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► To cite this version:

Julien Bordier. Open peer review : from an experiment to a model: A narrative of an open peer review experimentation. 2016. <hal-01302597>

HAL Id: hal-01302597

<https://hal.archives-ouvertes.fr/hal-01302597>

Submitted on 14 Apr 2016

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Open peer review : from an experiment to a model

A narrative of an open peer review experimentation

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Translated from French by the author

Summary: This article narrates the development of the experimentation of an open peer review and open commentary protocols. This experiment concerns propositions of articles for the environmental sciences journal *VertigO*, digital and open access scientific publication. This experiment did not last long enough (4 months) and was not deployed on a large enough corpus (10 preprints) to lead to firm quantitative conclusions. However, it highlights practical leads and thoughts about the potentialities and the limitations of the open review processes – in the broadest sense – for scientific publishing. Based on the exemplary of the experiment and a participant observation as a copy-editor devoted to open peer review, the article finally proposes a model from the experimented prototype. This model, named OPRISM, could be implemented on other publishing contexts for social sciences and humanities.

Keywords: Open peer review, Open commentary, Digital publishing, Publishing innovation, Open access, OpenEdition, OpenAire

Central and much debated activity in the academic world, peer review refers to different practices such as control, validation, allocation and contradiction exercised by the scientific community for itself. Its scope is wide: from the allocation for funding to the relevance of a recruitment. According to common sense, the control of the scientific community by itself is a guarantee of scientific quality. This issue became even more important in an international context of competition between universities and between scholars themselves¹. This article will focus on peer review for scientific publishing. To define it shortly, it consists in evaluating a proposal of an article (preprint) by experts (referees), who will indicate to the publisher if the text can be published, and/or, indicate how the text shall be modified. Traditionally, the authors do not know who review their manuscript – single blind – and sometimes neither the authors nor the referees know the names of each other – double blind. The reviewing work is an important part of a scholar's activities, however it is an invisible and, most of the time, unpaid part of the work done around a publication. The principle of peer review is widely accepted, however its terms and regulations are controversial². The main critique about peer review concerns the effective competence of referees. It turns out that the classical review process does not prevent the publication of false results (in order to support a funding for

1 BOURE Robert, “De l'évaluation collégiale à l'évaluation à dominante gestionnaire”, *Communication et organisation* [En ligne], 38, 2010, <http://communicationorganisation.revues.org/1391> (accessed on the 11/II/2016)

2 Among the rich literature about this subject, see the bibliographical landmarks proposed at the end of this text and see for example: WICHERTS Jelte M., “Peer Review Quality and Transparency of the Peer-Review Process in Open Access and Subscription Journals”, in *PlosOne*, 29 janvier 2016, doi : 10.1371/journal.pone.0147913

example) or, what is maybe less serious, the publication of hoaxes.³ At least, hoaxes have the merit to highlight the limitations of a system that seems irremovable. In a general way, the impartiality aimed by peer review appears to be a myth⁴. This fact may be even more delicate in social sciences and humanities, where the results of an analysis do rely on adopted views and does not necessarily aim accuracy. Where points of view can confront, does the critique allow to disqualifying?

To open the peer reviewing process, and to encourage scientific interactions around editorial contents, are alternatives in order to renew this activity. This idea is based on a simple principle: where authors and referees are supposed to be kept apart in a conventional reviewing process, open peer review propose to reconcile them. This alternative is born from a simple intuition expressed by many voices in the scientific community. As long as classical peer review does not prevent to publish mistakes or frauds, or to circumvent the effects of conflicts of interest since that anonymity is often not effective, reviewing should be taken for what it is: a way to collaboratively improve texts and to guide editorial committees. The practice of open peer review is particularly developed in the English-speaking sphere and in the Science-Technology-Engineering-Mathematics (STEM) academic field. It takes different forms (crowdsourcing review, peer commentary, preprint review, post-print review, synchronous review, peer review by endorsement, editor-mediated review) but a single principle at its core allows to define it. Open peer review implies that the referees' reports are disclosed, accessible, signed, and that authors and referees are able to discuss them⁵.

