

The Role of Hybrid Open Access in Extending Author Choice



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Executive Summary

Introduction

This report presents the findings of a qualitative study consisting of interviews with 33 authors of Gold open access (OA) articles. The study was carried out to better understand authors' motivations and influencing factors when selecting the Hybrid OA option.

Three attitudes towards OA publishing typify the landscape

Publishing Gold OA is perceived as giving wider exposure to academic articles. A considerable number of interviewees reported that OA publishing allows them to reach specific audiences. These include both researchers in other disciplines and stakeholders outside academia. We distinguish three categories of authors in terms of their attitude to OA:

1. *OA supporters*, who have explicit reasons to prefer Gold OA publishing.
2. *OA opportunists*, who will only use external funds, when available, to pay for article publication charges (APCs), because they value the additional exposure allowed by OA.
3. *OA apathetes*, who will comply with OA mandates but have no personal interest in it.

External funding is a key enabler of OA publishing

Our interviews suggest that publishing Gold OA is largely driven by, and reliant upon, external funding. There is great resistance among authors to the use of discretionary budgets for APC payments. A number of interviewees indicated that they would publish OA 'strategically' if there were no external funds to cover APCs. In such cases, only articles benefitting from broader exposure would be published Gold OA. Funding for these could, exceptionally, come from discretionary budgets.

OA options are increasingly taken for granted by authors

The match between the to-be-published paper and the scope and quality of the journal are the top criteria for journal selection. OA plays a minor role in the selection process, in part because the availability of an OA option in Hybrid journals is taken for granted by many respondents.

Without the Hybrid option, author choice would be restricted

Had no OA option been available, more than half of those who published in a Hybrid OA journal via payment of an APC would have selected another journal.

Offsetting deals stimulate Gold OA publishing

Offsetting deals appear to have a stimulating effect on OA publication: for some authors they raised awareness of OA, while for others they increased their appetite for Gold OA publishing in the future.

**Hybrid OA journals
offer flexibility where
funding is limited**

Without access to external funding to cover APCs, many authors of Gold Hybrid articles would have chosen the subscription-only option, in order to publish in the journal of their choice. Meanwhile, some respondents selected a Pure Gold journal because its scope best matched that of their article. However, the subsequent realisation that this entailed an APC payment sometimes constituted a significant obstacle.

**Authors' awareness of
APC pricing is growing**

Some authors have been publishing OA for several years, and have noted the wide variation in APCs charged by different journals and publishers. Increased awareness of APC pricing manifests itself in some authors calling for greater accountability and transparency from publishers. However, there was no indication that the level of APC charged had directly influenced our interviewees' choice of publication.

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1. Introduction

Background OA to articles published in scholarly journals is a relatively recent development in the electronic era. There are two main approaches to OA: (1) Green OA, where versions of the article are deposited in publicly-accessible repositories, usually after an embargo period, and (2) Gold OA, where the final version of record is publicly-accessible immediately upon publication on publishers' websites.

In this study, we focus on authors' motivations to select Gold OA options. Gold OA can currently be found in the following forms:

- **Pure Gold journals** - these are fully OA journals, where all content is OA. One can distinguish two types of Pure Gold journals: Gold-APC journals, where payment of an article publication charge (APC) is required for all articles, and Gold no-APC journals where no APC payment is required.
- **Gold Hybrid journals** - these are subscription-based journals that offer authors the choice to make their articles OA via payment of an APC. In 2014, this type of journal published over 50% of global research articles, and the number of Hybrid journals and articles have continued to grow in recent years.^a Articles not taking up this option are only accessible to subscribers, whereas those published after the payment of an APC are publicly accessible.

Terms of Reference The aim of this study was to understand the factors that influence authors when choosing to publish OA, with an emphasis on the Gold Hybrid route. The main research questions addressed are as follows:

- What are the driving and inhibiting factors behind Gold OA?
- What role does OA play in the journal selection process?
- What are authors' perceptions of the various OA choices?

Report structure This report provides a summary of the work performed to investigate authors' motivations and decision factors in OA publishing. Following this introduction, which briefly discusses the methodology followed, we present our key findings under the following headings:

- Driving and inhibiting factors
- The journal selection process
- A closer look at the Gold OA options and choice
- Obstacles and irritants
- Present and future attitudes toward OA publishing
- Conclusions

^a See Björk B. (2017) *Growth of Hybrid open access, 2009–2016*. *PeerJ* 5:e3878

This report includes five appendices, which expand on the information discussed in the document.

Approach

Research Consulting and Pleiade approached this project through:

- **Stakeholder interviews:** We interviewed a total of 24 authors of OA articles in Gold Hybrid journals, and 9 authors of OA articles in Pure Gold journals. The interviewees included researchers who had published in journals associated with earth sciences, life sciences and other STEM^b disciplines. They were at varying career stages, from postdoctoral research assistant to professor, and were split between the UK (17 authors), the Netherlands (11 authors), and Germany (5 authors). All three countries have been proactive in pursuing Gold OA, but through differing strategies. In the UK, Gold OA is supported by funding from various research funders; in the Netherlands, the University Libraries have concluded a number of offsetting deals; in Germany, most OA policies are focused on Pure Gold journals. The interviewee recruitment process proved challenging and this is reflected in the uneven distribution of respondents between the three countries. Appendix 1 discusses this further, and highlights lessons learned to improve future efforts. For a full list of contributors, see Table A3 in Appendix 2. The semi-structured interview format is available in Appendix 3.
- **Analysis and reporting:** Interviews were conducted via Skype or telephone by Maurits van der Graaf, and took between 30 and 60 minutes. For each interview, a brief report describing the main findings was prepared along with a number of quotes. The interview reports were then categorised (type of OA, type of payment and funding – see Appendix 5). Key quotes were extracted, and are included in this document in anonymised form.

Limitations of the study

This study has investigated authors' motivations to publish via the Gold Hybrid mechanism, and does not constitute a full assessment of the merits and demerits of Gold Hybrid. Accordingly, the economic, administrative and other implications of Gold Hybrid for stakeholders other than authors falls outside the scope of this study.

The study was delivered via qualitative interviews, with candidates invited via email by the publishers listed in Table A4 in Appendix 2. We note the following limitations to our study:

- This study involved a limited number of respondents that volunteered to take part in the study. Thus, it is possible that other points of view might have arisen, or that different pros/cons could

^b Science, technology, engineering and mathematics

have been identified with a different sample. The self-selection process is also noted as a potential issue.

