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## National OA mandate and its potential conflicting relationship with international scientific cooperation policies: the Dutch case

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### Introduction

Open access mandates are setting standards on how to publish open access, as well as indicate the timeframe in which these goals are supposed to be reached. The Dutch and UK Open Access mandates promote the Gold Open Access model for publishing while the EU Open Access mandate, as well as that of a number of countries indicate either a mix of Gold and Green (e.g. Switzerland) or advocate directly Green publishing (e.g. Denmark). With respect to timeliness, the Dutch Open Access mandate has been set first at 2024, according to a letter sent to Dutch parliament by Sander Dekker (Dekker, 2015), which was later shortened towards 2020, with the end of the Horizon 2020 programme by the EU (Dekker, 2016). Another change involved the targeted types of output: while the initial goals set were supposed to be inclusive of all types, such as books, journal publications, chapters in books, the more recent adjustment of the targets excluded books within the 100% open access goals for the Dutch science system. The UK clearly indicated that for the next REF, the national assessment of research that occurs in the UK periodically, can only cover those outputs that have been published in open access format, in which the Gold route was preferred.

Parallel to the OA development, taken up both nationally as well supra-nationally, European and thus also Dutch academics are confronted with an increasing pressure to cooperate scientifically with European partners, via the consortia obligations expressed via for example EU funding instruments such as those under the more recent Framework programmes. So we notice for many years an increasing tendency to internationally collaborate for European science (van Leeuwen, 2008).

The results presented in this study are part of a larger analysis in which CWTS supports the University and Royal Library system (UKB) in the Netherlands in their negotiations with the publishing industry, oriented towards the so called Big Deals. In this study, the question arose to what extent Dutch output was directly under the Big deals, that mean, a situation in which any publication with a Netherlands based author as corresponding author was involved, would get OA format published. The choice for corresponding author was a second best approach, as

the preferred choice for this analysis would have been submitting author. As this is not available, corresponding authorships was considered the best option for the study. In this analysis, also scientific cooperation was considered as an important element of the way output was created, and how that linked to OA publishing, so indirectly to the Dutch OA Mandate. The main research question here is: to what extent is the Dutch OA mandate hindered by EU policies to increasingly work together internationally for EU scientists (for example via EU Framework programmes, such as Horizon2020) ?

### **Data and methods**

Labeling of WoS data with OA tags is based upon the methodology developed in previous analyses (van Leeuwen et al, 2017). This method of tagging WoS publications with OA labels is somewhat different compared to the one applied by Dutch colleagues (Bosman & Kramer, 2018), in which only Unpaywall data are used to tag publications with OA labels. WoS data for this study are derived from the CWTS in-house version of WoS. Information on the addresses for Dutch universities is retrieved from the in-house address database on top of the CWTS WoS database, similar as is used for the Leiden Ranking (Leiden Ranking, 2017, Waltman et al, 2012). The data cover the period 2009-2016, taking into consideration articles, letters and reviews.

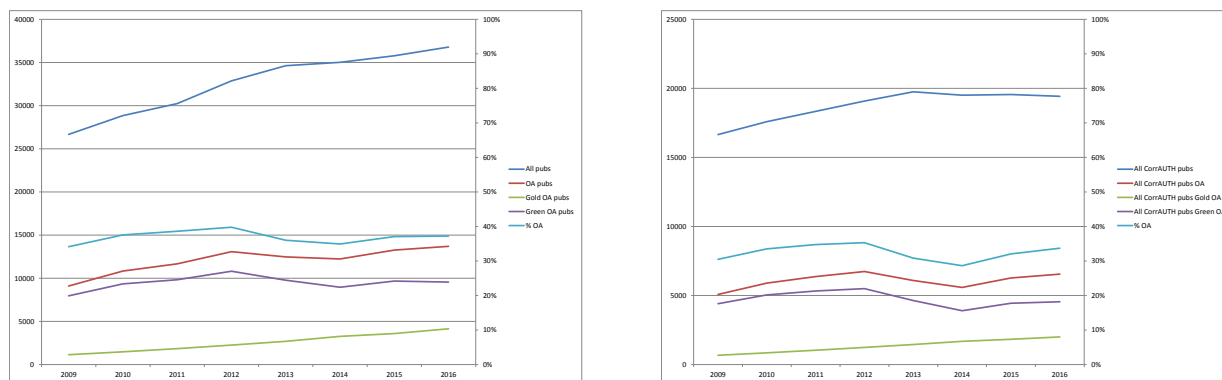
Corresponding authorship is derived from WoS immediately, by following the reprint organizations address, which is connected to authors in WoS from 2009 onwards. The method we followed here is similar to what has been used by Austrian colleagues in tagging the output from Austria with OA labels, using the corresponding authorship labels from WoS. (Gumpenberger et al, 2018). This allows the distinction between all publications from the Netherlands, and the publication output for which we can establish Dutch corresponding authorship.

