inherent in "transformative" agreements. Ultimately, this crisis may well lead to a reckoning: the price and value of collection subscriptions have become so misaligned that the current spending levels may not be sustainable when facing library budget cuts. Once a clearer view of post-COVID budgets emerges, the

[6] For example, in April 2020, giving its following full year outlook for the STM business, RELX stated: "Positive revenue momentum continued through the first quarter. As we go through the year, we could see some impact from the COVID-19 pandemic in our customer markets, and prolonged restrictions on movement could potentially impact our ability to conduct new sales in person and distribute print products, but overall revenue stability is supported by 75% being subscription based." Also in early April, Wiley communicated to investors that Q4 revenues would be affected by "delays in closing annual journal subscription agreements in certain parts of Europe and Asia due to challenges of remote selling and university disruption. … Wiley estimates that approximately one-quarter of the fourth quarter revenue and earnings impact from COVID-19 is timing related, primarily in Research, and recovery is expected in subsequent periods."

incentive to abandon collections subscriptions and acquire a much smaller number of leading titles from each publisher will likely grow.

The uncertainty surrounding COVID-19's impact on research funding may well affect open access publishing specifically. A possible decline both in the number of new grants for research and in their individual size may put more pressure on funding APCs, adding further questions about the sustainability of APC-based Gold OA, even in the limited number of disciplines for which the model is suited. However, the launch or expansion of major research programs in life sciences and in viruses in particular could offset some of the possible decline in funding for research, and limit the negative impact on the volume growth of OA articles (although some publishers, like SAGE, have waived APCs on COVID-19-related OA articles). There may also be an additional negative impact on the capacity of academic libraries to sustain monographs, through either the purchase of print editions or the funding of OA digital editions.

Risks posed to the subscription model by COVID-19 are both structural and reputational. While many publishers tried to move quickly to introduce some form of emergency program to open up COVID-19-related articles, the structural difficulties of trying to selectively open up content in a system that is closed by default quickly became apparent. An article by Vincent Larivière, Fei Shu and Cassidy Sugimoto documented the results of the Wellcome Trust's January 31st request for publishers to make all of their COVID-19-related papers fully open access.[7] By March 5th, over half (51.5%) of the articles published on coronavirus since the late 1960s (according to the Web of Science) still remained closed.

Because coronavirus research is deeply and inextricably connected to the rest of life sciences, this selective collection of papers is far from complete. Larivière et al. observed that the identified 13,818 full-text papers on coronavirus cite more than 200,000 additional articles, only one-third of which are coronavirus articles, and only a small fraction of which are openly available.

[7] https://blogs.lse.ac.uk/impactofsocialsciences/2020/03/05/the-coronavirus-covid-19-outbreak-highlights-serious-deficiencies-in-scholarly-communication/

The Wellcome Trust's experience is far from unique. In mid-March, a group of National Science and Health Advisors from 12 countries, including the US, issued a further request to publishers to enable researchers to "access, re-use and text mine" all papers relevant to the coronavirus from a single database. Publisher response was again mixed, with some quickly providing full open access to their articles but many others providing only temporary access limited by bespoke licenses – and still others not providing their articles at all.

This incident highlights the inherent problem of the readers/users of scholarly articles having to routinely seek individual publisher permission in order to conduct basic research. It also raises the question: if open access to articles and data is better and can save lives, why should it happen only at exceptional times? Surely, patients struggling with other diseases – cancer, heart disease, etc. – are as deserving of help as coronavirus patients?

This is also playing out at a time when publishers' value-added practices are under particularly intense scrutiny, and under the threat of a possible Executive Order in the US mandating that all federally funded research be made openly available without embargo. The inadequacy of the publishers' response illustrates the irreconcilable tension between the effective communication of science/scholarship and gated access models.

The Impact on Courseware Publishers

The outcome of the crisis for courseware publishers is much harder to forecast, as it is reasonable to formulate scenarios with very different implications.

A crisis that extends into the second half of 2020 will likely lead to a drop in enrollment, as many academic institutions may choose to keep their physical doors closed for another semester, making it more likely for students to defer their attendance until they can return to campus. Historically, recessions have been good for college enrollment (and for textbook publishers): Pearson estimated, in the aftermath of the 2009 recession and the subsequent recovery, that a 1% change in the US unemployment rate would drive a 3% change (in the same direction) in college enrollment. However, this relationship is likely to break down if college doors remain closed.

A significant number of students may be willing to shift to online courses and even online degrees, but it is unclear how many colleges are equipped to run a fully online program, including tutoring students, administering exams securely, etc. Some publishers (Pearson, Wiley) have strong capabilities in running online college programs, and may benefit more than others from enabling colleges to move to offering online classes and degrees. On March 23rd, 2020, Pearson issued a trading update indicating that it was seeing a substantial increase of interest in virtual schooling. The trading update referred specifically to Connections Academy, its K-12 virtual school, but the same trends may unfold for higher education as well. We will come back to the issues posed by a significant shift to online.

The Impact of Debt on Academic Publishers

Finally, the threat of a major recession has a significant and asymmetrical impact on companies on the basis of their debt profile. To illustrate this, we will use the latest reported Net Debt/EBITDA ratios for the companies covered in the Landscape Analysis. EBITDA (Earnings Before Interest, Taxes, Depreciation and Amortization) is a commonly used indicator of the cash earnings generated by a business, and Net Debt/EBITDA is a commonly used measure of debt. While there is no standard definition of an excessive Net Debt/EBITDA ratio, ratios above 3.5x are considered quite high.

PUBLICLY LISTED COMPANIES

The three companies that are publicly listed are currently in relatively good shape. Pearson and, to a lesser extent RELX, have prudent Net Debt/EBITDA ratios (1.3x and 2.5x, respectively, at December 31st, 2019); Wiley sits exactly midway in between Pearson and RELX at 1.8x.

