Differentiation through newspapers paywalls: toward a "Gresham's law" of information? Case studies of some Swiss and French daily newspapers

Patrick-Yves Badillo and Dominique Bourgeois

Abstract

The paper proposes an evaluation of the impact of paywalls on information. A new media model based on digital platforms and paywalls is the theoretical basis. A literature review shows that currently many newspapers operate some kind of paywalls; however, the choice of free and/or paywalled content is not obvious. We study the cases of three Swiss newspapers and three French newspapers. The types of paywalls and the subscription prices are described. Data concerning free and paid articles are analysed for some main sections. Results show differentiation between free and paid articles concerning the authors and the types of articles. Different strategies appear, particularly at the level of different sections of a newspaper. Finally, we discuss the idea of a kind of "Gresham's law" of information.

Introduction

Information is a cornerstone within our society. Media theories have long dealt with this issue. It is crucial to deepen concepts and methodologies to understand the mechanisms related to the increasing flow of information and "dis-information", "mis-information" or "mal-information" (Wardle and Derakhshan 2017: 20). The media ecosystem has been globally facing huge transformations, particularly in the press, for more than a decade. Many researches have shown the development of new narrative formats, new journalistic practices and organizations of journalistic work, new relationship between media and users (see, e.g., Pew research center, 2017; Newman, 2019). In this paper, our main underlying objective is to evaluate the impact of paywalls on information. Obviously, paywalls limit the access to a part of information. We would like to study if there is a general trend toward a strong differentiation between free information and paid information through newspapers paywalls.

Theoretical foundations

The theoretical foundations of our research lie at the interface of media economics and media and communication science. In this section, we present the general theoretical foundations and we will outline main research works on paywalls in the next section.

Our general approach refers in particular to works on media economic models (the two-sided model and multi-sided models: Gabszewicz et al., 2015; Evans & Schmalensee, 2016), works on digital platforms (de Reuver et al., 2018; Varian, 2010), and studies on changes in journalistic practices (see, e.g., Nielsen et al., 2016; Lewis, 2015). In particular, we would like to highlight the importance of certain large Internet platforms that are capturing a growing share of advertising resources and have often become main intermediaries for the distribution of news. Furthermore calculation capacities, data collecting and algorithms are increasing. Thus "'Big Data'" strategies are the Next Big Thing for media companies" (Stone, 2014: 1). Nowadays search Engine Optimization (SEO) is a tool used by media professionals in order to increase traffic, since search engines direct a great amount of traffic to news websites. Search engines, and more particularly Google have a significant effect not only on the Web traffic of media websites, but more generally on news gathering, news production and distribution, and thus on journalism. Beyond innovative aspects of digital platforms, various recent studies have critically examined the economic and social consequences of the use of digital platforms. Van Dijck et al. (2018) describe the three processes of datafication, commodification and selection that are developing through digital platforms and they question the compatibility between private interests and public values. Bell et al. (2017: 10) consider that "The influence of social platforms shapes the journalism itself. By offering incentives to news organizations for particular types of content, such as live video, or by dictating publisher activity through design standards, the platforms are explicitly editorial".

In recent works we proposed a new media model we called first the "advertising-traffic-data" model (ATDM) (Badillo & Bourgeois, 2015), and finally the "media Googlization" model (Badillo & Bourgeois, 2019 and 2020). This model is not only an economic representation of online media but integrates new strategies of media companies and corresponds to a complete

change of what has been usually considered as the "essence" of media and journalism. We have used the term "Googlization" to focus on the importance of online platforms and the new digital management processes they have created. The media Googlization model is indeed very different from the traditional "two-sided" model (Rochet & Tirole, 2006). In the traditional model the core of journalism is the capacity to define an editorial concept which interests an audience. So advertising revenues are a consequence of the success (or not) of the editorial concept. The media Googlization model takes into account the digital context and in particular changes linked to Big Data, algorithms and automation. From an economic point of view, it is a multi-sided model with media services and other services. The new managerial approach of big media groups seems to exclude more or less journalistic skills and to give priority to the new business model: advertising and/or collecting data are almost the prerequisite of many editorial concepts. The central purpose is no longer to produce information with the value added of journalistic work, but rather to get digital traffic. The editorial logic fades in favour of data and traffic.

We aim at studying how paywalls have an impact on information, in this new digital context. More precisely, we would like to analyse if there is differentiation in content, depending if the content is offered outside versus behind the paywall. Before defining our methodology for the applied analysis, we propose a short summary of the academic literature on paywalls in order to present how our research relates to this literature.