This open alternative to the conventional assessment finds today fertile ground in scientific digital publishing. The new forms of editorialization⁶ induced by digital publishing allow considering this opening. Where scientific discussions could only take place through an exchange of interposed paper-versions, it is now easy and possible to allow those discussions to deploy online. The average Internet user became largely familiar to practices such as commenting and discussing online, whether in collaborative practices or through the use of social media. Beyond these space and culture, open peer review seems to be able to become a pillar of open access policies for scientific publishing. Indeed, it fits into the perspectives defined by the 2003 Berlin Declaration, dedicated to

3 As articles generated by SCIGen, see VAN NORDEN Richard, "Publishers withdraw more than 120 gibberish papers", in Nature, 24/02/2014, doi:10.1038/nature.2014.14763 and in the journal Société, see COULMONT Baptiste, "L'Autolib' révélatrice de la sociologie postmoderne", in Le Monde, 9/03/2015

4 See for example the blog post from the scientific journalist Michael Nielsen on this topic:
<http://michaelnielsen.org/blog/three-myths-about-scientific-peer-review> (consulted on the 08/II/2016)

5 For a general view about open peer review, I allow myself to refer to the paper wrote during the exploratory research linked to this project: "Evaluation ouverte par les pairs : polysémie et problématiques", published on OpenEdition LAB, <http://lab.hypotheses.org/1453> (consulted on the 08/II/2016)

6 For a definition, see: VITALI ROSATI Marcelo, "What is editorialization ?" in Sens Public, Janvier 2016, <http://sens-public.org/article1059.html> (consulté le 11/02/16)

open access, as it permits turning public an important part of the research work, significant yet invisible: discussing and improving academic publications. This seems crucial for social sciences and humanities whose research objects can relate and directly feed the thoughts of a wide part of the society and citizen movements.

Thus, we propose to describe and to question, in this article, an experiment conducted by OpenEdition in the framework of the European project OpenAIRE2020, in partnership with the digital and open access journal of environmental sciences *VertigO* and the Couperin consortium. This analytic description of the experiment will lead to the model of an operational protocol of open peer review and open commentary⁷. Since the experiment takes place over a short time and over a limited corpus of preprints, five of them being submitted to open peer review and five others to open commentary, this article does not claim – nor have the ability – to present quantitative results. The qualitative approach adopted aims to describe the sequence of the experiment in order to draw significant elements. These elements will allow designing the proposal of a model of open peer review and open commentary device. Besides, the choice of this approach is justified because we assume that the issues related to peer review are closely related to the character and the subjectivity of authors, contributors and referees. Scientific community is a human community like others, and therefore, it is shaped by personalities meeting and interacting. Thus, taking advantage of an approach based on specific examples, we want to express the need for case-by-case analysis before risking any generalization. Beyond the mentioned facts and cases, the experience should be able to show if the implementation of open peer review and open commentary systems is possible, and, how it can be produced. Thus, from a methodological point of view, the following analysis is based on the exemplary of the experiment.

A prior hypothesis to the implementation of the device is that open peer review protocols do need specific human facilitation. We will see in which way this hypothesis is confirmed, the author of this paper and experiment-teller playing the role, during the time of the experiment, of a copy-editor dedicated to open peer review and open commentary. Hence, we could write that this article is a socio-anthropological study about an editorial innovation, on a reduced corpus, in a representative environment. This participant-observation is enriched by feed-backs on the experiment which have been collected from most of the participants – authors, referees or contributors. It also relies on verbal and written informal discussions that helped to clarify the purpose and context of scientific

⁷ Protocol in situation : <http://vertigo.hypotheses.org/evaluations-et-commentaires-ouverts> (consulted on the 08/II/2016)

publishing and reviewing processes. In addition, two scholars in social sciences and humanities, non-participating, were interviewed during the time of the experiment to collect their thoughts and opinions about the experimented open peer review and open commentary device. These discussions stimulated and helped to extend the study, and, to propose a model from the protocol.

The transcription and analysis of this experiment are organized along three directions. The first one describes the branches of the device – open peer review and open commentary, the editorial context in which they operate and it mobilized technical possibilities. This first part is limited to a factual and brief description. The second segment, longer, reports the results of the experiment. It is based on the participant-observation as copy-editor dedicated to open peer review and open commentary, quotations of the participants and is fed by the peripheral research that was led at this occasion. The third part focuses on the limits of the protocol and tries to propose solutions that could help to improve it. This third and last part makes a number of recommendations for the implementation of open peer review and open commentary devices in journals. At last, to conclude and open, after a general reflection about the opening of the review process, a model of the tested prototype will be designed. It proposes to give the main directions that could be followed for the setup of such devices.