We also use the classification CWTS applied in studies analysing scientific cooperation types. For such analyses, a relatively straightforward typology has been designed (Moed et al, 1995), which divides output in three different types: publications with only one address (Single institute, or SI), papers with two country names, hence indicative of international cooperation (International cooperation, or IC), and finally, all those papers that carry several addresses within one country (National cooperation, or NC).

### **Results**

Let us describe the landscape first in which we position the analysis. Therefore we have to first show the numbers of publications produced by Dutch universities in the period 2009-2016. The overall results of the output analysis are shown in Figure 1, in which we include the overall output of Dutch universities, the total number of publications is shown in the left panel, as well as the total OA output from Dutch universities. Furthermore, also the share of OA compared to the total output of Dutch universities is shown, next to Gold and Green OA output numbers. The share of OA output is relatively stable, fluctuating around 40% of the total output.

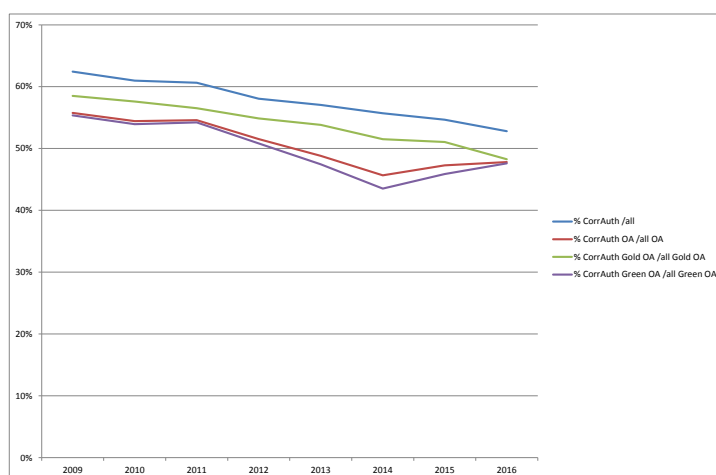
Figure 1: Output development of the Dutch universities, 2009-2016  
 Total (left panel) and only corresponding authorships (right panel)



In Figure 1 right panel we show the same configuration as displayed in Figure 1 left panel, here only limited to the output from Dutch universities on which Dutch academics are corresponding author. In the right panel we observe a certain stagnation of the number of publications on which Dutch academics are corresponding authors. The number of OA format published papers is fluctuating, consequently the share of OA format published outputs as corresponding author fluctuates as well. This share of OA format published output as corresponding author is slightly lower in comparison with the share of all OA format published outputs.

In Figure 2, we show the comparison of the Dutch output resulting from corresponding authorships, in comparison with the total Dutch output, and the various ways to depict OA publishing. We note that the share of the Dutch academic output that results from corresponding authorships in comparison with the total production of Dutch universities, slowly diminishes. The OA share of the total OA output is recovering a bit, due to an increase of the number of Green OA publications in the last two years of the analysis.