Literature on paywalls

"A paywall can be defined as a subscription model which limits the public's access to all, or to some digital news content, without a payment" (Myllylahti, 2016: 460). Thus, "a paywall acts as a barrier between an internet user and a news organization's online content" (Pickard and Williams, 2014: 195). With a hard paywall all content on the Web site is charged while a soft paywall allows for free access to some content. Among soft paywalls a distinction is usually made between metered paywalls which allow readers to read a number of articles before paying and freemium paywalls which allow readers free access to a selection of content while the premium content is reserved to readers who accept to pay. "The models we observed in Europe are diverse and relatively new (…) However, it seems that soft paywalls, like metered or premium (freemium) model, in general are more common than the hard walls that leave no or very little content available for free" (Nenadic & Ostling, 2018: 14). In their analysis of 171 important news organizations in six European countries, Cornia et al. (2017) show that freemium models are the most widely used, followed by metered paywalls. In a study on 212 news outlets in six European countries and the U.S. in 2018, Simon and Graves (2019) found that 69 percent of the newspapers they surveyed operate some kind of a pay model, "with the landscape evenly divided between freemium models and metered paywalls (33 percent each)" (Simon & Graves, 2019: 1), while hard paywalls represented only 3%. Concerning France, 61,9% of the newspapers and weeklies surveyed by Simon and Graves applied a freemium model, 33,4% a metered model, and free access represented only 4,3% of the sample. Our applied analysis below concerns six online daily newspapers, including three French newspapers and three Swiss newspapers, all of them with soft paywalls: one metered, four freemium and one that combines the metered system and the freemium system.

When a publisher chooses to introduce a paywall, an obvious objective is to propose a paid content that is most likely to be of

interest to readers who agree to pay for the content. Many studies show indeed that paywalls are considered by publishers as protecting the most valuable content. In an analysis of the paywall strategies of three Norwegian online newspapers Sjøvaag (2016) demonstrates that "open online news content is highly traffic-generating, while paywalled content protects the most valued and resource-demanding journalistic production of the newsroom" (Sjøvaag, 2016: 304). Of course, the characteristics of the most valuable content depend of the publisher strategy. Kvalheim (2013) analysed the local Norwegian newspaper *Fædrelandsvennen* in 2012-2013 and found that the content has not changed significantly with the introduction of the paywall. In a study of two leading Australasian financial newspapers Myllylahti (2017: 469) found that publishers "consider hard news and opinion pieces as their most saleable and valuable commodity, as this content was the most paywalled in both papers". But the appreciation by a publisher of a valuable content does not necessarily correspond to the readers' reception nor to the readers' willingness to pay. For

example, Brandstetter and Schmalhofer (2014) analysed the content published in the Business and Finance section on the website *www.welt.de* before and after the paywall was launched in December 2012 and they found that the paywalled content did not provide added value that merited payment from the readers, in particular because there was only a little paywalled content that the reader cannot get elsewhere for free. Olsen and Solvol (2018b) show that there are often misalignments between the intended attractiveness of paywalled content and audience attitude toward this content. The choice of paywalled content by publishers is not at all obvious: Piechota (2019) considers that segmentation is a main strategy to grow subscriptions and revenues; in particular, non-news products may interest some segments of users, as the case of the *New York Times* analysed by Piechota shows. But sometimes news organisations decide to drop, suspend, or open up their paywalls (Ananny & Bighash, 2016).

A paywall may have negative effects on readers and on media revenues. Davoudi et al. (2018: 205) consider that "this artificial

barrier, if not used well, may disengage potential subscribers and thus may not well serve its purpose of increasing revenue". Pattabhiramaiah et al. (2019: 19) study "two potential externalities of newspaper paywalls: (1) the effect of a paywall on the engagement of its online reader base and (2) the spillover effect on the print version of the newspaper". Moreover, as already analysed by Pickard and Williams (2014), paywalls are often unable to offset steep losses in advertising revenue. More generally, as underlined in the literature review made by Olsen and Solvoll (2018b) on how newspapers aim to build sustainable businesses for the future, research findings are complex and ambiguous, whether it's research on the balance between traditional print and new digital activities (see, for example: Thurman et al., 2018) or on users' willingness to pay for online news (see, for example: Chyi & Tenenboim, 2016; Fletcher & Nielsen, 2017; Kammer et al., 2015; Newman et al., 2017), or on the impact of paywalls on newspapers' attractiveness for advertisers (Myllylahti, 2016). Nevertheless, paywalls strategies have refined over time. By analysing 20 local newspapers in Norway, Olsen and Solvoll (2018a: 25) show that two different strategies have been developed : "A defensive brake strategy in the user market, and a forward leaning acceleration strategy in the advertiser market". Moreover, in the 2019 survey of 200 editors, CEOs, and digital leaders realized by Newman, it appears that "Subscription and membership is the key priority for the news industry going forward (…) This is a huge change of focus for the industry." (Newman, 2019: 5). Indeed "a growing number of news organisations across Europe and in the US are challenging the assumption that people will not pay for digital news" (Simon & Graves, 2019: 5). Of course, it's necessary to take into account consumers' willingness to share data (Evens & Van Damme, 2016) and, more generally, uses of digital platforms and challenges linked to big data and journalism (Lewis, 2015; Lewis and Westlund, 2015; van Dijck, 2014; Borges-Rey, 2016; Suri and Singh, 2018).