Of course, all these ratios are likely to deteriorate during the course of 2020. However, these companies have all elected to reduce some of their programs to return cash to shareholders by suspending stock buybacks, and this measure will provide some additional resources.

Finally, with relatively healthy balance sheets, all these companies can tap capital

markets to raise additional debt and – as a measure of last resort – additional equity. As a rule, investors respond negatively to being "diluted" through the issuance of new shares, because the same amount of earnings has to be divided up among more shares and because their shares count less when voting in the Annual General Meeting (AGM). Hence, raising new equity is viewed as less attractive than adding debt (as long as debt does not become excessive) and – as we said earlier – something to be done in exceptional circumstances only.

COMPANIES FULLY OR PARTIALLY OWNED BY PE

The companies that are fully or partially owned by private equity (PE) companies (Springer Nature Group (SNG), McGraw-Hill Education and Cengage), on the other hand, all have significant debt.

SNG is in the best position among the three. It still has substantial debt (it had €3.0 billion at the end of 2017, and we estimate that it should have generated at least €1.0 billion in cash since then, reducing its debt to about €2.0 billion) and an estimated EBITDA of €600/620 million (implying a Net Debt/EBITDA ratio of 3.2x–3.3x, if our debt estimates are correct). Cash conservation has prevented the company from embarking on acquisitions to strengthen its data analytics offerings. Its debt, however, is rated B+ by S&P, which means it is not viewed as investment grade (and it would need four upgrades to reach the BBB- category, which is the lowest investment grade category). The greatest disappointment for SNG is the highly likely postponement of its IPO, which was expected to take place sometime in the spring of 2020. With current market conditions, there is little hope that this IPO will go ahead on schedule.

McGraw-Hill and Cengage stand in very different territory compared to SNG. Cengage, on March 31st, 2019, had a Net Debt/EBITDA ratio of 6x under the most generous definition of EBITDA, and 8.1x when pre-publication costs were added back to expenditures (pre-publication costs are those expenses incurred in preparing new titles before they are ready for release – they can be lowered for some period of time but not eliminated altogether, for competitive reasons). McGraw-Hill Education had a Net Debt/EBITDA ratio of 5.1x on December 31st, 2019. The two companies have much lower debt

ratings than SNG: S&P rates both companies CCC, eight notches below investment grade. Unsurprisingly, the yields on the two companies' bonds spiked in the aftermath of the failed merger. In mid-February, before the pandemic started to affect the financial markets, the yield on McGraw-Hill Education and Cengage binds stood at about 9 and 10% respectively. As of March 20th, when the pandemic was factored in by financial markets, but the merger had not failed yet, yields stood at 15.3% and 18.5% for McGraw-Hill and Cengage. By early May, after the merger was abandoned, yields had risen to 29% and 37% respectively, to then decrease again as financial markets recovered. As of June 25th, yields on McGraw-Hill Education and Cengage stand at about 19 and 20% respectively, still above the yield before the merger failed. A rise in bond yields is typically a reflection of higher concerns about a possible default on the bonds.

THE EFFECT OF THE FAILED CENGAGE/MCGRAW-HILL EDUCATION MERGER

The decision to abandon their merger because of the divestitures required by the Department of Justice (DOJ) has left the companies with a more complicated future. In a call with investors in the aftermath of the decision to scrap the deal, Cengage's management indicated that they have embarked on a cost reduction program and formulated a number of scenarios about the impact of COVID-19 in 2021; the pessimistic one is based on a 25% decline in revenues, equal to about $300/310 million.[8] Since the cash costs of goods sold would also decline because of lower variable costs (print and warehousing, royalties, some selling costs), in this scenario, the cash flow of Cengage could decline by about $180 million (variable cash costs were 44% of revenues in FY 2019).

The decline in Cengage's cash flow would be roughly equal to the cash flow generated by its operations in FY 2019 (after paying interest on its debt). In this scenario, Cengage would likely be forced to cut costs substantially and to close to zero its investments in new technology and content in order to avoid further increasing its debt (in FY 2019, investments totaled about $150 million). In summary, a 25% decline in revenues would

[8] This assumes that revenues for FY 2020 (which ended in March 2020) were on a -7% trajectory, aggravated by a further $30 million decline in Q4 (i.e. the quarter that ended in March 2020) because of the COVID-19 crisis.

leave Cengage roughly in a position to continue servicing its debt, but it would make it difficult to continue investing adequately in content and technology just at the moment in time when the transition from print to digital is accelerating.

With no immediate prospect of launching cost-cutting programs of the magnitude expected as a result of the failed merger with McGraw-Hill, such a steep decline in revenues would force management to make tough decisions on how to balance financial survival with future growth programs.

THREE SUBTLE TRENDS PRESENT EMERGING CONCERNS

These issues are also occurring in the context of industry trends that have raised significant concerns in the past 12 months. We have identified three trends that warrant particular attention: the aggressive expansion of scholarly publishers into research assessment; the proposed approach of publishers pooling research dissemination through collective distribution channels; and the attempted bundling of data analytics tools with publishing tools into "bigger deals."

A Shift from Research Publishing to Research Assessment

In June 2019, Elsevier announced a co-development agreement with NETE, a digital solutions company focusing primarily on providing research assessment to federal government agencies. Two weeks later, Elsevier announced the launch of an International Center for the Study of Research (ICSR), a venture designed to "cultivate the thoughtful use of metrics and indicators in research evaluation and to promote evaluation best practices." ICSR is tasked with "developing, characterizing and validating new and existing research metrics, indicators and research assessment practices; it also supports independent, external studies on topics within this scope."