- The challenge of generality applies to this analysis, as generalising from a relatively small sample of stakeholders risks overlooking or, conversely, overplaying issues affecting the wider population.
- There are intrinsic limitations in the use of interviews as a qualitative investigation tool:
 - Interview questions might elicit slightly different types of responses (i.e., the interviewee's reporting ability affects the quality of a response).
 - The responses gathered have little statistical significance due to the low number of participants. To draw more definite conclusions, a quantitative study with a representative sample would be required.
 - The analysis of responses is performed by detecting patterns in the interview data. This is done qualitatively and is a function of the investigator's background and expertise.^c

Acknowledgements

We would like to thank the Publishing Research Consortium and the steering group for the guidance provided (see Table A2 in Appendix 2) and, particularly, Julia Wallace (PRC Research Manager). Our thanks also go to the researchers listed in Table A3 in Appendix 2, who kindly participated in our consultation, and provided feedback on their experience of publishing OA articles. Finally, this work would not have been possible without the assistance of the participating research publishers (see Table A4 in Appendix 2), who supported us in our efforts to reach prospective interviewees.

^c McCracken, G. (1988). **The long interview** (Qualitative Research Methods Series)

2. Driving and inhibiting factors

Summary In this section we explore the factors driving and inhibiting authors to choose Gold OA to publish their articles. The results of the interviews lead us to distinguish extrinsic factors influencing authors, such as research funders' policies, and intrinsic factors, which are inherently connected to Gold OA publishing.

2.1 Extrinsic driving factors

Easy access to funding plays a key role As expected, authors tend to publish Gold OA when there is an allocation for this in the project budget. Asking for compensation after the payment of an APC (an extra administrative procedure), is also seen as an acceptable route. However, we noted resistance to using discretionary budgets to cover OA charges (see section 3.3).

OA requirements are a strong motivation for authors Many respondents were under the impression that funders (e.g. UK Research Councils, Horizon2020) mandate Gold OA. As these funders also provide funds to cover APCs, all interviewees complied more or less willingly. We note that, in the cases of RCUK and Horizon2020, OA requirements could have been fulfilled via the Green route too, but some of the interviewees appeared unaware of this.^d Furthermore, some interviewees did not investigate the exact nature of OA requirements, because they wished to publish Gold OA anyway. Some respondents also mentioned the OA policy of their university or research institute as a reason to go for Gold OA. However, this appears not to be a decisive factor.

"We are forced by the MRC and Wellcome to publish on open access. This is mandatory. However, they also pay for it."

Offsetting deals come as a surprise to authors Nine respondents published OA by means of an offsetting deal between their library and the publisher. Some of them were going to publish Gold OA anyway, so this saved them time and, sometimes, money. For others, it was a (pleasant) surprise during the article acceptance process, as they were not aiming to publish OA, but welcomed the chance to achieve broader exposure.

"When the possibility to publish OA turned up, it was a nice chance to get more exposure."

Engaged peers drive the uptake of OA Two respondents mentioned a strong OA culture in their research departments as an important reason to choose OA. At one institution, the OA culture was described as nearly mandatory.

^d Please see the policy guidance from [Horizon2020](#) and [RCUK](#) for more information.

“If the article had been accepted by a subscription-only journal with high impact factor, the research director would have to give approval for this.”

Match between an article and a Pure Gold OA journal title

The sheer number of Pure Gold journal titles (estimated at about one third of all 35,000 scholarly journal titles^e) sometimes results in a best match between the article and a Pure Gold journal. In the interviews, we found two examples of this. In both cases, OA and APCs did not play a role when selecting the Pure Gold journal.

2.2 Intrinsic driving factors

Wider exposure for an article is the most common factor

Gaining exposure provides one of the strongest arguments for authors to publish Gold OA. Nearly one third of the respondents mentioned specific audiences (outside of their direct circle of fellow researchers) whom they would like to reach with their articles, and would benefit from OA. These audiences were sometimes within academia but outside their own discipline, for example an article, published in a physics journal, which is also relevant for biologists, or an article on health economics, also relevant for oncologists. However, in many cases these audiences were outside academia, such as industry, consultancy firms, governmental organisations, NGOs or patients.

Relevance to external audiences drives usage of personal funds

The subject matter of the article determines whether it should be shared more broadly when little funding is available. Some respondents argued that in the case of scarcity of funds they would publish OA ‘strategically’. This would mean that they would use internal, discretionary funds to pay APCs only for those articles with a high degree of relevance to non-academic audiences.

“This article has a broad scope and therefore there are also consultants who have no access to subscription journals and will be interested in it.”

Improved article metrics drive the uptake of OA

Many authors had more general expectations of wider exposure through OA. This expectation was frequently confirmed by their own experiences: more downloads, more feedback, or faster citation rates of their OA articles.

Authors generally support OA as a principle

A number of respondents have personal motivations to publish OA. These include enabling access for everyone to the outputs of publicly funded research. Several interviewees had less outspoken arguments in favour of OA, but expressed general support for it. None of the respondents seemed opposed to OA, although some were not enthusiastic about it.

“The company has a policy to publish as much as possible its articles on open access. The reason for this is a wider audience and transparency for its research.”

^e Van der Graaf, M. (2017). Financial and administrative issues around article publication costs for open access, the author's perspective

Freedom to redistribute and reuse an article is a plus

This is primarily seen as an extra bonus of Gold OA publishing. However, as there are many ways of sharing subscription articles (both licit and illicit), most respondents do not see this as a key reason to publish Gold OA.

2.3 Inhibiting factors

Authors don't want to use their discretionary funds for OA

APCs are high compared to authors' discretionary budgets, thus, there is resistance to paying them from this source. When an author publishes many papers a year, the payment of APCs becomes particularly burdensome. The opportunity cost (defined as the loss of other alternatives when one is chosen) of paying an APC out of the discretionary budget is acutely felt.

"This is not the sort of amount that you can easily cough up from your own budget".

Green OA is not as well-known as expected

We found that a large minority of the respondents are not familiar with Green OA, often because their organisation (frequently a private company) does not have an OA repository.

Green OA is not seen as a full-fledged alternative

Of the other interviewees with access to the Green OA option, three stated that they saw it as a good, and cost-free, alternative to Gold OA. However, most other interviewees do not believe that Green OA is a full-fledged alternative to Gold OA. These respondents indicated that they knew the institutional repository existed, and that their articles had been deposited, often without their involvement, by the library. They saw Green OA only as a second-best alternative, partly because of the poorer layout of authors' accepted manuscripts (AAMs).