Methodology

Our sample is made up of six French-speaking online newspapers, including three French newspapers and three French-speaking Swiss newspapers. The case of the French press is very interesting since circulation and revenues have diminished sharply for the last decade, particularly in the daily press, and since well-known newspapers have developed their digital activities. The case of the Swiss press is also very illustrative because Switzerland is a country where the media is a key industry, considered as essential to democracy, and since the Swiss paid-for press is facing a crisis (Badillo & Bourgeois, 2017). The big Swiss press groups have developed various digital activities and in most paid-for newspapers there are now paywalls on their websites. Nevertheless, in France as well as in Switzerland the future of the press is probably depending of revenues coming not only from digital news, but much more from activities correlated to the development of what we have called "media Googlization". Although French newspapers have received significant State aid particularly for the last two decades, they are searching for new business models. Until now the development of digital news and paywalls has not meant a quick development of revenues for paid-for French newspapers: in France only 11% of users paid for online news in 2018 (Newman et al., 2019: 79). Concerning digital news in Switzerland, most experts are also pessimistic: "There is currently no sustainable business model for information journalism on digital channels. On the one hand, this is due to the extremely low

willingness to pay for news - only 12% of Swiss citizens were willing to spend money on online news last year [i.e. 2018] (…) - on the other hand, this is due to the weakness of the online advertising market (Fög/University of Zurich, 2018: 2).

We have chosen to study some French and Swiss news companies which are well-known brands and/or which continue to benefit from loyal readers. More precisely we made two analyses, a first one which was mainly exploratory on three Swiss newspapers and a second one on the six newspapers.

In a first applied analysis the sample was constituted by the following three Swiss newspapers: *La Liberté, Le Temps* and *La Tribune de Genève.* The observation and calculation were made over a period of one week, from Monday 25.03.2019 first hour to Sunday 31.03.2019 last hour. These three newspapers are important French-speaking daily newspapers in Switzerland. *Le Temps* is considered as the reference daily newspaper in the whole French-speaking part of Switzerland and is owned by Ringier Axel Springer Medien Schweiz AG, which is one of the two main Swiss press group. *La Tribune de Genève* is owned by Tamedia AG which is the main Swiss press group and is read mainly in the Geneva region. *La Liberté* is a daily newspaper anchored in the canton of Fribourg and the "Broye Vaudoise" region and is independent of major press groups. In 2018 the total daily circulations of the three Swiss newspapers were quite the same, around 35000 (Source: REMP, 2018). A second analysis was made for six French-speaking newspapers on a new period: from Monday 13.05.2019 first hour to Sunday 19.05.2019 last hour. A first objective has been to see if the results are the same for two different weeks for the analysed Swiss newspapers. We have also chosen a sample consisting of the three Swiss newspapers - *Le Temps, La Tribune de Genève* and *La Liberté*

- and three French national newspapers: *Le Figaro, Le Monde* and *Libération.* The three French newspapers are important national brands in France while the three Swiss newspapers are also brands at the level of the French-speaking part of Switzerland. Of course, the scales of the Swiss newspapers and the French newspapers are not the same since the circulations of the French newspapers are far larger: in 2018 the total circulation was equal to 317 075 for *Le Figaro,* 302 624 for *Le Monde* and 70 501 for *Libération* (source: l'Alliance pour les Chiffres de la Presse et des Médias/ACPM, 2019). All the studied newspapers publish in the same language, and journalistic practices are very similar, especially today journalistic practices on the Web.

Our objective has been to study the main characteristics of the paywalls. We calculated some criteria by observing free and paid articles on the different newspapers websites. The comparison between the newspapers is also made for some sections of news (see Annex for more details on data and methodological issues).

Results

We give hereafter the results which show main characteristics of the paywalls strategies of the six French-speaking newspapers.