These two announcements were largely ignored by the media, but we believe that they raise significant issues:

1. **Conflict of interest.** There is an inherent conflict of interest between assessing and evaluating research, on the one hand, and disseminating it, on the other. We know that all kinds of biases and errors slip into algorithms, even unintentionally. There may be little or no way for federal agencies to identify whether any biases creep into the NETE evaluations and favor publishing research in Elsevier journals. Similarly, there may be no way for academic institutions or funding bodies to assess whether there are any biases embedded into the methodologies and standards proposed by ICSR.

In aggregate, federal agencies continue to be the largest source of funding for STM research in the US.

A deeper relationship between Elsevier and these agencies heightens the risk of excessive concentration in the provision of data analytics to academic institutions as universities are likely to gravitate toward accessing the evaluation tools used by their largest source of funding. The more successful NETE is with its customers, the stronger the motivation for academic institutions to access its data. This is likely to reduce the opportunities for other players to compete with Elsevier in research assessment analytics.

2. **Excessive control.** Perhaps the greatest source of concern is the statement contained in the Elsevier/NETE press release highlighting the aspiration to offer "seamless solutions for managing research information." It is laudable to pursue interoperability across research information systems, but it is risky to put these capabilities into the hands of one company which may find itself at the center (and perhaps in control) of a large percentage of all research dissemination and assessment data flows.

In general, the academic community should approach any companies driving the definition of research evaluation methodologies and/or performing actual assessments when they have clear conflicts of interest with a healthy dose of skepticism. In the case of ICSR, these concerns are heightened by the announcement in March 2020 that it will operate a computational platform, ICSR Lab, which will host researchers wanting to analyze large data sets (including SCOPUS and PlumX, but also their own).

Users of ICSR Lab will maintain ownership of their own data sets, but they must grant ICSR and Elsevier the right to use the data fed by researchers "for the purpose of developing and maintaining the ICSR Lab and related services," a formulation that is vague enough to allow ICSR (and possibly Elsevier) a wide and potentially unlimited range of uses. At a minimum, Elsevier and ICSR will have access to a significant amount of analytical work on science assessment and be in a position to affect the outcome of research projects on science assessment.

From Individual to Communal Research Distribution

A second issue that raises red flags is the December 2019 launch of GetFTR, a new service from Elsevier, SNG, Wiley, Taylor & Francis and the American Chemical Society. GetFTR is a service to facilitate seamless access to published articles by leveraging a one-time-per-device user sign-on. GetFTR will serve both subscribed and open access content located through publisher websites as well as other discovery services, repositories, academic social networks and library systems; it will send users to the "best" full-text version of an article, based on the permissions (i.e. subscriptions) available to each individual user.

The launch publishers highlight the benefits of this service in terms of faster access for researchers to published journal articles. While it is natural for the publishers to highlight these benefits, however, it is difficult to believe that they warrant launching a new service; after all, publishers of consumer magazines and newspapers have offered perfectly functional solutions for over a decade. As Roger Schonfeld has pointed out, the publishers also hope to reap benefits in terms of fighting leakage[9]: a growing proportion of article access takes place outside the websites of publishers (for example, through ResearchGate and Sci-Hub), and this trend imperils the value of all sources of revenue for the publishers.

GetFTR has several disadvantages, both operational and strategic, for academic institutions and, in particular, for academic libraries. Lisa Janicke Hinchliffe wrote a useful, detailed analysis of the operational issues that GetFTR poses for academic libraries.[10] In addition, we highlight a few strategic concerns:

1. **GetFTR imperils competition.** Publishers are aiming to leverage their control over content to compete in services where the community currently has access to a wide variety of choices like link resolvers, content aggregators and innovative access brokers like Kopernio and Unpaywall. These different options represent a valuable

[9] https://scholarlykitchen.sspnet.org/2019/12/03/publishers-announce-plug-leakage/

[10] https://scholarlykitchen.sspnet.org/2019/12/10/why-are-librarians-concerned-about-getftr/

source of steady innovation for libraries and researchers. The introduction of GetFTR poses the risk that these services will lose substantial volumes of traffic, which could ultimately marginalize them, laying the groundwork for publishers to dominate this area.

2. **GetFTR hurts repositories and inflates the value of "Big Deals."** GetFTR channels views and downloads to publishers at the expense of other sources, including repositories like PubMed Central, arXiv, and similar services – even when these repositories hold the version of record of an article. This will increase the perceived value of publisher-held collections and devalue open repositories.

3. **Privacy protection is uncertain.** GetFTR initially promises strong privacy protection. However, terms and conditions for usage can be and are routinely changed by commercial vendors, and – once alternatives are effectively marginalized – the academic community may find itself with no recourse if new terms and conditions are imposed, even if they are unacceptable.

Ultimately, the academic community does not have the information required to assess whether the unique benefits to researchers outweigh these potential significant risks that we've outlined. Before academic libraries sign on to GetFTR, it would be useful to request a period of testing to determine any real benefits. Ideally, this would run in parallel to an analysis of the negative consequences, in order to make an informed decision, rather than just accepting the claims of the publishers, who have market motives to offer this service.

The "Bigger Deal"

Finally, in December 2019, the Dutch press received leaked detailed information on a deal that Elsevier was about to sign with Dutch academic and research consortia.[11] The general terms of the deal included a zero increase in total spending for access to subscriptions and on publishing articles in open access, in exchange for the broad

[11] https://www.scienceguide.nl/2019/11/leaked-document-on-elsevier-negotiations-sparks-controversy/

adoption of Elsevier's data analytics tools in Dutch universities. A few days later, a framework agreement was signed, with the final agreement signed at the end of May 2020. Although the full financial terms and conditions are not known, we have no reason to doubt the general terms highlighted in the press leaks. This raises several concerns:

1. **Linking publishing and data contracts is deeply problematic.** It is easy to understand why Elsevier would like to bundle publishing and data contracts. Elsevier is under pressure from the academic community to lower its future revenue growth from journals. In addition, while the transition to open access may prove less disruptive than feared, there is still uncertainty over both the endgame of this transition and the complexity of managing a protracted transition phase. Contracts like this provide some degree of "insurance" from the risks posed by these issues.