"[Green OA] is like a nice dish dumped on a plastic plate. As an author, you're very proud of your published article with the logo of the publisher and the nice layout"

Depositing articles for Green OA is not as easy as it should be

There was criticism of the complex process to deposit AAMs via Green OA. Furthermore, the requirements with regard to embargo periods are often in contradiction with journal policies.

3. The journal selection process

Summary This section discusses the criteria that most commonly influence authors when selecting a journal for publication. We found that a good match between an article and the journal is key, although other factors sometimes steer authors' decisions. OA plays a secondary role at the journal selection stage, with many authors assuming that an OA option will be available by default.

3.1 Top selection criteria

A good match between article and journal scope is the most important criterion

In our interviews, the match between the article and the scope and quality of the journal (often seen through the lens of the impact factor) top the list of decision criteria. The audience of the journal is often mentioned too, although this is perceived as part of the scope of the journal. It also became clear that journal selection is not a completely rational and objective process, and that chance occurrences also have an influence.

Specific factors play a role when selecting a journal

Over a third of the respondents mentioned specific factors that played a role in selecting the journal, including:

- Forthcoming special issues highlighted by editors
- Suggestions by co-authors/supervisors/peers/editors
- Articles on a similar topic previously published in the same journal
- Speed of publication (i.e. short time between submission and publication)
- Page limits (or lack thereof)

Often, several journals are suitable

Often several journals may be suitable for a given article, and articles may be submitted to several different publications before acceptance. The final publication venue may therefore depend as much on the opinion of editors and peer reviewers as the author's own preference.

3.2 The role of OA in the journal selection process

OA plays a secondary role when authors choose a journal

Two-thirds of the respondents indicated that the OA option was considered late in the journal selection process.

"OA did not affect the journal selection. However, at the moment of article acceptance, I was very keen to have it on open access"

The remaining third of the respondents stated that the OA options offered by the journals were an important element in the journal selection process.

“The open access publishing option was an important decision factor right at the beginning of the selection of the journal. If this journal hadn’t had an open access option, we would have chosen another journal.”

**An OA option is
expected to exist**

Many interviewees appear to assume that an OA publishing option would be offered by default, reporting that most journals with a good impact factor now have an OA option.

**Authors are not always
aware of offsetting
deals**

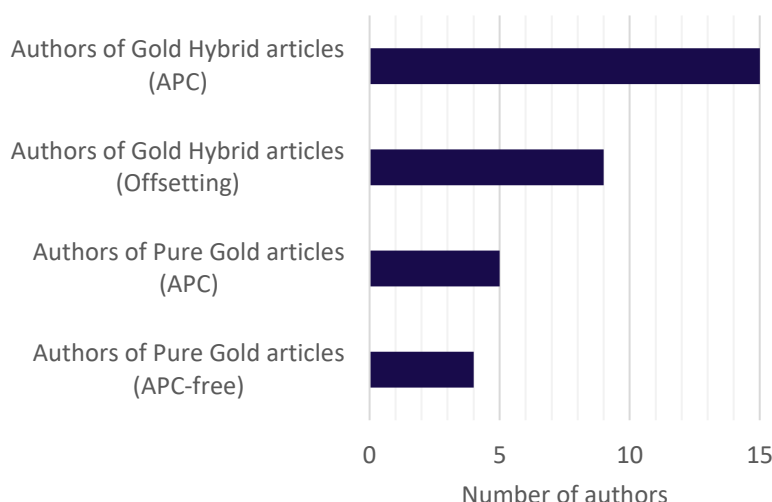
The majority of the interviewees who benefited from an offsetting deal understood only at a later stage (during the article acceptance process) that the OA option was available.

4. A closer look at Gold OA options and author choice

Summary In our consultation, we interviewed a total of 33 authors of OA articles (see Figure 1). Their inclinations towards OA publishing were investigated by means of ‘What if’ questions (see Figure 2), which proposed different scenarios to study authors’ choices.

Figure 1

Overview of the authors interviewed



The OA option in Hybrid journal is crucial for many authors

We found that the Gold OA option in Hybrid journals attracts articles that would not have been published in the journal if no OA option had existed. When authors want to publish OA from the start, the propositions of Pure Gold and Gold Hybrid journals are not seen as different. Funding remains a key issue, although some authors are keen to publish OA and would try to find funds in any event.

Offsetting deals may attract additional submissions

It appears that journals falling under offsetting deals may attract additional article submissions in time. At present, authors are often unaware of these deals, but on finding they do not have to pay themselves, they value the chance to publish their article OA.