Table 1 below gives the main prices for accessing the six newspapers. We have selected the main subscriptions and we indicate also the conditions for free access. *Le Monde, Le Figaro, Le Temps* and *La Liberté* apply a freemium paywall (paywalls observed in May 2019). *Le Temps* changed its paywall system twice since 2011: in 2011 it was a hard paywall; from 2015 to February 2019 it was a metered paywall with free access to 10 articles per month; from the

Table 1: Prices of the six French-speaking newspapers, in May 15, 2019*

	Le Monde (prices in Euros)	*Le Figaro* (prices in Euros)	*Libération* (prices in Euros)	*Le Temps* (prices in Swiss Francs [CHF])	*La Liberté* (prices in CHF)	*La Tribune de Genève* (prices in CHF)
Subscription per year:						
online (full subscription)	99.9	119	96	328	300	348
online + paper	298.8	419	300	579	Paper only: 428	549
Daily online	No	No	No	no	no	2
One article	No	No	no	no	1.5	No
Other prices (non-exhaustive list)	week-end: paper + digital: 19 per month (228 per year)	week-end: paper (including week-end magazines) + digital: 16 for 4 weekends (209 per year)	week-end: paper + digital: 9.5 per month (114 per year)	1 year online + paper Saturday 489	Basic = 25 articles per month 9 (108 per year)	light digital (Web access and mobile apps): 228 per year
	1 euro first month Then 9.90 per month	1 euro first month Then 9.90 per month	8 euros per month	1 month online 9 Then 29 per month	1 month online without *e-paper* 18	1 month online without *e-paper* 19
	Subscription for 3 months: 1 per month Then 9.9 per month	Various prices for magazines		3 months online + paper 152	3 months «essai papier» from Monday to Saturday 57	1 month online + *Matin Dimanche* online 37
Content with free access	Articles not indicated by the yellow logo of the newspaper	Articles not indicated by the yellow logo of the newspaper	free online access up to 4 visits; beyond that, all the articles have to be paid	Articles not indicated as "ABONNÉS"	Articles without a padlock	Articles not indicated as "ABO+" + free access to 10 paid articles per month

* In May 15, 2019, 1 Euro was equal approximately to 1.13 CHF.

14th of February 2019, the system has been a freemium paywall. The Deputy Head of the Digital Unit of *Le Temps* explained the change in February 2019 by saying it's a compromise that they hope ideal: "some articles are reserved for subscribers while others are freely available. Thanks to these, we can maintain our good audiences and make ourselves known to new audiences. The protected articles offer, for their part, a real added value (…) we have already been able to identify four strong objectives to guide our decisions: retain our subscribers, reach new subscribers, reach a wide audience and strengthen our image" (Deléchat, 2019, our translation). Concerning *Libération,* the paywall is a metered one with free online access up to four visits of the website. As regards *La Tribune de Genève,* there is a combination of the freemium system and the metered system: on the one hand, some articles are free and others have to be paid (indicated by "ABO +"); on the other hand, the reader who does not want to pay has free access without any payment to around 10 paid articles per month. In fact, with the previous metered system it was possible to avoid the paywall by using various computers, or other devices, or various web-browsers, and many people were never in touch with the subscription options. The mixed system is said to work well by journalists of *La Tribune de Genève.*
Differences in living standards explain the fact that subscription prices are higher for Swiss newspapers than for French newspapers. Besides that, one can observe in general segmentation strategies, with, for example, specific prices for week-end subscriptions. Moreover, all the newspapers try to attract new readers with low prices for one month.

Now, through a first group of hypotheses we would like to compare the online "presence" strategy of the newspapers. More precisely, we evaluate the number of free articles and paid articles in each newspaper (see below Hypothesis H1a). To have a better understanding we measure also these numbers for different sections in the newspapers (Hypothesis H1b). Then, a second group of hypotheses (H2a and H2b) will show the importance of the segmentation introduced by the paywall. To estimate differentiation we used the following tests (depending on the number of data): Khi-deux, or Fisher test. When Khi2 is high and the p-value is around 0, differentiation is accepted.

H1a. Newspapers offer more free articles than paid ones: they develop what we call the "presence strategy", i.e. a presence through a lot of free papers.

We give results for the first studied period (Monday March 25, 2019 to Sunday March 31, 2019) for only the three Swiss newspapers, and for the second period (from May 13 to 19, 2019), for all newspapers, including French newspapers. Table 2 hereafter indicates the number of free articles (column 1) and the number of paid articles (column 2) for the three

Table 2: Swiss newspapers: number of articles. first period: 2019, March 25 to March 31.