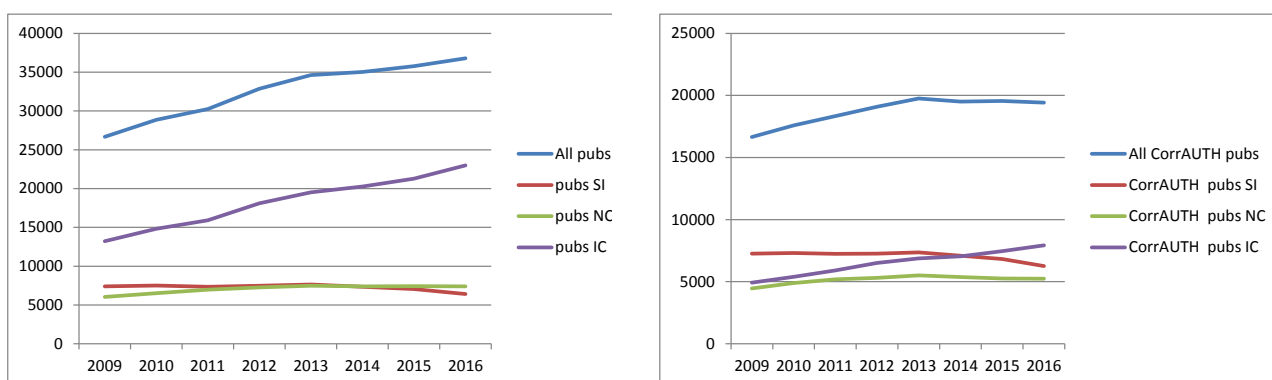
Figure 2: Share of the output in corresponding authorships of the total output of Dutch universities, 2009-2016



Next, we shift our focus towards the way the Dutch academic production of scientific journals pares has developed, across three types of scientific cooperation, both for the full set as well as for the set of publications in which Dutch academics are corresponding authors. This is displayed in Figure 3. In Figure 3, in the left panel, we clearly note that Dutch output development is driven by an increasing intensification of international collaboration. National

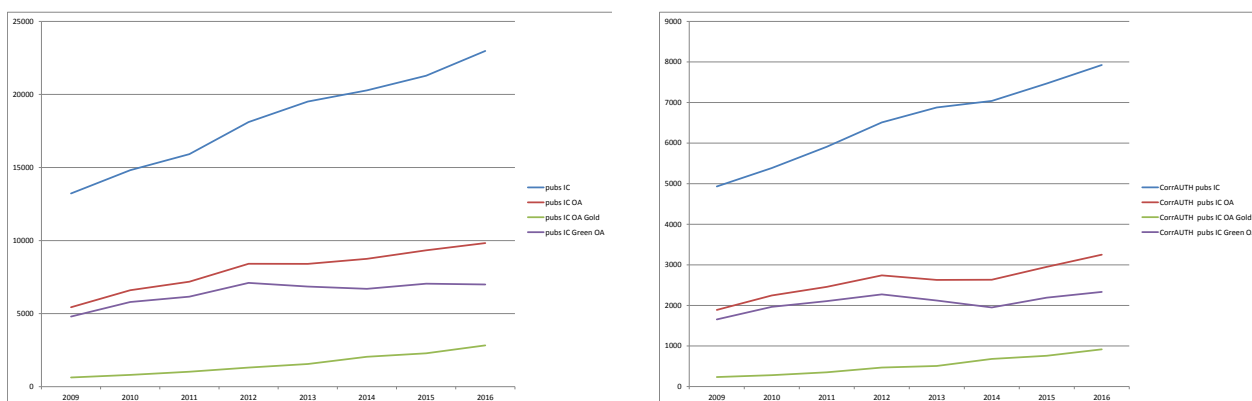
cooperation and single address publications show a stable pattern, with a slight decrease of the latter, and slight increase of the former. In the right panel, the output related to corresponding authorships are depicted. First, we clearly note that the overall output in which the Dutch academics are leading is stagnating in the later stages of the period of analysis, while the international scientific cooperation output surpasses the single address output (which by definition covers a substantial part of the corresponding authorship output). The observed stagnation of Dutch corresponding authorship output is mainly due to output resulting from national cooperation (in which non-academic research institutions apparently more often take corresponding authorships).