1. DESCRIPTION OF THE EXPERIMENTAL PROTOCOL

1.2. Editorial and scientific contexts

Editorial context: OpenEdition

The experiment was conducted in the technical and scientific framework proposed by OpenEdition and is based on the articulation of two platforms developed by the portal created by the *Centre pour l'édition électronique ouverte*⁸ (Centre for open digital publishing – mixed structure from CNRS, Aix-Marseille University, EHESS and University of Avignon). OpenEdition is an electronic publishing infrastructure which develops scientific communication in the social sciences and humanities. It brings together four complementary platforms: for books with OpenEdition Books, for journals with Revues.org, for academic-blogs with Hypotheses, for scientific events' announcements with Calenda. These platforms have 3 million monthly world-wide visits. Regarding the experiment described and analyzed here, the platforms which are mobilized are Revues.org and Hypotheses. The experiment concerns scientific articles proposed for a journal

⁸ <http://cleo.openedition.org>

hosted on Revues.org, *VertigO - The digital journal of environmental sciences* (vertigo.revues.org) and *VertigO's* research blog (vertigo.hypotheses.org), hosted on Hypotheses. Each journal hosted on Revues.org is not necessarily linked to a scientific-blog hosted on Hypotheses. Hypotheses is mainly conceived to enable the scientific community to report the advancements of their researches and communicate about them, in a non-academical way, but these blogs are actually very diverse as can be seen in browsing the catalog of the platform. In February 2016, for 1459 blogs hosted on Hypotheses⁹, only 42 are “publications blogs” that is to say, attached to a publishing device; the largest share is represented by the 330 “research program blogs”.

As OpenEdition is specifically directed towards the social sciences and humanities, using its editorial platforms to experiment open peer review and open commentary processes in these disciplines is particularly relevant. The relationship between a journal and a research notebook hosted on two platforms managed by the same structure creates an editorial consistency that should be beneficial to the development and progress of the experiment.

Scientific context: *VertigO*, environmental sciences

As mentioned above, the practice of open peer review and open commentary, hinged to open access to publications and preprints, is particularly developed in the Sciences-Technology-Engineering-Mathematics (STEM) field and in the English-speaking sphere. From the point of view of the history of the science, this is explained by the need to quickly share and discuss the search results on one hand, and on the other, by a specific scientific communication tradition. The common example, although it is not a platform of publication but an open archive for preprints open to comments, is *arXiv*. But journals practicing effective open peer review do exist as *Atmospheric Chemistry & Physics*, *Peer J* ou *F1000 Research* for example. We should add that it is mostly journals making the choice of open access that implement open peer review procedures. But this is not a necessity: nothing prevents a paid access journal to practice open peer review, leaving only its subscribers the ability to access it.

Open peer review and open commentary are underdeveloped in the social sciences and humanities. The reasons are many and, once again, the question of the historicity of the discussion by sharing research results plays an important role¹⁰. An open peer review and open commentary experiment which takes place in an environmental sciences journal may potentially overcome the effect induced

9 <http://www.openedition.org/catalogue-notebooks>

10 PONTILLE David and TORYN Didier, “The Blind Shall See ! The Question of Anonymity ib Journal Peer Review”, in Ada : A Journal of Gender, New Media, and Technology, No.4., 2014, doi : 10.7264/N3542KVW

by disciplinary traditions, to the extent that environmental analysis seems necessarily interdisciplinary. Environmental sciences lie at the crossroads of biological and human approaches, and find their relevance in the encounter and the crossed perspectives of both these approaches. The proper scientific context of the journal *VertigO* therefore creates a fertile ground for an experimentation with open peer review and open commentary, where different scientific communication traditions can meet without burdening the device. Another fact can be raised in the same way, the international situation of *VertigO* certainly favors such an experiment. The journal is based in Montreal, at the crossroads of linguistic areas and therefore also at the crossroads of the different traditions of the scientific communications.

The journal *VertigO* using OpenEdition's platforms

The link between the journal *VertigO* and its research blog provides an editorial and technical framework that seems appropriate to develop an experimental open peer review and open comment system. Indeed, a journal who wants to open its evaluation's process by turning it public, must first have an adequate space where to implement and to expose this process. With its research blog, the journal has such an area, without having to use external evaluation platform like the few existing ones.

The *VertigO*'s research blog is usually used by the journal for several purposes: calls for contributions are published therein, articles already published in the journal are open to comments (by offering the reader to switch from the journal to the blog), the journal's actuality is reported there. This blog seems to be, above everything else, a tool allowing to communicate about the journal's activities and publications. Even if it calls for interactivity by offering readers to share their views on articles published in the journal, the reactions of readers are finally rare.

1.2. Description of the experiment

The experiment took place over five months, the first of which was devoted to an exploratory research, and has been developed along two distinct branches inspired by the existing multitude of forms taken by open peer review. The opening of these two branches is also related to the types of articles' proposals available by *VertigO*'s editorial board: many spontaneous contributions that the journal has difficulties to deal with because of their number and their quality. The decision to open two separate protocols was prior to the implementation of the experiment, but it does correspond to the possibilities offered by the open evaluation in general. Besides, the protocol meets a need of the

journal and reveals an the journal's attraction for editorial innovation. Here, both parts of the device relate to preprint, while different modes inspired by the open peer review may also apply to post-print, which is especially true for open commentary. In the experiment's analysis expressed here, these two branches will be separated but we will also see that some of the observations are common to both of them.