   Academic institutions, however, have no reason to go along just because the contract is in the interest of Elsevier. These products serve different purposes, are acquired by different entities within academic institutions, and compete with different alternatives. By allowing Elsevier to link two separate products together, the academic community limits its future flexibility to cancel or discontinue *either* product. It is questionable enough to be required to acquire bundles of journals containing titles of little interest to the research community in order to gain access to the leading Elsevier journals, but it is even more questionable to be asked to sign contracts that make access to *Cell* or the *Lancet* contingent in some way on purchasing a research management system like *Pure*.

2. **This deal structure is bad for competition in data analytics.** Data analytics businesses are naturally likely to become concentrated oligopolies or monopolies. In scholarly publishing, there are cost areas such as sales, administration and IT that benefit from company consolidation, but many other costs (editing and peer review administration, for example) are dependent on the number of articles published. As a result, publishing has concentrated, but there are still many publishers, particularly in niche positions, providing diversity and alternatives. Data analytics, on the other hand, is naturally a highly concentrated oligopoly (or even monopoly) because users want access to the best data and analytics or to the broadest reach, regardless of cost.

Search engines or social networks provide compelling examples of just how powerful these oligopolies have become even in the consumer market.

The parties indicate that Dutch universities retain vendor neutrality. However, once a university uses the Elsevier tools, it has no incentive to also acquire tools from other vendors. As a result, this deal structure could inflict further damage on competition in the data analytics business. Elsevier, in fact, is the only company offering both journals and analytics; its competitors in data analytics simply cannot match this offer. Clarivate, Academic Analytics, and Digital Science, among others, sell products that compete directly with Elsevier's data analytics, but it is difficult to justify acquiring the products of multiple vendors because of cost duplication and because tools providing different recommendations generate administrative complexity. It is difficult to see how Clarivate, Digital Science or Academic Analytics can match the package offered by Elsevier and remain competitive.

Arguably, this may lead to consolidation between publishers and data analytics companies, with each leading publisher merging with an analytics company (for example, it would appear natural to bring together Springer Nature Group with Digital Science). Even so, the Elsevier publishing contract is often the largest one a library signs with journal publishers, and therefore there will be an incentive for libraries and consortia to sign a "Bigger Deal" with Elsevier rather than with any other company.

3. **Reduced competition will negatively impact customer leverage.** With less competition, universities may have fewer options on all terms and conditions of their contracts. Spending is one possible area of concern, but so are issues around the transparency of algorithms, the retention of ownership of the data, the retention of the right to use outputs when contracts are discontinued, non-disclosure agreements and other clauses that have historically penalized academic institutions in their dealings with scholarly publishers. In a market with robust competition, academic institutions may obtain favorable conditions on these issues; however, in a quasi-monopoly, that appears unlikely.

4. **This deal structure may be bad for the health of scholarly publishing.** Historically, critics have been incensed by the high profitability of Elsevier and other large

publishers of scholarly journals. However, should most or all revenue growth for Elsevier start to be driven by data analytics, amid expectations that "zero revenue growth" becomes the norm across the scholarly journal industry, there would be margin pressure on smaller publishers. In turn, this would reduce the availability of capital to fund new technologies, new journals, etc.

In the near term, some critics of commercial publishers might rejoice in these difficulties; paradoxically, however, Elsevier is best equipped to deal with "zero revenue growth" and would suffer less than anyone else (and perhaps even profit more) by shifting revenue and profits growth away from publishing and into data analytics. It is the smaller publishers and scholarly societies who would be left in the most precarious financial position.

5. **Spending is the least relevant issue.** While the total cost of data and data analytics is likely to go up if the business becomes less competitive over time, this is the least significant problem. The real problem posed by a monopoly or quasi-monopoly on data analytics is the loss of diversity.

   For example: one company (and one algorithm) may heavily influence decisions on which departments should grow in size and budget, which research projects should be funded, who should be promoted, etc. As we know, algorithms contain errors and biases, and those errors and biases could affect a vast amount of academic research. In addition, chasing productivity improvements as measured by a single vendor could well lead to an "arms race" with no discernible long-term gain for the participants. Senior administrators know only too well the behavior triggered by college and university rankings even among the most prestigious academic institutions. Maintaining and encouraging diversity is necessary for reasons that go well beyond spending.

   In addition, lack of diversity may influence "what" academic institutions measure, not just "how." If data analytics becomes a quasi-monopoly, what is for sale may well become the metrics that academic institutions use to evaluate their research, as happened with the Impact Factor. As we highlighted earlier, Elsevier is already attempting to play a leading role in defining standards for research assessment. If

> unchecked, Elsevier may well find itself in the position of defining, on behalf of the academic community, what constitutes good research and then selling the tools to perform the actual assessment.

For all these reasons, agreements like the Elsevier/Dutch Institution deal are highly problematic. Institutions and consortia should pause to consider and robustly debate all the ramifications of these decisions, before pursuing what may prove to be partial and short-lived benefits.