Newspapers	Free articles	Paid articles
Le Temps	150	65
La Liberté	116	65
La Tribune de Genève	332	50
Khi2 = 44; p–value around 0 Differentiation		

Table 3: Swiss and French newspapers: number of articles.
Second period: 2019, May 13 to Mai 19

Newspapers	free articles (C1)	paid articles (C2)	C1 – C2
Le Temps	171	72	99
La Liberté	98	126	-28
La Tribune de Genève	399	49	350
Le Monde	332	387	-55
Le Figaro	409	164	245
Khi-deux and p-value: *Le Temps, La Tribune de Genève* and *Le Figaro*	Khi2= 54; p-value around 0 Differentiation		
Khi-deux and p-value *La Liberté* and *Le Monde*	Khi2= 0.4; p-value around 0.5 No differentiation		

Swiss newspapers. The hypothesis H1 is confirmed.

Then we tested the stability of the result over time, and also we made the comparison with the two daily French newspapers which have developed freemium paywalls (Table 3). It has not been possible to include *Libération* which has a metered paywall.

These results confirm the "presence" strategy through a lot of free articles for *Le Temps* and *La Tribune de Genève.* Moreover, this "presence" strategy is confirmed for *Le Figaro.* But we do not confirm this strategy for *La Liberté* in the second period. And, like *La Liberté, Le Monde* has, for this second period, what we can call a "balanced" strategy, i.e. more or less the same number of free and paid articles. Let us note that *Le Monde* and *La Liberté* have actually more paid articles than free papers in this sample. Thus we can validate the hypothesis of "presence" strategies for *Le Temps* and *La Tribune de Genève* for two periods, and for *Le Figaro* (for the defined second period). For *La Liberté* results are different between the first and the second period. It appears that *Le Monde* and *La Liberté* have probably balanced strategies by offering more or less the same number of free and paid

articles. But we will now further examine this issue by studying important sections within every newspaper.

H1.b However, the presence strategy differs between sections of newspapers; in particular, an opposing strategy exists for some sections of newspapers: we have called it the "targeted payment" strategy.

We have studied if there is a specific strategy for each section within a newspaper. It would have been too long to present all detailed results; so we give hereafter the results only for the "economy" and "culture" sections. But the general conclusion confirms that there are different strategies according to sections and newspapers.

"Economy" section

For a given section, like "economy", we compared free articles versus paid articles for different newspapers. Table 4 gives results for the Swiss newspapers for the first period. *La Tribune de Genève* remains on a "presence" strategy with a higher number of free articles on economy (37)

than the number of paid articles (10). But *La Liberté* (with few articles on economy) and *Le Temps* propose more or less the same number of articles dedicated to their paying subscribers than the number of free papers. When we apply the Fisher test (adapted to a small number of data) on the economy sections of *La Liberté* and *Le Temps*, the differentiation hypothesis cannot be validated (p-value equal to 1).

Table 5 gives the results for the second period for the Swiss and French newspapers (excluding *Libération*). For the "Economy" section we observe three strategies:

- the "balanced" strategy: *La Liberté, Le Temps,*
- the "presence" strategy with a high number of free articles: *La Tribune de Genève, Le Figaro,*
- The "targeted payment" strategy, i.e. value articles are behind the paywall: *Le Monde.*

Table 4: Swiss newspapers: number of articles for the "economy" section
First period: 2019, March 25 to March 31.

"Economy" section	*free articles*	*paid articles*
La Liberté	5	4
Le Temps	27	26
p value = 1; no differentiation strategy for *La Liberté* and *Le Temps* in the "Economy" section		
La Tribune de Genève	37	10

Table 5: Swiss and French newspapers: number of articles for the "economy" section
Period: 2019, May 13 to May 19.

« Economy » section	*free articles*	*paid articles*
La Liberté	7	5
Le Temps	29	24
p value = 1; no differentiation strategy for *La Liberté* and *Le Temps* in the "Economy" section		
La Tribune de Genève	33	9
Le Figaro	150	27
Le Monde	52	90

"Culture" section

For the culture section (Table 6), *La Liberté* has a "targeted payment" strategy with a very large majority of paid articles. On the other hand, *Le Temps* and *La Tribune de Genève*, for the culture section, develop the "presence" strategy, with abundant free articles by comparison to paid articles.

Table 6: Swiss newspapers: number of articles for the "culture" section
First period: 2019, March 25 to March 31.

"Culture" section	*free articles*	*paid articles*
La Liberté	2	33
Le Temps	32	13
La Liberté	38	11

In the second period the two mains strategies are confirmed (Table 7): *La Liberté* and *Le Monde* develop a "targeted payment" strategy, while *Le Temps, La Tribune de Genève* as well as *Le Figaro* develop a "presence" strategy for the "culture" section.