Open peer review

The first branch is an open peer review protocol, where five texts are published. Therefore, its objective is to let experts determine if proposals of articles may be published in the journal, and how these proposals have to be corrected and improved. The review is conducted following a reviewing table, which is the same one that is used for classical blind review by the journal¹¹. These reviewing-document's sections cover the different levels and features of the text. The sections are divided by several parts which are supposed to be checked (four options from best to worst, through two intermediate levels, corresponding to major modifications or minor modifications) and other parts opened to comments. The reviewing-document is concluded with sections to fill freely (about strengths, weaknesses of the paper), the referee's recommendation for publication, refusal or major/minor modification and finally comments addressed to the author.

Within this experiment, the review process is open because it is transparent and open to public visibility. The texts are not anonymized which means that referees have access to the authors' names. Once the reports are submitted, they are uploaded just below the text and they are signed: the reviews are disclosed. Finally, it is important to note that the texts are uploaded online as soon as at least one referee agrees to review the preprint. Hence, the content of the submitted article is also published from the beginning of the review process. Potential referees are appointed by the journal, the authors have previously given their consent to participate in the experiment. In this article, we will call this part of the device: the "*review*" branch.

At the end of the reviewing process, the page of the blog where took place the review process (article's first version, reviews, annotations, answers from the authors) remains online if the text is accepted for publication. On the published version, an editorial note indicates that article was openly peer reviewed and the referees are namely credited. A hypertext link refers – in a new window or tab – to the page of the blog where the review process took place. On this page, a link

11 This document is public, available among the "Instructions for authors": <https://vertigo.revues.org/5401> (accessed on the (2.II.2016)

creates the reverse path to the published version, indicating that the text was submitted to open peer review, which process is over. If, on the contrary, the text is not accepted, its content is removed from the blog but the page remains online. The article's title and the names of authors and referees are still mentioned but the evaluation reports are deleted. A note indicates to the visitor that this text was submitted to open peer review.

The screenshot displays a web-based platform for scientific communication. On the left, there is a sidebar with various navigation links such as 'EVALUATION OUVERTE', 'REVUE', and 'VEILLEES'. The main content area shows a post titled "Synoptique et impacts d'un événement hydrométéorologique : les inondations du 6-7 octobre 2014, Grabels (France méditerranéenne)" by T. Rey, S. Defossey, F. Vinet, and L. Boissier. Below the title, it says "PAR TONY REY - 6 NOVEMBRE 2015". A note indicates that the article is subject to peer review. The text discusses a flood event in Grabels, France, in October 2014, mentioning specific dates (6-7 October) and locations (Grabels, France). It includes a summary, author information, and a detailed description of the event and its impacts. At the bottom of this section, there is a link labeled "Up: draft".

4 RÉPONSES

[Commentaires 4](#) [Pingbacks 0](#)

Yves Guermond (14 décembre 2015 à 10:20)
Evaluation ouverte par Yves Guermond, CNRS/UPRESA 6063 IDEES, Université de Rouen, France
Appréciation du sujet
Moyenne
Appréciation générale
L'information contenue dans l'article est à jour, mais manque de précision technique. Son contenu est appuyé par des recherches valides et soutenu par une bibliographie. Les statistiques utilisées sont valides. Les arguments présentés sont logiques. L'article est pertinent pour la revue Vertigo, le lecteur de la revue, ses mandats et ses objectifs.
Appréciation concernant les articles de résultats de recherche et de réflexion théorique
Concernant la valeur scientifique: acceptable, demande de modifications mineures.
Concernant la qualité méthodologique: acceptable, demande de modifications mineures.
Appréciation concernant les articles de transfert de connaissance (synthèse)
Concernant l'exhaustivité: acceptable, demande de modifications mineures. Concernant la qualité de synthèse: acceptable, demande de modifications majeures (une localisation insuffisante des aires inondées et de leur relation avec l'urbanisation, ce qui est pourtant le cœur de l'article).
Appréciation concernant la correction de la langue, l'écriture et le style
Acceptable, demande de modifications mineures.
Appréciation concernant l'élegance de la présentation, l'organisation et la structure du texte
Acceptable, demande de modification majeures.
Le plan est un peu fouillis, ce qui entraîne de fréquentes redites. Pourquoi ne pas adopter un plan, certes classique, mais plus clair et convaincant. Par exemple:
- 1 Le contexte hydrogéologique et météorologique
- 2 Cinématique de l'écoulement de crue et calculs des débits
- 3 La péri-urbanisation non contrôlée vecteur d'exposition aux risques
Commentaires généraux
Points forts: une analyse sérieuse des données hydrologiques.
Lacunes ou faiblesses: un lien mal explicité avec les conséquences sur l'habitat.
Compréhensibilité: un plan un peu fouillis.