UPDATE TO THE ROADMAP FOR ACTION

New Responses in the Context of the COVID-19 Crisis

Acting in conditions of high uncertainty is particularly difficult. Academic institutions do not know what will happen to their revenues and expenses in the next six to nine months, let alone a couple of years out, and anecdotal evidence suggests that library budgets will have to be repeatedly recast as 2020 progresses. Offering near-term relief and maintaining some degree of operational continuity is paramount, and makes any longer-term planning difficult. However, uncertainty will decrease over time, allowing academic institutions to refine economic forecasts. It is important to take steps now to help maintain viability in the near term, while offering options for launching strategic initiatives at a later stage.

In the original Roadmap, we identified three classes of action. Below, we've provided additional actions that could help accomplish the twin goals of supporting near-term viability while laying the groundwork for future strategic initiatives:

Risk Mitigation Actions

These are actions that libraries, in particular, and academic institutions, in general, could take regardless of the current situation, although these actions are especially germane given the current crisis. For example:

1. **Limit cash outlays.** If there are subscription collection expirations, this is the time to avoid renewing them, regardless of the intention to renew at a later stage or not. Negotiations could be put on hold until librarians have better visibility on 1) their budget for the next academic year and 2) the likely outcome of the possible new mandate for OA for federally funded research in the US. The value of subscriptions could even decline substantially in the years to come as a result

of regulatory developments in various countries, and maintaining flexibility seems particularly valuable now. In this environment, publishers will likely be eager to be seen as collaborating with academic institutions and to avoid a constant stream of cancellations news in the press, so they will probably be more willing to offer discounts to minimize public controversies.

We would also urge academic institutions to pursue alternatives before accepting inclusive access deals that raise total tuition costs for students and/or institutional spending (if their cost is wrapped into tuitions). OER is a practical alternative that limits total spending at a time when this issue is particularly urgent.

2. **Negotiate terms and conditions affecting sustainability.** Historically, the academic library community has focused a great deal of its relationships (and tensions) with publishers on the rising costs associated with subscription contracts. There are several other terms and conditions that should also be put on the table now; the following are all essential elements of sustainability that should be pursued: billing in local currency, retention of perpetual rights to subscribed content, default author retention of copyright, financial hardships clauses, and price recalibration clauses as open content increases. Most important, the academic community should rally around open identifiers, and demand that all the relevant data that drives the data infrastructure is consistently open. This would create, over time, a “more level” playing field for new participants in the academic data and data analytics industry, as they would be able to build services that use the same data as the existing services. ORCID and DOI are good examples of these identifiers, but more are needed linking them also to data sets, grants, etc.

3. **Avoid "bigger deals" and distribution agreements that penalize alternative infrastructure.** We outlined earlier the issues posed by linking data analytics and journal subscriptions, as well as by GetFTR. It is plausible that some vendors will try to bundle multiple products and services as a strategy to offset the likely pricing pressure they will encounter in the months to come. It would be highly problematic to accept even bigger bundles that would only limit the future flexibility of academic institutions and libraries. Similarly, adopting services that depress the roles played

by repositories and other distribution channels should not be done lightly. An independent assessment of the real value of GetFTR to the academic community should be conducted before libraries and academic institutions sign on to GetFTR.

4. **Support the adoption of OER.** Publishers will be eager to use this crisis to establish credentials for future sales (for example, by offering temporary free access to their digital courseware). Cengage, for example, has stated that it views Cengage Unlimited as a key element of its future strategy. Limiting the uptake of digital offerings from commercial vendors, in particular inclusive access and unlimited offerings, also seems particularly valuable because it limits the amount of student data that it will be possible to gather in the meanwhile. OER get very high marks for quality from both faculty members and students once they have tried them, but adoption is still limited. This is the time to launch a concerted effort to expand the support and resources available to faculty for the adoption, adaptation and creation of OER in lieu of digital courseware from commercial vendors.

5. **Adopt stringent data management and privacy policies and require commercial vendors to comply.** Academic activities and campus life already generate vast amounts of data on both faculty and students, and the COVID-19 pandemic will only increase this trend. Moving online will add even more data and transfer a lot of it from the academic community to commercial vendors. In addition, a lot of this data can and will be used to "assess" faculty and students' abilities and behavior, often with limited human supervision. For example, there have been reports charging that software used to detect cheating may disadvantage minorities, the poor and students with health issues.[12] Just as it is necessary for academic institutions to introduce safeguards around the data they hold, there should be safeguards that protect faculty and students if they are forced to move to an online world.

In the original Roadmap, we advocated for academic institutions to identify a list of "principles" as a basis for adopting appropriate data policies (Exhibit 2). It is unrealistic to

[12] For example, see here https://hybridpedagogy.org/our-bodies-encoded-algorithmic-test-proctoring-in-higher-education/

argue that all these principles are equally nonnegotiable in an emergency (for example, demanding an independent audit of algorithms may be unrealistic in the current crisis).

Exhibit 2: Principles of Data Analytics Usage*

- **Transparency.** Open source software, disclosure to enable testing for biases, auditing and evaluation requirements, etc.
- **Strong privacy protection.** Consent, control over the use of data, right to erasure and correction, right to restrict processing, etc.
- **Accountability.** Remedy for automated decisions, ability to appeal, etc.
- **Equity.** Identification/correction of errors/biases, fairness, environmental impact, etc.
- **Human control.** Opt out of automated decisions, human review of recommendations, etc.
- **Customization.** Definition of non-standard reports, development of tools for a subset of users, etc.
- **Governance.** Effective input from all stakeholders, independent review mechanisms, etc.

*Based on *Principled Artificial Intelligence: Mapping Consensus in Ethical and Rights-based Approaches to Principles for AI* published under the auspices of the Berkman Klein Center at Harvard University

However, academic institutions should consider adopting four non negotiable principles, and demand – in parallel – that commercial vendors also support them if they want to operate with their community:

1. **Strong privacy protection.** Faculty and students should give informed consent to the collection of data and be entitled to an explanation as to how it will be used. They should also have a right to restrict processing to a specific list of tasks (without being forced to provide a blanket acceptance) and they should have a right to demand erasure after courses are completed. Individuals should also have a right to demand rectification of data that is wrong or incomplete. Within applicable laws, requests

from any government for data should be notified immediately to the individuals involved and the data handed over only in the presence of a legitimate court order.