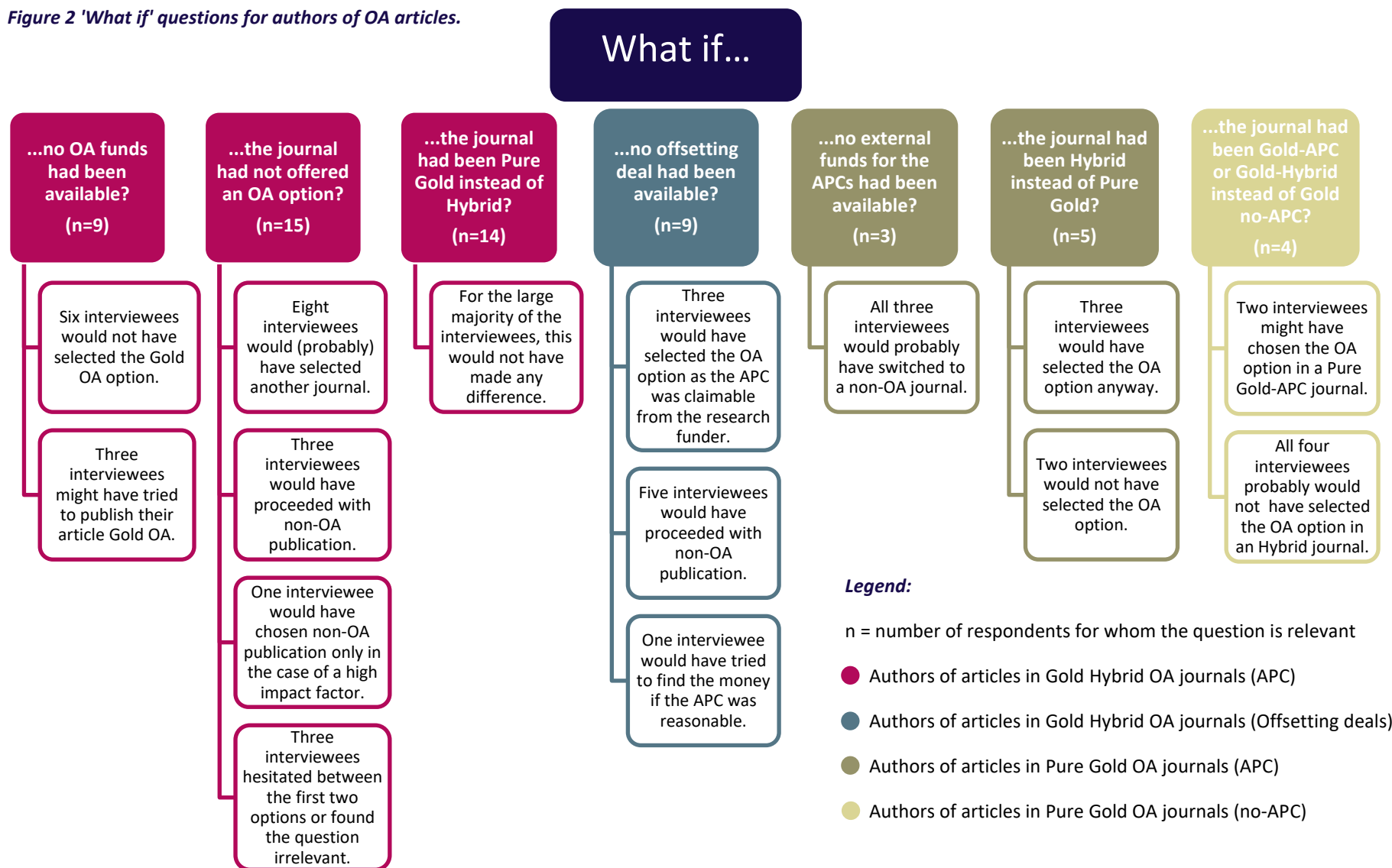
Hybrid journals offer more choice to authors

Hybrid journals allow authors to choose whether they wish to publish OA. This choice often depends on external factors. For example, authors of articles in Gold Hybrid journals would have chosen the subscription-only option if they had not had access to external funding to cover APCs. For some respondents who had selected a Pure Gold journal because its scope matched that of their article, the APC payment proved an obstacle.

At times, OA publishing arises from other factors

Pure Gold no-APC journals sometimes attract authors for reasons other than OA. Examples include authors publishing a paper via a conference that also publishes its proceedings in an OA journal.

Figure 2 'What if' questions for authors of OA articles.



5. Obstacles and irritants

Summary When publishing articles, authors experience obstacles and irritants that influence their views on OA. This section discusses the key problems reported by the authors, such as emails from journals of questionable reputation, the confusion between the different OA options, and increased awareness of APC prices.

Daily emails from OA journals damage the image of OA

A number of interviewees - especially the more established researchers - complained about daily emails from OA journals 'of questionable reputation' inviting them to submit a paper. This daily barrage (some respondents talked about 10 per day) appears to damage the image of OA journals.

The range of OA options creates confusion

Several interviewees reported that they or their colleagues were bewildered by the range of OA options (pre-prints, Green OA, Gold OA, offsetting deals, delayed OA, etc.) and the various rules and requirements regarding OA.

"In particular, elderly colleagues are baffled by how quick this open access thing has changed everything."

The payment of APCs is sometimes a burdensome process

When libraries or university offices take care of the payment of APCs, the administrative process is relatively smooth. However, some factors may complicate the situation, including time-consuming communications, changes of affiliation, different budget holders, and the need to share invoices with university departments.

"Scientists are involved in an unreasonable amount of admin work, which takes away from their research"

The wide range of APC prices leads to questions

Some authors have now experienced making APC payments several times, and noticed the very wide range of prices. Some of them have begun to question the reasons for the different prices and would like to see more transparency in the costs incurred by publishers.

"You don't know why you pay so much. There is no breakdown of the costs, it is rather foggy."

6. Attitudes towards OA publishing

Summary Authors have had mixed experiences of OA publishing, with around half seeing the benefits and the remainder being unconvinced. A full switch to OA might prove difficult for some researchers, particularly those with no dedicated grants to cover APCs. We identified three typical author attitudes towards OA publishing: supporters, opportunists, and apathetes.

6.1 Experiences with publishing OA articles

**Feedback on publishing
OA is mixed**

About half of the interviewees had not noticed any additional benefit accruing from their article's OA status, compared with other non-OA articles by their hand. Some of these individuals stated that they were unaware of the download statistics, while others said that it was too early to say. The other half of the interviewees believed that the OA article is downloaded more often, or they get more feedback because it is published OA. In the experience of one interviewee, OA articles are reaching an audience several orders of magnitude higher than that of subscription-only articles.

"All my articles have been published open access. They have a very good citation score, and this gives me a very strong academic presence on social media."

**Fully switching to Gold
OA may pose challenges**

Several interviewees observed that, if Gold OA became the norm, there would also be some downsides. They expressed concerns that APCs might constitute a barrier to publication, especially where research is marginal or not mainstream. This was considered to be especially concerning for researchers without dedicated grants.

6.2 A typology of authors' attitudes towards OA publishing

**Three author attitudes
to OA publishing are
prevalent**

Statements about future behaviour led to the characterisation of interviewees into three groups (see Boxes 1-3). This simple characterisation is meant to create a better understanding of the authors' attitudes towards OA, and was not made by the interviewees themselves. In this study, we have interviewed 19 respondents who can be categorised as OA supporters, 7 as OA opportunists and 6 in the 'Other' category (see Appendix D for more information). There does not appear to be a correlation with the career stage of the respondent, publication history, or country. It is important to note that the distribution among all authors of peer-reviewed journal articles will certainly be different than in this sample of - largely self-selected - respondents.

Box 1: OA Supporters

These 19 authors have intrinsic reasons to prefer publishing Gold OA, mostly because their articles are relevant to other audiences outside their own discipline or outside academia. They mainly pay APCs by means of research funds or the project budget, but will go the extra mile to find funding if there are no (obvious) external funds available. Some of these OA supporters will resort to 'strategic OA publishing' and will try to publish Gold OA only those articles that are relevant to their chosen audiences. They may publish other, more specialised, articles as subscription-only, and will often use the Green OA option. Some OA supporters would even use their personal money for publishing, provided APCs are not too high.