Down: reports

Illustration 1: a report published below a preprint.

Open commentary

The second branch does not aim to review articles for publication. Instead, it proposes to help authors to improve their initial draft before they submit it for review. Five texts are published within

this branch, which is an open commentary device. It presents spontaneous contributions which have significant problems and are not yet ready to be submitted for peer review. These texts are open to anyone comments, and contributors are told that these comments can be both substantive and formal. Therefore, this branch's issue may seem less important as long as the open commentaries are not going to decide the fate of the article.

The experiment contradicts this intuition and demonstrates the relevance of the implementation of such a device, rather from a pedagogical point of view than from a scientific communication point of view. It can already be noticed that the journals which open texts to commenting – usually for post-prints – harvest only few feed-backs. The authors participating in the experiment gave their prior agreement, knowing that the preprints would be publicly and freely available online. In this article, this part of the device will be called: “*commentary*” branch; the ones who post comments and annotations will be called *contributors*.

At the end of the process, the editorial content is unpublished but the page of the blog remains online, indicating the article's title, along with the names of the authors and contributors. Authors are invited to add the contributor's names within the *thanks* part. If the article is finally published by the journal, a hypertext link would guide to the page of the blog where comments and annotations would still be available.

à-dire environ 5,9 milliards d'hommes vit dans des zones côtières, et la plupart des grandes concentrations urbaines se situent sur le littoral marin.

Le fleuve, le littoral et les eaux marines côtières sont des milieux naturels remarquables intensivement utilisés par l'homme. Cette utilisation conduit l'ensemble des zones littorales et marines de la planète à une dégradation des ressources, une dégradation de leur environnement, une compétition pour l'utilisation de l'espace terrestre et maritime, des conflits et interférences entre des usages multiples (Prieur, 2010).

Les meilleurs littoraux ou côtiers qui sont en effet des espaces réceptacles et de transition à l'interface entre l'atmosphère, la terre et l'océan, sont d'importantes zones d'échanges de matières et d'énergie jouant ainsi un rôle capital dans les cycles biogéochimiques (LOICZ, 2005).

Dans le Golfe de Guinée, la forte concentration des activités humaines (agriculture, industries, etc.) a provoqué d'importants changements et a considérablement modifié les écosystèmes côtiers (Adam, 1988).

Au Bénin, la détérioration des écosystèmes constitue une préoccupation pour les populations dont le nombre ne cesse d'augmenter sensiblement depuis plusieurs années (Paskoff, 1998). En effet, Le littoral béninois dans le Golfe de Guinée est identifié comme présentant une vulnérabilité particulière à une hausse relative du niveau moyen de la mer sous l'effet du réchauffement global (PNUE, 1985 ; IPCC, 1994 ; MEHU, 1997 ; MEHU et ONUDI, 1998).

Avec le débat sur les conséquences du réchauffement global, les facteurs de vulnérabilité souvent évoqués quant à l'avenir du littoral béninois sont pour partie liés aux caractéristiques des côtes qui bordent la façade occidentale de l'Afrique : côtes sableuses pour la plupart (Toffi, 1991 ; Pohano, 1995 ; Adam, 1996).

A l'instar de Cotonou, la Commune de Grand-Popo subit les mêmes phénomènes de dégradation voire de destruction de ses écosystèmes marins et côtiers liés à certains facteurs. En réalité, les effets de cette dégradation commencent déjà à se faire ressentir dans la Commune de Grand-Popo. Ainsi, l'évolution temporelle et spatiale de cette dégradation voire destruction de ces écosystèmes dans la Commune de Grand-Popo risque d'hypothéquer la survie des générations futures si aucune mesure de contrôle et de protection n'est envisagée.

L'objectif de cette étude est d'analyser les facteurs de la dynamique des écosystèmes marins et côtiers dans la Commune de Grand-Popo.