2. **Accountability.** There should be rights in place to demand remedy for any decisions that are made by algorithms, and there should be clearly identified and accessible processes in place to appeal decisions.

3. **Human control.** There should be a right to opt out of AI-driven decisions and demand a human process.

4. **Accessibility and Equity.** There should be explicit indications that data and data services are accessible to all relevant constituencies, with no barriers or impediments. There should be rights in place to demand that any biases that are identified, including when identified outside the institution (for example, by other academic institutions or independent auditors) are immediately notified and corrected.

Strategy Actions

As we pointed out in the Roadmap for Action, this second category of actions is more complex, since it relates to decisions that will need to be made specifically based on each individual institution's mission, culture and values. It also involves the establishment of an explicit, structured process to determine the position that each institution wants to take in regards to specific issues posed by the collection of data and the deployment of data analytics tools. Establishing such processes in the midst of a crisis is certainly complex. Running such processes will be more difficult at a time of campus closure, financial stress and planning uncertainty.

However, some of these issues are so important that they will need to be resolved urgently, and resolution should involve all relevant parties. For example, the need to reconcile student and faculty privacy with health protection will require choosing proper monitoring tools that adequately balance very divergent goals. Similarly, academic institutions will need to decide whether (and to what extent) they want to substitute humans with algorithms in a number of activities, from screening student admissions to student tutoring to remote exam monitoring. In each of these instances, all parties involved should have a proper voice as these themes are debated and decided.

Community/Collective Actions

A number of actions require such large efforts that only concerted action, sustained by several institutions, can accomplish real impact.

1. **Support community initiatives on dissemination and data infrastructure.** Financial resources will shrink for the foreseeable future, penalizing new initiatives aimed at building the next generation of community-owned tools and infrastructure. Scarce financial resources should be pooled to achieve the most impact, rather than dispersed through individual library spending.

   This is an ideal time to pool whatever resources are available, including, if possible, some of the savings from the cancellation of collections subscriptions, into open infrastructure initiatives (such as IOI) and library-supported platforms.

2. **Advocate for the immediate opening of all articles to text and data mining.** One of the lessons learned from this crisis is that text and data mining are becoming important tools in accelerating science. There is no morally defensible reason why such acceleration would be possible only to help treat COVID-19 patients. This is the time to ask publicly all publishers to relinquish text and data mining rights for all articles and to identify publicly any publishers refusing to do so.

3. **Seek opportunities to acquire courseware publisher content in order to make it open.** The continuing decline in the size of the courseware market, coupled with the failure of the McGraw-Hill/Cengage merger, may lower valuations for publishers' assets. It is now possible to contemplate an investment in existing, high-quality titles and technology aimed at transforming them into OER. This action would likely still require the financial support of funding bodies interested in supporting the provision of OER, with the additional incentive of making OER available more rapidly and efficiently.

A TIME FOR RADICAL CHANGE

All the attention, anxiety and fear are focused on what will happen in the days and weeks to come. It seems impossible to think beyond the COVID-19 emergency. And yet, this is exactly the moment to ask if it is possible to think about a different future, and to use this opportunity not just to reopen the current academic system but also to make substantive progress toward building a more equitable and open one.

University rankings, journal impact factors, performance-based funding for universities – these have all affected the culture of academic institutions for years and have progressively led to an erosion of control by academic institutions over their own destiny. Data analytics services have a market and are in demand – in spite of all the issues they pose – because academic life has become a race to secure funding. As a result, research assessment is becoming a business opportunity, and one that commercial vendors appear eager to control, regardless of their possible conflicts of interest. SPARC's Landscape Analysis and the Roadmap for Action are intended to support institutions in reclaiming control.

This culture is ripe for radical change. We are seeing a vast community of researchers operating around the world to share preprints and data sets in the search for a vaccine and a cure for COVID-19. For many researchers, and for society at large, finding vaccines and cures matters a lot more than publishing articles in prestigious journals ahead of others. This culture of collaboration and sharing, which is defined so well by Kathleen Fitzpatrick in her recent book *Generous Thinking*, is what is opening the eyes of many skeptics to the value of knowledge and scholarship.

In the months and years to come, university and college presidents and provosts will have to decide which departments to downsize, which labs to close, which research programs to abandon. Perhaps, the time has come to cede some control and accept that sharing programs, labs and departments may be better than losing them altogether. Sharing programs may affect rankings, but abandoning them may be much worse.

These changes will not come in one week or in one month. But it is time to start thinking about collaboration and sharing, rather than competition, as a basis for rebuilding the academic community. Then, perhaps, many of the issues outlined in the Landscape Analysis, as well as in many articles and publications around "gaming the metrics,"[13] will become less relevant. At that point, data infrastructure may become what it was always meant to be: a support for the research community, rather than a tool to control it.

[13] https://mitpress.mit.edu/books/gaming-metrics

APPENDIX

Underlying Market Trends Continue Unabated

The Landscape Analysis of 2019 highlighted the substantial stagnation of the subscription revenues of scholarly journals and, in parallel, the visible rise of scholarly open access revenues and the continued decline of the US courseware market, where the rise of digital revenues is insufficient to compensate the accelerated decline of print revenues.