Box 2: OA Opportunists

These 7 authors like to publish their articles Gold OA, and will use external funds to pay for APCs if these are available. However, should there be no external funds, OA opportunists will generally publish subscription-only, and a portion of them might pursue the Green OA option. One of these authors highlighted that for research funders Gold OA is a '*must have*', while for authors it is just '*nice to have*'.

Box 3: OA Apathetes

These 6 authors are characterised by statements such as '*I am not interested at all in OA*' and '*Gold OA is irrelevant to me, because I know it costs money*'. This does not mean they are opposed to OA and some of the interviewees in this category see Green OA as a good and cost-free alternative. However, OA is rarely a significant consideration for OA apathetes and does not play a role when selecting a journal.

7. Conclusions

Summary We found three different attitudes towards OA publishing: supporters, opportunists, and apathetes, but all agree external funding is a key enabler of OA. OA options at present play a minor role in journal selection, but the proposition of Gold Hybrid journals is nevertheless attractive to authors. It stimulates submissions and offers flexibility, thus, extending author choice. Authors are, however, increasingly aware of variations in APC pricing, and keen to see increased transparency in this area.

7.1 Overview of the findings

Funding and increased exposures are the main driving factors

The availability of external APC funding is generally the decisive factor. However, authors sometimes have good reason to publish their article Gold OA if it is seen as relevant to audiences outside their direct circle of fellow researchers. In these cases, the respondents are strongly motivated to publish Gold OA and will go the extra mile to find APC funding.

“No APC funding, no open access.”

Using discretionary funds is the strongest inhibiting factor

Authors are reluctant to use their discretionary funds to pay for APCs, particularly because this would mean ‘losing’ money that they could spend for their research.

OA plays a minor role in the journal selection process

Practically all respondents indicate that the match between the to-be-published paper and the scope and quality of the journal are the top criteria for journal selection. One of the reasons why OA plays a minor role in the selection process, even in cases when Gold OA publishing is seen as mandatory, is that the availability of an OA option in Hybrid journals is taken for granted by many respondents.

There exist four types of obstacles/irritants with regard to OA

Authors identify two general irritants with regard to OA: firstly, a number of respondents reported that they or their colleagues are confused by the various options, rules and policies. Secondly, some respondents (often more established scientists) report receiving daily emails from OA journals with invitations to publish. The other two irritants relate specifically to APCs; as respondents grow in experience with Gold OA publishing, the wide range of APCs makes them question these prices, while administrative procedures regarding the payment of APCs also annoyed a number of respondents.

Authors may be OA supporters, opportunists, or apathetes

OA supporters often have intrinsic reasons to prefer publishing Gold OA, such as their articles being relevant to audiences outside their own discipline or outside academia. In the case of a lack of external funding for APCs, they will go the extra mile to find funding. *OA opportunists* like to publish their articles Gold OA, and will use the external funds for APC if these are available. Should external funding not be available, they will generally publish subscription-

only. *OA apathetes* are not interested at all in OA, or consider it to be irrelevant.

Figure 3

Artist's impression of
the OA landscape



7.2 Positioning OA journals

The Hybrid OA option stimulates submissions to a journal

A number of interviewees had strong motivations to publish Gold OA. They stated that they would have chosen another journal if the journal where they published the article had not offered an OA option. Having a Hybrid option makes a journal more competitive than a subscription-only journal, as it appeals to authors whether they wish to publish subscription-only or OA. Consequently, the Hybrid option seems likely to lead to more article submissions.

Offsetting deals have beneficial effects on OA publishing

Offsetting deals appear to have three effects:

1. If the original intention is to publish Gold OA, the offsetting option is often a pleasant surprise during the article acceptance stage, saving money and paperwork.
2. If there was no intention to publish OA, it is seen as a chance to get more exposure for the article.
3. The effect on future publishing behaviour is twofold: it both raises awareness of OA in general, and leads some authors to actively check during the journal selection process if a journal falls under an offsetting deal.

Thus, Hybrid OA journals falling under offsetting deals can be expected to attract additional article submissions in the future.

Gold Hybrid OA journals offer more flexibility than Pure Gold journals

If the intention is to publish OA from the start, the interviewees reported no difference between the proposition of Gold Hybrid and Pure OA journals. However, a number of interviewees selected a Pure Gold journal solely because of the match between its scope and their article. For those, the APC proved an obstacle.

Green OA is seen as a second-best alternative

Green OA is seen by some authors as a good, cost-free alternative to Gold OA. However, most perceive Green OA as a second-best alternative to Gold OA. Interestingly, a significant number of respondents were not familiar with Green OA or stated they had no access to a suitable repository.

7.3 Final considerations

Gold OA is to a large extent dependent on external funding

The majority of the interviewees in this qualitative study indicated that external funds for the APCs were a decisive factor when choosing the Gold OA option. Without these external funding options, most would not have selected Gold OA, as discretionary budgets are too small or in their opinion are better used elsewhere. Should research funders stop funding APCs (e.g. as the Dutch funding organisation NWO will do in 2018), one might expect a decrease in Gold OA articles that require APCs.

Gold OA is attractive to most authors

Our findings highlight that Gold OA publishing is attractive to many authors. OA can be characterised as 'nice to have' for the majority of our interviewees and 'need to have' for a minority of them. With no APC funding, this minority of interviewees will resort to 'strategic OA publishing', meaning that they would only publish Gold OA articles that are especially relevant for audiences outside academia.

Offsetting deals stimulate Gold OA publishing

Offsetting deals appear to have a stimulating effect on authors: for some they raised awareness of OA, while for others they increased the appetite for Gold OA publishing in the future.

Green OA is often invisible to authors

University libraries have increasingly automated their workflows to populate their institutional repositories, so that little or no involvement is needed by the authors. The drawback of this appears to be that many authors are less aware of whether their article or accepted manuscript is made available in the repository and this results in a lower awareness of Green OA in general.

There is growing awareness of the price of APCs

The wide range of APCs and growing experience of authors with OA publishing is leading to increased awareness of APC costs, and to a call for greater accountability and transparency. However, none of our interviewees indicated that the level of APC charged was a significant factor in their choice of journal.

Glossary of terms

Below you can find an explanation of the open access terms used in this report (in alphabetical order).