Figure 3: Output development across scientific cooperation types of the Dutch universities, 2009-2016  
Total (left panel) and only corresponding authorships (right panel)



In Figure 4, we show the composition of the output that results from Dutch academic international scientific cooperation. In the left panel, we show the overall situation, while the right panel contains the composition of the output in which Dutch academics are corresponding authors. While we notice a more or less continuous increase in the number of publications that are published in OA format in the total output resulting from international cooperation, we find a somewhat more fluctuating pattern in the development of the output that results from international scientific collaboration in which Dutch academics are corresponding authors.

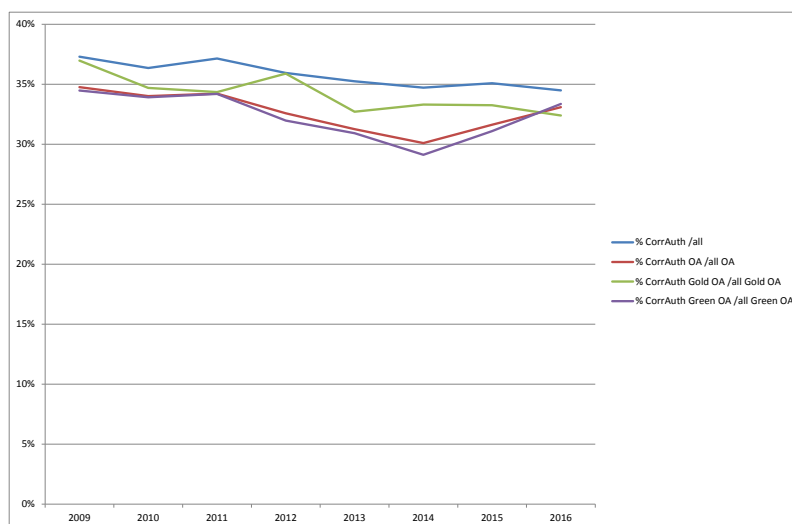
Figure 4: Output development for international scientific cooperation of Dutch universities, 2009-2016  
Total (left panel) and only corresponding authorships (right panel)



In Figure 5, we present the relative share of the Dutch corresponding authorship output in comparison to the total output, that results from international scientific cooperation. Like we

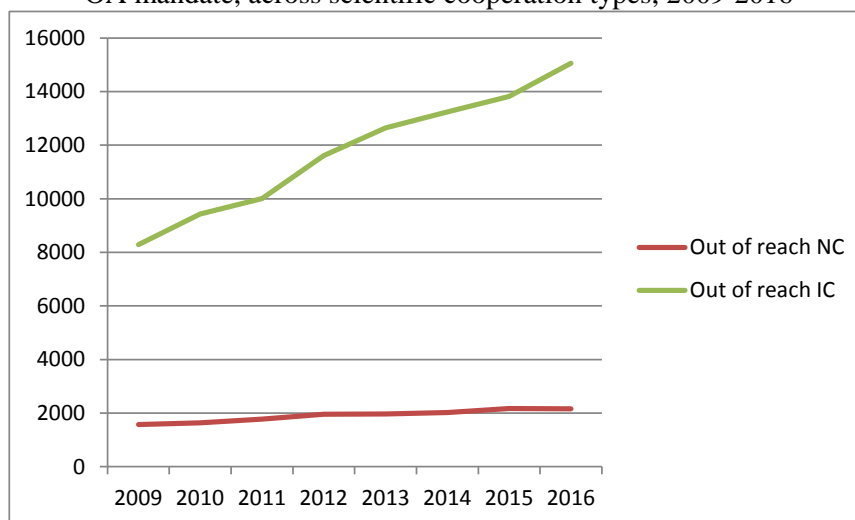
observed for the overall output, we observe a decreasing trend, albeit not so sharp we observed for the total Dutch output. The decrease means that in international scientific cooperation relationships, the Dutch have lesser corresponding authorships. Whether this means that academic leaderships by the Dutch university world is under pressure is a topic for another study, the increasing output number over the last decades, as can be concluded from the increasing numbers measured in numerous bibliometric studies, in combination with an intensifying of international scientific cooperation due to requirements connected to funding. In FP-6 and FP-7, scientific cooperation with South European countries was obligatory, in Horizon 2020, Eastern European partners have to be part of consortia. This brings of course also sharing authorships among more partners, from an increasing number of countries. The OA format shares of the international collaboration output shows a rather varying pattern, with a first Gold OA important in 2012, while later, in 2015 and 2016, the Green OA format share of the output resulting from international cooperation increases.