In the original Roadmap, we identified three classes of action. Below, we've provided additional actions that could help accomplish the twin goals of supporting near-term viability while laying the groundwork for future strategic initiatives:

Scholarly Journals

The most detailed information on scholarly journals revenue trends comes from Wiley. In early March, the company presented its Q3 2020 (for the three and nine months ending on January 31st, 2020). In its 8K form, the company stated that its 3% constant currency revenue growth for the quarter was "primarily driven by growth in open access." In previous quarters, the research business grew in the range of 3% to 4%, and – in the quarters when management offered commentary – volume growth in open access publishing was identified invariably as the driver of revenue growth.

We do not have such granular commentary for the other leading publishers. Interviews with the management of other publishers suggest that the pressure to keep subscription pricing growth close to null or to offer additional inducements (for example, by offering to bundle other digital content with the core journal subscriptions, when possible) is mounting.

Is growth through open access volume sufficient to support the scholarly publishing industry? Historically, publishers raised their revenues by inserting annual price increases into their subscription contracts. To justify their price increases, the publishers pointed

to the growth in the volume of articles they published. Hence, the evolution of costs and revenues should not fundamentally differ just because the articles are published in open access.

We continue to believe that raising revenues in line with the growth in the number of articles will raise the profitability of publishers over time. First of all, not all the costs incurred by publishers are variable with the number of articles published; in addition, a well-managed company should strive to increase its productivity somewhere in the region of 1% to 3% every year. If management are unable to do so, it is a shortcoming that should not be rewarded; if they are able to do so, the decision to not share the benefits with their customers is legitimate, although the publishers should not be surprised if this makes the customers unhappy.

Transformative agreements have been an increasingly significant topic of discussion in the past year, and we've begun to see a small, but growing, number of these deals signed. Can these deals change these dynamics in any way? We are skeptical for several reasons:

- First, the publishers are going to ask for substantial price increases to agree to transformative agreements (both "read and publish" and "publish and read") that really advance open access. This is perfectly rational: Elsevier reports that 15% of its journal revenues derive from corporate and individual subscriptions; these revenues can be expected to evaporate completely. It is rational for publishers to attempt to recoup these revenues, and this requires them to raise their charges to the academic sector by 20% on average.

  In addition, transformative agreements are not being negotiated between one publisher and one institution, but over time and across a very large number of institutions. While "transformative" agreements are being negotiated with large numbers of institutions, many more are likely to remain outside such arrangements. Those "read" institutions will expect their subscription fees to decrease to reflect the open content, requiring that more be captured from "publish"-intensive institutions. While this may be equitable, it remains to be seen whether "publish" institutions will be able and willing to accept the radical reallocation of costs logically implied by transformative agreements. Every deal signed lowers the value of "read" subscriptions at all other institutions (because more of the content is available OA)

– but the perception of that value is different for every institution. Hence, publishers need to protect themselves by offsetting that lost value via the institutions that sign 'publish" deals.

It is no surprise that the Elsevier deal with Couperin, the French consortium of universities and research organizations, which was touted as leading to a decrease of subscription fees, has disappointed. The deal is not Plan S compliant; it is not even a real OA deal. Articles authored by researchers unwilling to pay APCs (even at the discounted rate offered by Elsevier) will remain under embargo for one year.

- Moreover, these deals are not homogenous, and – until standards emerge – they will continue to require lengthy negotiations, limiting the capacity of most publishers and institutions to roll them out fast enough. In the meantime, they disadvantage smaller publishers – including many society publishers – and further entrench large commercial publishers.

- Finally, these contracts are complicated and based on a number of assumptions which are driven by scarcely understood forecasts. In the words of the CEO of an important publisher, "I don't know whether we will make money or lose money." Of course, this is just as true for the counterparts on the other side of the table, and negotiating teams have no easy way of knowing whether libraries will be better or worse off as a result of these deals.

In summary, the scholarly journals business is still on a path to raising its profitability, but pricing pressures will intensify. The possibility that the White House will mandate immediate access to articles resulting from research funded by the federal government creates further uncertainty around future revenues. We will discuss later how the larger publishers may attempt to change the composition of their revenue mix by broadening Big Deals into a series of Mega Deals, with the attending risks for the academic community.

Courseware

The courseware and textbook industry continues to face a much more difficult market than scholarly journals. McGraw-Hill Education reported in its 2019 annual report that the US higher education market declined by about 12% from $3.2 billion to $2.8 billion. This decline is reflected in the higher education revenue decline for the three largest

publishers: Pearson reported a 12% decline, McGraw-Hill Education a 7.7% decline and Cengage (which operates on an April 1st to March 31st calendar) projects a 5% decline in higher education revenues for FY 2020, which will actually include three quarters of calendar year 2019.

This decline is driven by the collapse of print revenues. In 2019, Pearson reported that print sales declined by almost 30%, McGraw-Hill Education by 32% and Cengage (looking at the first three quarters of FY 2020) which comprise the period April–December 2019) by 14%.

To a certain extent, the decline of print reflects more than a change of preferences among students: the three major publishers have all adopted digital strategies that are leading them to accelerate this transition. The publishers have good reasons to encourage this decline. Fewer print books mean fewer second-hand books competing with new book sales. Digital courseware can lead to signing up virtually all the students enrolling in a course, since students often have no practical alternatives available. Finally, the deployment of digital courseware allows publishers to collect vast amounts of data, which feeds data analytics tools. These tools – regardless of the drawbacks for students and faculty – are marketed as a means to increase graduation rates, as well as provide other attractive benefits designed to appeal to institutional leaders.

Pearson represents perhaps the highest-profile case of this strategy. In July 2019, the company announced that it would move to prioritizing the digital editions for most of the roughly 1,500 titles it offers in the US. The new economic model is based on rental for a semester of a digital edition of the titles, which will be constantly updated over time. Print editions will still be offered, but only on a rental base, and only 100 titles will be updated. This strategy obviously undermines any residual market for second-hand books, and also discourages students from renting increasingly obsolete print editions.