Table 7: Swiss and French newspapers: number of articles for the "culture" section
Period: 2019, May 13 to May 19.

"Culture" section	*free articles (C1)*	*paid articles (C2)*	*C1-C2*
Le Temps	51	25	26
La Tribune de Genève	51	4	47
Le Figaro	170	62	108
Khi 2 = 12; p value around 0 "Presence" strategy for *Le Temps, La Tribune de Genève* and *Le Figaro*			
La Liberté	1	24	-23
Le Monde	73	90	-17

In summary, there is a very strong differentiation between what is free (outside the paywall) and what is paid (behind the paywall), but the results are different according to the sections and to the newspapers. The paywalls allow very fine strategies of differentiation. We will now analyse these strategies of differentiation by observing two criteria.

H2. Differentiation depends on the authors and the types of articles.

In order to study more precisely differentiation between what is outside and what is behind the paywall, we have chosen two criteria: the author of the article and the type of article. To clarify the presentation we select the results of the last period (May 2019) and for every section of each newspaper. We have excluded some articles for which the authors are not clearly indicated; so data may vary slightly if compared to previous data.

H2a. A first differentiation criterion is based on the author: paid articles are assumed to be made by journalists while free articles are mainly coming from agencies.

We have analysed if newspapers differentiate what is outside and behind the paywall on the basis of the authors of articles. We distinguish news coming from agencies, such as AFP (Agence France Presse) or Keystone-ATS (Agence Télégraphique Suisse) and articles signed by journalists. Table 8 hereafter gives a synthesis of results for Swiss newspapers. *La Liberté* does not use content from news agencies to provide paid content: paid articles are made almost at 100% by journalists. For *Le Temps* there is no paid article from agencies but *Le Temps* proposes a lot of free articles made by journalists. *La Tribune de Genève* proposes many free articles from agencies and no paid article from agencies; but, for articles coming from journalists, we observe a larger number of free articles than paid articles.

Table 8: Swiss newspapers: number of articles according to the authors
Period: 2019, May 13 to May 19.

	La Liberté		La Tribune de Genève		Le Temps	
	free	Paid	free	paid	Free	paid
Agencies	54	1	338	0	54	0
Journalists	41	125	51	41	117	72
test	p value near 0; Khi2=91 differentiation		p value near 0; Khi2=166 differentiation		p value near 0; Khi2= 29 differentiation	

For the French newspapers (Table 9) we have the same differentiation for *Le Monde* and *Le Figaro:* no paid article when the source is an agency and more paid articles made by journalists behind the paywalls. The case of *Libération* is different: we recall that the paywall is a metered one which does not distinguish paid and free articles. But we have also to mention a special difficulty: in many cases *Libération* mentions not only an agency, but at the same time a journalist or the newspaper. In these cases we aggregated all data as if the source was an agency. If our classification is relevant, we can establish a link between great economic difficulties of *Libération* (since 2014 *Libération* had great difficulties

with less readership, less journalists...; following a main crisis in 2014 the number of journalists was reduced by around 30% and more recently the strategy was defined as a digital one, reducing the content on the print version, with a sharp declining circulation) and a strategy which is based not only on journalistic work, but also on agencies sources.

H2b. Another differentiation factor concerns journalistic work

We have identified another criterion, which, finally, provides an idea of the "quality" of journalistic production, at least of journalistic work. We have distinguished

Table 9: French newspapers: number of articles according to the authors
Period: 2019, May 13 to May 19.

	Le Monde		Le Figaro		Libération	
	free	Paid	free	paid	free	paid
Agencies	122	0	79	0	-----	61
Journalists	177	385	138	164	-----	222
test	p value near 0; Khi2=191differentiation		p value near 0; Khi2=75 differentiation		Not calculated	

short articles (less than 1000 characters), standard articles (from 1000 characters to 3000 characters) and journalistic investigation, which corresponds to longer and more detailed work (more than 3000 characters). This typology is still debatable but gives an approximate evaluation of the importance of journalistic work.

Table 10 below illustrates the results for the Swiss newspapers: only *La Liberté* proposes brief paid articles, but *La Liberté* has more standard and investigation paid articles than free articles of the same categories:

La Liberté develops a "targeted payment" strategy with less free access for articles based on journalistic work. The results show mixed strategies for *Le Temps* and *La Tribune de Genève:* a "presence" strategy exists since there are many free articles. Nevertheless there is also a strategy that takes into account journalistic work: the percentage of paid articles increases with the length of articles: for example for *La Tribune de Genève* 0% of paid article among brief articles, 7% among standard articles and 19% among investigation articles.