2. Cadre d'étude

Située au Sud-ouest du Bénin entre 6°15' et 6°25' de latitude nord et 1°40' et 1°49' de longitude est, la Commune de Grand-Popo est

The screenshot shows a post on the left with several annotations on the right. The annotations are as follows:

- Annotation 1: "fixé pour la circonference à 3/20" (fixed for the circumference at 3/20) by HerveRegnault 1 month ago. Comment: Il faudrait préciser comment ce taux est fixé. Présenté comme cela, il semble arbitraire. Reply Link
- Annotation 2: "15 personnes" (15 people) by HerveRegnault 1 month ago. Comment: Il faudrait justifier et expliquer le choix de ces 15 personnes (pourquoi 15 et pourquoi/Comment ont-elles été choisies). Reply Link
- Annotation 3: "63 % sont des hommes et 37 % sont des femmes" (63% are men and 37% are women) by HerveRegnault 1 month ago. Comment: Cela est-il représentatif de l'ensemble de la population ? Reply Link
- Annotation 4: "La répartition par classe d'âge des personnes concernées par l'enquête montre que les enfants de moins de 10 ans sont ..." (The distribution by age group of the people concerned by the survey shows that children under 10 years old are ...) by HerveRegnault 1 month ago. Comment: Existe-t-il des statistiques globales sur les activités de la population en fonction de l'âge et du genre ? Reply Link
- Annotation 5: "Préquence (%)" (Frequency (%)) by HerveRegnault 1 month ago. Comment: Que signifie « fréquence » ? Cela devrait être précisée. Reply Link
- Annotation 6: "la dérive littorale peut exercer une action érosive sur les côtes meubles comme à Grand-Popo" (Littoral drift may exert an erosive action on sandy coasts like those in Grand-Popo) by HerveRegnault 1 month ago.

Illustration 2: a contributor annotates an initial draft.

1.3. Technical modalities for review and commentary

The experiment is conducted on Hypotheses, platform of social sciences and humanities scientific notebooks, which operate as blogs integrated with WordPress. This blog-form meets one of the main requirements of a review/commentary protocol as long as it allows the publication of comments following the editorial contents. Thus, deployed on Hypotheses, an open review/commentary protocol is simply shaped and easily recognizable by any user: the manuscript is similar to a blog's post, the following feed-backs published below are commentaries to this blog's post.

However, Hypotheses does not include the ability to annotate, that is to say, to publish comments inside the editorial content itself. Hence, the best tool to propose for contributors to submit annotations inside the contents had to be determined. Different solutions have been considered, especially *Framapad* and *Googledoc*. However, the first one does not incorporate all that is necessary for a scientific publication (such as including images, tables and footnotes) and the second, more comfortable, raises the ethical issue of relying on a solution provided by Google. In

each case, the disadvantage would be, for the user who wants to capture annotations in the text, to open it in another window or tab. Finally, the chosen tool is Hypothes.is (<https://hypothes.is>), free plug-in based on the open-source JavaScript library Annotator (<http://annotatorjs.org>), which allows annotating editorial content online by deploying an annotation layer on a webpage (cf. Illustration 2).

2. A NARRATIE ABOUT THE RESULTS OF THE EXPERIMENT

This part of the article will tell, comment and analyze the implementation of the experiment. These comments and remarks can be considered as the results of the experimental device. However, as mentioned above, the corpus on which the experiment took place is not large enough to draw any quantitative conclusions or firm results. But, supported by the peripheral research led on this occasion, these observations are the ways which lead us to think about the possibilities and limitations of open peer review and open commentary protocols. First, observations applying to the entire device will be made and a particular attention will be drawn to addressing the specific potential of open review and commentary. Then, we will see which specific observations can be made about each of the two branches. Finally, the problems encountered during the experiment will be exposed, as the limitations – especially from a technical point of view – that appeared while experimenting the protocol. Exposing these remarks and limits will open a path to recommendations that could be followed in order to set efficient open peer review and open commentary devices.

2.1. General results

2.1.1. Interest in the renewal of the practices

Words that are spontaneous

The first element to note is the almost unanimous enthusiasm regarding the experiment that comes from participating authors, referees and contributors, but also from various informal discussions about the experiment. This first appeared in the search for referees/contributors. As for a conventional review, a key point is to find referees who agree to devote time to the reviewing process, which is usually voluntary and anonymous – which means that the scientist does not draw

any direct benefits in terms of career from this work, unlike a publication for example. The approach towards potential referees consisted in explaining the protocol, especially the fact that the reports would be disclosed and signed, from the first contact, while remaining concise to ensure that the message is fully read:

“The principle of open peer review, as practiced here, is simple. It differs from a conventional review process insofar your evaluation report and your notes will be turned public and signed by your name.”

For an open peer review device, as for a conventional device, many experts declined the proposal¹². However, it appears that even negative answers express an interest in this experiment, in a quasi-systematic way. Here are some examples that seem representative:

“I absolutely do not have any time to dedicate to this project, which, I am sure, will be exciting.”; “The described project looks interesting to me but I must decline because of a lack of time.”; “I am obliged to decline your proposal, despite my interest in an alternative reviewing mode.”; “I find this experiment very interesting and I would gladly participate unless you expect a quick review (by the end of the year).”; “The idea is interesting, but I must admit that I am obliged to prioritize the many demands that I receive.”