Can digital revenues return the courseware business to growth? For the time being, this has not been the case: digital courseware has been available on a large scale for the past decade, but in none of these years has the growth of digital revenues offset the decline of print. As average revenues per enrolled student decline, the time when digital sales can

substitute print sales is, of course, coming closer.

However, the leading publishers may be satisfied even earlier than that. The courseware business is likely to become even more concentrated when the transition to digital is completed. Smaller publishers are likely to struggle to match the technology investments of the market leaders, and pricing models like Cengage Unlimited (an all-you-can-eat scheme) can only make sense for publishers with significant market share. The failure of the McGraw-Hill/Cengage merger will slow down for a while the trend toward concentration, and these publishers will need to review their asset portfolios and rethink their cost structures. However, the investments required to support the transition to digital continue to be beyond the reach of smaller companies. Should McGraw-Hill and/or Cengage pursue a merger with companies from complementary areas of activity (for example, from the consumer fintech sector), smaller publishers will again face the issue of competing against a small number of formidable, large companies.

The Industry Response

Leading publishers responded to the trends we described earlier by strengthening their digital offerings and – in the case of McGraw-Hill Education and Cengage – by proposing a merger in order to reduce costs and strengthen their economics.

Expanding Digital Offerings

Most of the leading publishers strengthened their digital and data analytics offerings in 2019, and have continued to do so into 2020.

ELSEVIER

Elsevier was relatively quiet in the past 12 months. The only two deals of notice were the acquisitions of Parity Computing in July 2019 and Authess, acquired in March 2020 (in addition to 3D4Medical, a Dublin-based company specialized in developing apps in the medical and health fields for professional reference). Parity Computing is a company using artificial intelligence (AI) to provide entity resolution, profiling and recommendations for STM content and applications in research. These capabilities can

be used to resolve ambiguities in citations and attributions, strengthening SCOPUS's offerings in data analytics and decision support. Authess is a company specializing in analyzing the skills and competencies of individuals; it is a natural fit with the medical and nursing courseware and textbooks in health and nursing education.

SPRINGER NATURE GROUP

SNG has been hobbled by its large debt, which has constrained its capacity to expand its role in data analytics through acquisitions. The company was well aware of the limits posed by debt and tried to raise new capital to lower debt through an IPO in early 2018. The failure of the IPO has continued to constrain SNG, which has limited itself in the past year to a number of non-equity partnerships. The company signed agreements with ResearchGate (March 2019), DrugPatentGate (April 2019), AI2 (July 2019), Digital Science (December 2019) and OpenAIRE (January 2020).

WILEY

Wiley was also very active in the recent past, completing a number of data and digital acquisitions. The most notable are The Learning House (this deal closed in November 2018), a provider of online program management services; Knewton (closed in May 2019), an adaptive learning technology; Zyante, also known as zyBooks (closed July 2019), a publisher of computer and STEM education courseware, MThree Consulting (January 2020), a provider of training and hiring technology in tech disciplines working with several US, Canadian and UK universities (MThree claims to partner with OSU, Fordham, NYU, Columbia, the University of Chicago, Case Western, McGill, University of Toronto and Université de Montreal, among others); and Madgex (March 2020), a technology company specializing in career and recruiting services. In addition, the company disclosed that it had also closed two "immaterial" acquisitions, although it did not give any further detail.

TAYLOR & FRANCIS

Taylor & Francis, an Informa company, announced in January 2020 the most important deal in research in the past 12 months with the acquisition of F1000 Research, the

publishing platform founded by Vitek Tracz as part of a broader set of companies offering publishing services to the academic community.

PEARSON

The past 12 months have seen turmoil at Pearson, with the announcement of the departure in 2020 first of CEO John Fallon and then of CFO Coram Williams. Nonetheless, in November 2019, Pearson acquired Lumerit, a provider of digital courses, and in January 2020 the adaptive learning technology of Smart Sparrow. Most important, as we mentioned earlier, in July, Pearson announced its "Digital First" strategy that effectively represents the beginning of the end for most print textbooks.

Consolidation

MCGRAW-HILL EDUCATION/CENGAGE

The largest development in the courseware market over the last year was the proposed and ultimately failed merger between the second and third largest US higher education course publishers. In May 2019, Cengage and McGraw-Hill Education announced that they intended to merge. The logic behind the deal was to reduce costs, as the two companies expected to increase their EBITDA by $300 million through cost savings. The expected savings were equal to 47% of the last reported Adj. EBITDA of the two companies before the deal was announced ($633.8 million). In other words, the two companies expected to lift their EBITDA by about 50% (and perhaps more, as often management teams tend to articulate conservative estimates).

The merger encountered, from the very beginning, strong opposition from many constituencies (as predicted in the Landscape Analysis), both because of the large market share that the new company would have had and because it would have led to the reduction of competition and diversity in data analytics.

SPARC was joined by others (APLU, NACS, SCONUL, to cite a few) in opposing the deal, and submitted a detailed antitrust filing to the Department of Justice in August 2019. On March 10th, 2020, House Antitrust Subcommittee Chair David N. Cicilline and

House Consumer Protection and Commerce Chair Jan Schakowsky sent on the 10th March 2020 a letter to the Department of Justice' s Antitrust Division, urging it to closely scrutinize the deal (a similar letter was sent on April 28th, 2020 by Senators Feinstein, Blumenthal, Durbin, Smith, Booker and Hirono). As opposition grew, the two companies pushed back the closing deadline from February 1st to May 1st, 2020. Finally, on May 4th, 2020, the two companies announced that they would abandon the deal because the conditions imposed by the Department of Justice would make the deal uneconomical.