Name	Institution
Article publication charge (APC)	A fee which is sometimes charged to authors in order to publish an article in an open access journal. The fee is usually paid by an author's institution or research funder rather than by the author themselves.
Gold open access	Funding and business models that allow peer-reviewed research articles to be made immediately open access by the publisher.
Gold-APC open access	Publication in journals that make all of their content OA via payment of an APC, and do not rely on subscriptions.
Gold no-APC open access	Publication in fully open-access journals which do not charge an APC.
Gold Hybrid open access (or simply Hybrid open access)	Peer-reviewed articles within a subscription-based journal are made immediately open access, typically on payment of a publication fee (also called an article publication charge or APC) to the publisher.
Green open access	See open access archiving.
Open access archiving	A term sometimes used to describe the process of posting or depositing versions of articles in a repository or other website, with a view to making them freely accessible.
Open access publication	The article is published in an open access journal that provides immediate open access to all of its articles on the publisher's website.
Offsetting deal	Deals concluded between publishers and RPOs/funders to reduce the total cost incurred to both acquire subscriptions and pay for APCs within an institution.
Open access policies (or mandates)	The documents, declarations, recommendations or set of operational guidelines adopted (formally or informally) by a research funder, governmental entity, research organisation or higher education institution, which regulate open access to academic publications.
Pre-print	A version of an article before it is submitted to a journal.
Pure Gold open access journals	Journals that only publish open access articles (as opposed to Hybrid journals, where both subscription-only and open access contributions can be found). Pure Gold open access journals may use either the 'Gold-APC open access' or the 'Gold no-APC open access' publishing model.
Repository	A mechanism for managing and storing digital content. Repositories can be subject, institutional, national or international in their focus.
Version of record	The final published version of an article.

Appendix 1 – The interviewee-gathering process

Introduction

Initially, this project aimed to gather a total of 34 interviewees, split as follows:

- 24 authors of Hybrid OA journal articles
 - 8 UK authors
 - 8 Dutch authors
 - 8 German authors
- 10 authors of Pure Gold OA journal articles

It should be noted that the sample was designed to reach a certain number of qualitative interviews per type of OA choice and country, and was not intended to be representative of the market.

The interviewees originally invited were corresponding authors of articles:

- Published in 2017;
- Published in a journal managed by Elsevier, Springer Nature, Taylor & Francis, or Wiley;
- In the field of life sciences or earth sciences.

However, the above disciplinary split proved impossible to reach and, thus, invitations were extended to all corresponding authors of articles from STEM disciplines, while keeping the other criteria unchanged. Nonetheless, this change did not yield the desired number of interviewees. As a possible solution, the number of interviewees for each country were slightly relaxed by allowing plus or minus two authors for each country. However, it was still not possible to fully meet the planned objectives and the following actual distribution of authors was obtained:

Table A1 Distribution of authors

	Earth Sciences		Life Sciences		Other STEM		TOTAL
	Hybrid	Pure Gold	Hybrid	Pure Gold	Hybrid	Pure Gold	
United Kingdom	3	0	7	3	1	3	17
Netherlands	4	0	2	1	4	0	11
Germany	0	0	1	1	2	1	5
TOTAL	7	0	10	5	7	4	33

Response rates

In total, 4,258 corresponding authors were invited to contribute to this project, and the overall response rate was about 0.8%.

Response rates were uniformly low, particularly from Germany, and response rates by country varied noticeably between the participating publishers. This made it very difficult to plan efforts to secure the desired number of interviewees.

Possible causes of the above shortcomings

The difficulty in meeting the original recruitment targets for the study is likely related to a range of causes:

- **The reward of a prize draw entry was not sufficiently attractive:** one of the participating publishers and some prospective interviewees highlighted that this was a major issue. A guaranteed reward of at least £40 was recommended to us for future exercises.
- **The approach to inviting interviewees was not organic:** most publishers sent invites through their communications teams, while one of them asked us to prepare a mail merge ourselves. This was not ideal, as the project might have appeared as a number of different initiatives rather than as a coherent whole.
- **The period of the investigation included summer holidays:** many of the prospective interviewees were on holiday during our investigation and likely missed our invite. In cases where we sent email invitations ourselves, we received a large number of 'Out of Office' messages.
- **Some of the contact details provided were not up to date:** while this is an unavoidable issue, we highlight that not all contact details we received for the mail merge worked (e.g. authors who left a university or inactive email addresses).

Appendix 2 – Stakeholders

Table A2 Publishing Research Consortium Steering Group

Name	Role	Organisation
Stephen Lotinga	Chief Executive of The Publishers Association; Chair of the PRC Steering Group	Publishing Research Consortium
Mayur Amin	Senior Vice President, Research & Academic Relations	Elsevier
David Green	Global Journals Publishing Director	Taylor & Francis
David Crotty	Editorial Director, Journals Policy	Oxford University Press
Michael Mabe	CEO	International Association of STM Publishers
David Nicholson	VP of Society Business Development	Wiley
Wim van der Stelt	Executive Vice President Corporate Strategy	Springer Nature
John Tagler	Vice President and Executive Director, Professional & Scholarly Publishing	Association of American Publishers
Julia Wallace	Research Manager	Publishing Research Consortium

Table A3 Consultation participants

Name	Organisation	Country	Discipline
Hybrid Gold - APC			
Ljudmila Bordag	University of Applied Sciences Zittau/Goerlitz	Germany	Other STEM
Stephan Theis	BENEO Institute	Germany	Life Sciences
Mariele Evers	University of Bonn	Germany	Other STEM
Gjalt Huppel	Leiden University	Netherlands	Earth Sciences
Lotte Woittez	Wageningen University & Research	Netherlands	Earth Sciences
Daniel Schillereff	King's College London	UK	Earth Sciences
Helena Gomes	University of Hull	UK	Earth Sciences
Jon Tennant	Imperial College London	UK	Life Sciences
Justin Frosina	British American Tobacco	UK	Other STEM
Koonal Shah	Office of Health Economics	UK	Life Sciences