We can notice that the recurrent obstacle is the available time¹³. This observation applies both to potential referees as contributors. The contributors expressed the same interest as potential referees, even though they did not take time to comment the preprints. These feed-backs can be quoted as examples:

“I find this experiment very commendable and very interesting. I hope to find some time to do it but without warranty because I am somewhat “loaded” for the moment.”; “Thank you for contacting me regarding this initiative which interests me a lot, both in form and in content.”; “That sounds quite interesting and vital, I am unfortunately not available at the moment. I'll do my best to have a look later.”

We can not draw a sociological portrait of the researchers who have expressed an interest, and we can not see any particular discipline emerging from others. However, it seems to me that these expressions of interest to each of the branches of the device clearly reveal that the scientific

12 About this issue, see for example the funny scientists discussion on Twitter:

https://twitter.com/marc_rr/status/659318460133019648/photo/1 (accessed on the 5/II/2016)

13 About this issue, see AÏT ALI Nawel et ROUCH Jean-Pierre, “Le “je suis débordé” de l'enseignant-chercheur” (*The University researcher's “I'm over my head”*), in *Temporalités*, 18, 2013, <http://temporalites.revues.org/2632>, (accessed on the 12/II/2016)

community questions the methods of evaluation and expresses no particular rejection about innovations in this field. But it is only in exceptional cases that interest in the device was clearly formulated as a questioning of the classical review requirements. These answers illustrate the typical critique of classical peer review:

“I have experienced many times the damages done by a competitor and dishonest reviewer, or incompetent for multidisciplinary studies, where specialists from each field refer to a journal from another field.”; “I watched with great interest your project, I think that the peer review (and publication) system clearly deserves to be rethought in the digital era.”

Words from participating authors, referees and contributors

The same interest toward the experiment is expressed in the feed-backs from participating authors, referees and contributors. All feed-backs are positive, but one from the “review” branch, which will be described and analyzed later. Here, the interest in new forms of review is also clear, and on this occasion appears a critique of conventional review methods. Here are the authors' words whose texts were evaluated for example:

“Being able to identify the referees helped me to judge their good faith by allowing me to inform me whether they knew or not the subject”; “In a blind evaluation, I often receive feed-backs that are not argued. Here, perhaps because the referees are exposed, it seems to me that the remarks were particularly constructive.”

The same kind of positioning comes from referees:

“I find the exercise very interesting because the author understands the remarks of the corrector according to his profile; it allows the debate to start; it makes the process “less hypocritical” that anonymous reviews which often include that reviewer knows who is the author, but not the reverse!”; “On the general principle, I think that it is a very good formula, not only to produce the review, but mainly to get feed-back on it and a potential dialogue with the authors.”; “We found ourselves most often in small circles of specialists, anonymity is more a principle than a reality.”; “I'm against anonymity and this motivated my decision to participate in the experiment.”

While the question of anonymity remains a central argument for the review's objectivity and for protecting from conflicts of interest, it seems that for the interviewed researchers anonymity is not a central factor to preserve in the peer review system, regarding scientific publication. If anonymity is usually invoked as a mean of protecting the professional careers, two previous quotes express that

anonymity is often fictitious on one hand, and that the identification would guide to a particular attention to the quality of the remarks addressed to the authors on the other hand. As noted by an non-participant researcher interviewed about the course of the experiment, a signed review will professionally penalize a referee who will not review seriously: "*If you review any old way and everyone sees you doing it... you're completely discredited. Simple as that.*" The personal care to protect its own professional credibility would therefore guarantee a better review procedure. Hence, one can argue that the opening would potentially improve the quality of reviews. On another hand, one may think that this can complicate the search for referees as long as they are no longer protected and can eventually end up being themselves reviewed for their own reviewing work. Therefore, the question that arises is whether the objective is to find assessors at all costs, without considering the quality of the reviewing work, or to find referees who read and would review the proposals under an open control of the community.

In these feed-backs and in the questioning of the conventional review system emerge the major advantages of open peer review expressed by the scientific community itself: the possibility of discussion between authors and referees on the one hand, and the ceasing of anonymity as an advantage for authors, because they can appreciate the referees' competence and therefore the relevance of their report. These first results will be analyzed deeper later, and their limits will be exposed.