Table 10: Swiss newspapers: number of articles according to the types of articles
Period: 2019, May 13 to May 19.

	Le Temps			La Liberté			La Tribute de Genève		
	free	Paid	% of paid articles per line	free	paid	% of paid articles per line	free	paid	% of paid articles per line
Brief articles	0	0	0	58	18	24%	81	0	0%
Standard articles	91	23	20%	36	54	60%	161	13	7%
Investigation	100	49	33%	4	53	93%	157	36	19%
test	Khi2 = 5.2 p value 0.02 Moderate differentiation NB calculated on standard and investigation articles			Khi2 = 64 p value around 0 Strong differentiation (paid articles for standard and investigation)			Khi2 = 24 p value near 0 Differentiation		

Concerning the French newspapers (Table 11), they did not propose paid articles in a short format (except 1 for *Le Figaro* and 2 for *Libération*) during the observed week. All the newspapers develop mainly long articles. *Le Figaro* and even more *Le Monde* have strong differentiation strategies. The longer is the article the higher is the propensity to introduce paid articles. For instance, for *Le Monde* 12% of standard articles are paid articles against 74% for investigation articles.

Table 11: French newspapers: number of articles according to the types of articles
Period: 2019, May 13 to May 19.

	Le Monde		Le Figaro		Libération	
	free	Paid	free	paid	free	paid
Brief articles	9	0	29	1	-----	2
Standard articles	173	23	213	24	-----	106
Investigation	115	364	167	139	-----	262
test (calculated on standard and investigation articles)	Khi2 = p value 0 No differentiation		Khi2 = p value near 0		Not calculated	

Conclusion and discussion: beyond "fake news" or "post-truth", a Gresham's law of information ?

First, let us indicate some limits of the study. We do not pretend to have analysed all elements of the impact of paywalls on information. In particular, the quality of information would need further analysis. From a theoretical point of view, the issue of the impact of paywalls on information differentiation is important. Our applied analysis is, of course, limited to some criteria and to an observation of some newspapers.

Without any doubt, paywalls are changing, in an increasing way, the access to information. Our analysis of some Swiss and French newspapers show various ways of information differentiation linked to paywalls. We would like to extend the approach by highlighting challenges for the future. Recent MIT (Massachussets Institute of Technology) research shows the main stakes of information diffusion: "Falsehood diffused significantly farther, faster, deeper, and more broadly than the truth in all categories of information (...) It took the truth about six times as long as falsehood to reach 1500 people" (Vosoughi et al., 2018: 1146 and 1148). More generally an approach in terms of "media ecology" (the term "media ecology" was introduced by Postman at the 58th Annual Convention of the National Council of Teachers in English at Milwaukee in 1968; for a more recent and interesting presentation, see Postman, 2000) "questions about the relationship between the media system and its context, the way the media affect our understanding of the world, the interactions we have with them..." (Badillo, 2008c: 49, our translation). Every day, we receive a lot of information. This information is a diversified and permanent flow: true or false, a little manipulated, or not at all or much manipulated, not hierarchized. With a medium such as the Internet, information is spreading at an accelerated speed. According to Lum (2014), it is clear that media ecology will continue to develop into one of the most interesting theoretical development pathways. Our approach (see Badillo, 2008a, and more particularly 2008b

and 2008c; see also Badillo & Bourgeois, 2020) takes into account new information processes. The beginning of Internet was characterised by free culture and free access for everybody, everywhere... However, this free access has threatened the economic health of newspapers. The collapse of advertising resources and of readership strangles many newspapers. Correlatively media are developing paywalls that are reintroducing a market logic. We have shed light on the differentiation phenomena that comes with paywalls development. From an economic point of view, it is too early to examine if it will save news organisations. But the strong differentiation has revealed another main issue: is there a trend toward a "Gresham's law of information"? Let us recall that, according to Encyclopaedia Britannica, Gresham's law is defined as the "observation in economics that 'bad money drives out good'. More exactly, if coins containing metal of different value have the same value as legal tender, the coins composed of the cheaper metal will be used for payment, while those made of more expensive metal will be hoarded or exported and thus tend to disappear from circulation" (https://www.britannica.com/topic/Greshams-law, May 12, 2019). Our analysis shows that differentiation is at the heart of the paywall system. It is probably a good news for newspapers economic health, or more precisely for the economic health of some newspapers and some media companies. But we are far from "Early optimistic internet evangelists [who] addressed news and information as an area in which digital technologies would eradicate social inequality. [...] From today's perspective, such digital over-optimism is no longer justified. [...] Digital technologies have rather added new layers to the existing news inequalities, in particular in the political economy of news. Digital and social forms of inequality appear to be deeply intertwined in the news realm" (Mattelart et al., 2019:

215). The impact of platforms is critical. Bell et al. (2017: 10) underline: "Platforms rely on algorithms to sort and target content. They have not wanted to invest in human editing, to avoid both cost and the perception that humans would be biased. However, the nuances of journalism require editorial judgment, so platforms will need to reconsider their approach". From our point of view, we are not at all sure all the platforms will reconsider their approach and, if some of them decide to invest in human editing, will they privilege checked, hierarchized and quality information? And at what prices? The present research shows that paywalls introduce (very) strong differentiation. This trend seems to indicate that the utopia to have a new age of access with more and more information circulation is perhaps (probably?) unrealistic. Will a new Gresham's Law of information have a preeminent place?

Annex: methodological issues

We calculated some criteria by observing the different newspapers websites: the total number of published online articles; the number of free and paid articles; the authors (and we distinguished three main categories of authors: press agencies, journalists, others or unknown); the dates; the titles of articles; the main types of information (with three main types: short articles, normal news article, in-depth investigation). We look at the websites of newspapers several times a day to collect data. For each newspaper methodological aspects were thoroughly studied and solved step by step. We mention only main issues hereafter.

Sections of the newspapers

We observed four different groups of topics: "National", "World" (or "International"),

"Economy" and "Culture". However, there are slight differences between the sections indicated in the chosen newspapers. For some newspapers we had to collect data by grouping different sub-sections. We have to note that *Libération* does not offer a section on economic topics as such and all articles relating to economy were collected by using the search engine of *Libération*.

Categories of authors

Six sub-categories of authors were observed: 1. Agency (when the author was the AFP, Reuters or ATS); 2. Agency and newspaper (when an agency and the newspaper were indicated); 3. Agency and journalist (when an agency and a journalist were indicated); 4. Journalists (when a journalist or several journalists was/were indicated); 5. Newspaper (when the article is clearly made by the newspaper); 6. other (when the author was neither an agency, nor a journalist, nor a newspaper); 7. Non-visible (when there was no indication). After having collected the data, we grouped into three main categories because there appeared in general few articles in the sub-categories 2, 3, 5, 6 and 7. Thus sub-categories 1, 2 and 3 were grouped into a category called "agencies": a journalist may have added something, but when an agency is indicated we consider that the main content (often facts) was coming from an agency. Subcategories 4 and 5 were grouped into the category "journalists" and subcategories 5 and 6 were considered together.

Types of articles

Concerning the types of articles, the distinction has been made on the basis of the number of signs in each article: short articles have been considered as those with a content below 1000 signs (without taking into account the title and the "chapeau"; most short articles are under 750 signs

in the French-speaking press, but we extended a little this limit in order to include some very limited news articles); in normal news articles the content is between 1000 and 3000 signs; and in-depth investigation correspond to articles with a content above 3000 signs (without taking into account the title and the "chapeau"; in general the number of signs is largely above 3000 signs). Of course, the distinction is simple and in particular is not an evaluation of the quality of content. But it gives already an indication of the underlying journalistic work.

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About the Authors

Prof. Patrick-Yves Badillo
(Geneva University, Switzerland)

Patrick-Yves Badillo is a full Professor at Geneva University, and Director-founder of Medi@ LAB- Genève. He is working on innovation, digital change, media concentration and social media influence through the Web, health communication, and digital divide (https://archive-ouverte. uni-ge.ch/authors/view/29736;http://patrickbadillo.com/). He completed his PhD. at the Paris I Panthéon Sorbonne University. Then acted as director of the "École de Journalisme et de Communication d'Aix-Marseille". He was also responsible for Digital Economy and Society Prospective at the ANR (French National Research Agency

ORCID ID: https://orcid.org/0000-0001-9971-8212

Prof. Dominique Bourgeois
(University of Fribourg, Switzerland)

Dominique Bourgeois is a Professor Emeritus at the University of Fribourg, Switzerland. She was holder of the Chair in Communication and Media Science until 2019. She is working on digital innovation, business and digital communication, media economics, e-Learning, social media, uses of information and communication technology (http://dominiquebourgeois.eu/). She is acting as an expert for the Swiss National Science Foundation and the Swiss Association of Communication and Media Research. Has a PhD. in International Economics and a second PhD. in Economics/Econometrics, in Aix-Marseille University. She was a Professor in Information and Communication Science at Angers and Aix-Marseille Universities

ORCID ID: https://orcid.org/0000-0002-0955-7759