Mary Board	University of Oxford	UK	Life Sciences
Peter Mitchell	Cefas	UK	Earth Sciences
Research fellow (anon.)	University of Nottingham	UK	Life Sciences
Researcher (anon.)	University of Glasgow	UK	Life Sciences
Sophie Regnault	Royal Veterinary College	UK	Life Sciences
Hybrid Gold - Offsetting			
Fausto Gallucci	TU Eindhoven	Netherlands	Other STEM
Fernanda Achete	UNESCO	Netherlands	Earth Sciences
Henk Huinink	TU Eindhoven	Netherlands	Other STEM
Jan Reedijk	Leiden University	Netherlands	Other STEM
Matei Jene	Delft University of Technology (TU Delft)	Netherlands	Earth Sciences
Michael Chang	TU Delft	Netherlands	Life Sciences
Remy Merckx	Radboud University Nijmegen	Netherlands	Life Sciences
Sanae Chraïbi	Philips	Netherlands	Other STEM
Thomas Hesselberg	University of Oxford	UK	Life Sciences
Pure Gold			
Lars Blank	University of Aachen	Germany	Life Sciences
Thomas Neumeyer	Neue Materialien Bayreuth GmbH	Germany	Other STEM
Jan Willem Cohen Tervaert	Maastricht University	Netherlands	Life Sciences
Huai-Hsuan Tseng	King's College London	UK	Life Sciences
Joe Bathelt	University of Cambridge	UK	Life Sciences
Veronika van der Wardt	University of Nottingham	UK	Life Sciences
Carmelo Mineo	University of Strathclyde	UK	Other STEM
Colin Morrish	Self-employed	UK	Other STEM
Shoaib Sarfraz	Cranfield University	UK	Other STEM

Table A4 Publisher contacts

Name	Role	Organisation
Adrian Mulligan	Research Director	Elsevier
Kristen Traub	Marketing Coordinator	John Wiley & Sons, Inc.
Natasha White	Director, Author Marketing	
Dan Penny	Head of Market Intelligence: Researchers and Audience	Springer Nature
Anna Gilbert	Research Manager	Taylor & Francis Group
David Green	Global Journals Publishing Director	
Lucy Giles	Senior Marketing Manager	

Appendix 3 – Interview format

Journal selection

1. What were the decision factors that led you to choose this specific journal? [see Table A5]
2. Did the fact that the journal offers OA publishing play a role in your decision?
3. What was the order in your decision process for this particular article: the preferred journal to submit the article followed by considerations about OA or vice versa: first the decision to publish the article OA and then the journal to publish it in?

TABLE A5 Factors in selecting a journal

Factors not related to open access:

Quality and reputation of journal

Fit with scope of journal

Audience

Impact factor

Likelihood of acceptance

Time from submission to publication

Editor or editorial board

Option to publish the article open access

Reasons for OA

What were the decision factors that led you to choose the open access option [see Table A6]? is it possible to rank them in order of importance?

TABLE A6 Reasons for OA

Pragmatic reasons:

More exposure/wider audience for the article

Complete freedom to reuse, re-publish and distribute the article

Ideological reasons:

Support for open access/ Open Science

Requirements:

To meet the requirements of my University/research institute

To meet the requirements of the research funding organisation

To meet the requirements of research evaluation procedures

Conditions and circumstances

1. How was the APC paid? What role did the level of the APC play in your decision? In the case of an offsetting agreement: How were you informed about the existence of an offsetting agreement? What was your response to this option to publish OA?
2. Did you consider Green OA archiving as an alternative to the Gold-Hybrid option?
3. How did you find the administrative process?
4. What if some factors could have been different: what would have been the effect on your ultimate decision to publish OA?

Experience with publishing an OA article

1. What are your experiences with the OA availability of your article in terms of re-use, redistribution and/or visibility?
2. How did your experience of the OA publishing of this article compare with previous experiences of non-OA publications?

Decision factors in publishing your next article

1. Do you see your decision factors regarding OA changing in the publishing process of your next article?
2. If yes, what is causing this change? Has your experience with your Gold Hybrid article influenced these decision factors?
3. Do you have any other remarks with regard to OA publishing of articles?

Appendix 4 – Quotes from the interviews

In this appendix, we collate quotes that are not included in the main text of the document but support the arguments made.

Table A7 List of quotes by topic

Topic	Quote
Extrinsic factors	'I don't need to know the exact requirements with regard to open access because I want to publish open access anyway'
	'If the university wants this, they also have to pay for it'.
Intrinsic factors	'We practically always choose the option to publish the article on open access. We are working in the nutrition business and want to reach an audience outside academia that have no access to subscription journals'. The respondent mentions food and nutrition specialists working in industries and colleagues working in research institutes without access. The respondent thinks that this is a quite large audience.
	'The decision about the open access option was taken at the acceptance of the article. It was suggested by senior colleagues and seen as a good idea because of the high profile of the paper. The target audience would not have necessarily had access to the journal, so the decision was taken to find out how much the OA option cost.
	'The review article is seen as relevant for a larger public outside academia, such as NGOs, companies, governmental organisation. Also, in Indonesia there are many small universities and research institutes who have no access to subscription journals'.
	'We work in an interdisciplinary area of research. If you have a very clearly defined area of research, then you have normally a rather constant list of journals that are applicable. However, we work on the borders of biology and physics. We have ourselves no access to biology journals, as our library does not subscribe to those. There are a number of workarounds to get access, but direct access is of course, much easier. So, this is an additional argument for OA when working in interdisciplinary area of research'.
	'OA is also good for the exposure of the articles in industry and for other researchers. The industry often does not have access to these journals'. The supervisor of the respondent is often contacted by companies about their output. 'Lifting all the barriers is beneficial for us researchers. The effect of more exposure will be more connections, that might lead to more collaboration'.
	'OA is only relevant in special cases for articles that may be of interest to patients'.
	'You immediately get emails and more feedback about your article. This is also very positive, as you can maybe cooperate with the people that are interested in your

Topic	Quote
	article in the next research project. The process of connecting different problems and solutions goes quicker’.
	‘You reach more people with an open access article. You see a lot more downloads with open access articles’. However, this respondent does not see a difference in the number of citations. Also, she does not see any difference in feedback (emails et cetera).
	‘As a scientist, you want that your results are broadly accessible within the society in general.’
	OA is ‘a step in the right direction to address flaws in the present publishing model.’
	‘With other articles, you do not know what you’re allowed to do or not to do, these articles on ResearchGate, your webpage, LinkedIn et cetera. With OA you are free to use it’.
	The respondent does not see a large difference with regard to freedom to reuse. ‘I post all my articles on ResearchGate. In case of a non-OA article, I posts the AAM’.
	‘It is nice to be able to distribute the copy among partners of the project’.
	‘The attractive part of open access is that you, as an author, can easier and in a more targeted way bring your article to the attention of your colleagues. The article should always be findable via Google Scholar and accessible with one click. However, you also want to post the article on Academia and ResearchGate and other places where you want to post it, in order to bring it to the attention of your colleagues in a targeted way’. The respondent calls this ‘thematic browsing’ as opposed to searching (in the last case, you know already what you want to have).
Inhibiting factors	‘I’d rather use that money for research’.
	‘if you have to pay this yourself for two articles per year, then this will mean that practically the entire budget for the project will be spent. Money is a big factor in this. The intention to publish on OA is there, but the budget has been assigned already to other matters’.
	‘Our discretionary funds are very small: it’s about €10,000-€15,000 per year. We have to do everything with this, The APC really is then an important sum of money to pay’.
	‘I publish around 25 articles per year. If the APCs are around €3,000, the total amount per year would be around €80,000. This means that I can hire a PhD student for nearly 2 years’.
	‘Green open access is a good alternative, because it does not cost money’. The respondent regularly deposits her articles in the repository of the University. ‘Money is a huge issue!’
	‘Green open access is a good alternative. I find this a more appropriate procedure’. Publishing papers is crucial and at this moment, this respondent is looking for research funding for his own research. If he does not find funds for Gold OA, then Green OA is a better option. ‘It seems to me, that it should not matter if the article is