Figure 5: Share of the output resulting from international scientific cooperation in corresponding authorships of the total output of Dutch universities, 2009-2016



Finally, we return to the findings underlying Figure 3. From Figure 3, we concluded that the corresponding authorship part in output resulting from international scientific cooperation was relatively small, as compared to the overall output resulting from international scientific cooperation. This brings us the results as shown in Figure 6, in which we present the development of the numbers of publications in which the Dutch are not corresponding authors. That is, these publications are actually somewhat out of the reach of the Dutch OA mandate, as the OA status of these publications is not determined by Dutch academics, but by either non-academics from the Netherlands (in the case of national scientific cooperation) where OA is not such an issue as it has become for the university sector, or by foreign colleagues (in the case of international scientific cooperation), for which completely different OA mandates might apply. When we take a somewhat closer look to the two types of scientific cooperation, we note that the number of publications that are national cooperation based is stable at about 2000 publications. However, the output that results from international scientific cooperation, in which Dutch academics participate but are not corresponding authors, increases from 8290 in 2009 to 15053 in 2016, an increase of 6763 publications that do not fall under the Dutch OA Mandate.

Figure 6: Numbers of publications of Dutch universities, 'Out of reach' for the Dutch OA mandate, across scientific cooperation types, 2009-2016



### Conclusion & Discussion

A very first remark we can make on the basis of this study is related to the question what makes a research paper a national product, so what makes it a Dutch, a German, or a Danish paper? This is becoming more and more an issue in conducting bibliometric analyses, as international scientific cooperation intensifies, and as such is becoming more and more a dominant aspect in science, and particular in Europe, with its research funding instruments that incentivize international scientific collaboration, through requirements connected to funding opportunities.

One first conclusion might be that the Dutch OA mandate could deal with a substantial smaller part of the total production of the Netherlands and its universities as compared to the perception that we have to take care of the total and also growing output of the Netherlands. National ambition can thus be limited to a smaller number of publications as conceived before, which also means that costs might be lower. However, that might make the discussion with respect to the change from subscription based to APC based somewhat more complicated, as Dutch academics still want to maintain their access to all the journals they have access to now.

Next conclusion could be that given the growing output resulting from international scientific cooperation, the part of the Dutch scientific output on which the mandate applies becomes smaller. This is contrary to the wish by the Dutch government to have all Dutch outputs OA accessible by 2010 (limited, as stated in the Introduction, to certain types of publication).

The study has shown that policies on national mandates can be hindered by international policies related to research funding and scientific cooperation and integration. An advantage can be that the goals set by national OA mandates can be more restricted to a smaller set of publications, for example by looking at the part of the output in which corresponding authorships play a role. This will however also further complicate the monitoring of OA format publishing on the national level, not to mention on the international level.

However, one could also turn around the argumentation: if the Netherlands reaches under its national OA mandate only a sub-set of the national scientific production, by taking responsibility for the corresponding authorship segment of the total national production, and every country would follow a similar policy, this creates a clear key for distributing responsibilities with respect to getting national outputs accessible via OA publishing.

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