Topic	Quote
	Green open access or Gold open access: you post the authors' manuscript on your website and people can access it'.
	The respondent was not looking specifically for Gold OA because in his view Gold open access does not matter very much. 'Our University has a policy that accepted versions have to be submitted to the repository. In other words, everyone can have access to the contents of the article. For this reason, Gold OA has never been a priority for me'.
	On Green OA: 'You are creating an extra world, it makes things less than ambiguous and it is less findable by search engines.'
	On Green OA: 'You cannot find it on PubMed'.
	On Green OA: 'To post your articles, you have to login and you have to follow a number of complicated steps. Also, it is not uniform over the world. The whole process of depositing is not clear'
Journal selection process	'The journal had been selected for reasons other than open access. However, during the process of writing the article, we decided to publish it open access'.
Experiences with publishing OA articles	'The response was overwhelming'.
	'The article is in the top five of the downloaded articles on the journal platform'.
	'The article was cited very rapidly. However, it is difficult to know if this is due to open access or due to the journal reputation'.
	'With other OA articles, a lot more people are downloading and citing it. I think it certainly helps'.
	'So, it looks like you get faster citations then with non-OA articles. I think it helps'.
Future publishing behaviours	'Young people, however, do not have these projects. Money is a key factor: our department has a very low budget of its own'.
	'In case I will do another article, OA would not be of any consideration.'
	'I will look for OA in the future as it gives you good exposure. I do research into a subject that is also of interest for the general public.'
Price sensitivity	'Publishers are milking us.'
	'€2000-€3000 is the upper limit of an APC that we are willing to pay. If the APC were higher, that would be a reason to look for another journal.'
	'My APC was €3600. I am rather fed up with this kind of high-level costs and might consider Green open access in the future.'
	'I don't understand why the APC is so expensive for certain journals while other journals can do it for a lower APC.'

Topic	Quote
	<p>'There are journals in the market with similar titles to very good journals with low or no impact factor and with many open access articles of low quality, and this is polluting the literature.'</p> <p>'Some of those APCs of €2,000 or €2,500 are not keeping up with the service level of the journal.'</p> <p>'But now it seems to be the world on its top: Nature means cost-free publishing for the author and new coming journals are asking exorbitant prices. For journals with lower impact factors than 20, you will go for a free option: there is always an alternative journal that will be free or have a low APC.'</p>

Appendix 5 – Authors’ attitudes towards OA publishing

Table A8 Summary of the interviews leading to the typology of authors

GOLD OA option	Characterisation	APC paid by	Number of articles published	Number of Gold OA articles	Country	Discipline
Hybrid – APC	OA opportunist	Research funder	> 20	5	UK	Earth Sciences
Hybrid – APC	OA opportunist	Research group budget	>20	1	NL	Earth Sciences
Hybrid – APC	OA opportunist	Research group budget	6 to 20	4	UK	Life Sciences
Hybrid - offsetting	OA opportunist		1 to 5	1	NL	Life Sciences
Hybrid - offsetting	OA opportunist		6 to 20	1	UK	Life Sciences
Pure Gold	OA opportunist	Research group budget	6 to 20	3	UK	Life Sciences
Pure Gold - no-APC	OA opportunist		6 to 20	2	UK	Other STEM
Hybrid – APC	OA supporter	Research group budget	6 to 20	most OA	DE	Life Sciences
Hybrid – APC	OA supporter	Research group budget	1 to 5	1	UK	Other STEM
Hybrid – APC	OA supporter	Research group budget	1 to 5	2	UK	Earth Sciences
Hybrid – APC	OA supporter	Research funder	6 to 20	11	UK	Life Sciences
Hybrid – APC	OA supporter	Research funder	1 to 5	4	UK	Life Sciences
Hybrid – APC	OA supporter	Research funder	6 to 20	5	UK	Life Sciences
Hybrid – APC	OA supporter	Research funder	6 to 20	14	UK	Life Sciences
Hybrid – APC	OA supporter	Research funder	>20	6	DE	Other STEM
Hybrid – APC	OA supporter	Research project budget	1 to 5	3	NL	Agriculture

Hybrid – APC	OA supporter	Research group budget	>70	4	DE	Earth Sciences
Hybrid – offsetting	OA supporter		1 to 5	2	NL	Other STEM
Hybrid – offsetting	OA supporter		>20	5	NL	Other STEM
Hybrid – offsetting	OA supporter		1 to 5	2	NL	Earth Sciences
Hybrid - offsetting	OA supporter		6 to 20	30%	NL	Life Sciences
Hybrid - offsetting	OA supporter		>20	5%	NL	Other STEM
Hybrid - offsetting	OA supporter		1 to 5	1	NL	Earth Sciences
Pure Gold	OA supporter	Research funder	6 to 20	20	DE	Life Sciences
Pure Gold	OA supporter	Research funder	6 to 20	most OA	UK	Life Sciences
Pure Gold	OA supporter	Research funder	6 to 20	6	UK	Life Sciences
Pure Gold - no-APC	OA supporter		1 to 5	1	UK	Other STEM
Hybrid – APC	OA Apathete	Research funder	>20	a few	UK	Life Sciences
Hybrid – APC	OA Apathete	Research funder	6 to 20	4	UK	Earth Sciences
Hybrid - offsetting	OA Apathete		>20	a few	NL	Other STEM
Pure Gold	OA Apathete	Research group budget	>20	a few	NL	Life Sciences
Pure Gold - no-APC	OA Apathete		6 to 20	1	DE	Other STEM
Pure Gold - no-APC	OA Apathete		1 to 5	1	UK	Other STEM