Statistics and communication

The interest generated by the experiment is also visible from the blog's statistics. The announcement of the experiment has clearly and significantly increased the number of visits in the following days. The implementation of the protocol was announced and uploaded during the first week of November 2015. The first day of the following week, the number of visits was 1215 and the number of viewed pages was 15,180 for respective averages for the current month of 395 and 1131, and for the previous month of 237 and 664 (see table 1 below). Similarly, we find that for November 2015 the presentation page of the experiment, two texts submitted to open peer review and two texts open to comments are among the ten most popular pages on the blog. If these numbers are decreasing afterward and that they do not tell us about the visitors thoughts, it anyway demonstrates the interest – or perhaps the curiosity – sparked by the renewal of review practices.

	Visits	Viewed pages

First day of the week after the announcement	1215	15180
Monthly average	395	1131
Average for the previous month	237	664

Table 1: The attendance on the blog following the announcement of the implementation of the experiment.

2.1.2. The potential discussions between authors and referees

Open peer review allows authors and referees to discuss. However, this discussion does not take place systematically, despite a constant work of communication, inviting authors to answer the reports. In the experimented device, it can be considered that discussion takes place in half of the cases, which is true for both branches of the protocol. The fact that the exchange does not take place does not mean that the authors reject the possibility. In the case of the “evaluation” branch, two reports did not lead to a discussion. This is not due to the fact that these texts were negatively reviewed: minor corrections are asked for one of them, while opinions are divided for the other one (rejection and major corrections). For authors, it rather seems that this is a lack of time and a lack of awareness of this possibility that cause them to neglect this discussion. This is apparent in their answers when they are invited to discuss the reports:

“If I understand correctly, I do not have to make these corrections, but rather to discuss with the referees, is that correct? It is a process which I am not used to, but I still appreciate.”; “I'm sorry for this slowness, I'm too busy right now. [But] I have read the evaluations.”

Generally, we note that if the exchange does not take place, observations are still considered. This is especially visible in the branch “comments” when comparing the original and corrected versions of the articles, and according to what emerges from the private discussions with the authors.

Original version	Modified version after comments
Title: The water table of “Thiaroye” in Senegal: a resource of water still usable ?	Title: The water table of Thiaroye in Senegal: a resource of water usable for irrigation ?
Therefore, this water has become unusable for human consumption but used in irrigation.	Therefore, this water has become unfit for human consumption. It is currently used for irrigation but not without risks.

The storage period varies from one day to seven days. Consumption's cups are exposed to external contamination. These various manipulations of water can lead to contamination along the supplying chain.	Regarding the conditions of use, the storage period varies from one day to seven days, and consumption's cups are exposed to external contamination. Ultimately, these various manipulations of water are all potential sources of contamination along the supplying chain.
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Table 2: Examples of modifications after comments from the contributors

When the discussion takes place, it generally is a detailed answer based on the different elements pointed by the referee/contributor. The authors directly relate their answers to the referees stating how they would modify their text. These feed-backs are submitted either in answer to comments either using the annotation tool.

Example of an answer to a comment: In the report: “Regarding the methodological quality: It would have been very appropriate to present gathering techniques of the speech of the actors in the text. Which has not been done although we get the actors' speech. (Acceptable, request for minor modifications)” Answer: “Regarding the methodological quality: We have added these methodological elements in the text.”

Example of an answer using the annotation tool: Referee: “The date would be helpful.” Author: “Yes indeed, pending the amendment of the text, here is this precision: the Blue Book of the Sea Round Table is dated from July 2009.”

The exchange also allows authors to modulate the relevance of an observation while answering it. On a remark about the lack of clarity on a figure for example (“*inadequate location of flooded areas and their relation with urbanization, although this is the heart of the article*”), the authors respond:

“The representation of the flood (...) appears clearly in Figure 6. The 570 homes affected by water appear in the flood zone. The link that appears graphically will be explained in the text.”

Finally, some discussions proceed as prolonged exchanges, answers bringing new questions and outlining the observation. This represents a real benefit because the authors are not helpless facing a remark that is not clear enough. On the other hand, the referee can check if his remark has been understood and he can clarify it if needed. This type of prolonged exchange is facilitated by the annotation tool, rather than the blog-style comments which are longer and address many issues simultaneously. For example:

Referee: "Who is the local population?" Author: "We mean by "locals", the population living or working on a territory such as a municipality or group of municipalities. But perhaps the question was to know more about the composition of this population?" Referee: "It was rather regarding the composition of this population." Author: "We understand the question, we consider this population as the economic actors and the civil society, by opposition to the elected officials. We'll clarify."

A basic typology of these discussions can be drawn. It appears that there are three main types. They are modification, demand of precision and justification:

- **Modification:** the author notes the observation. He proposed a modification or announces that a modification will occur.
- **Precision:** the author asks for precision over the observation or the requested modification.
- **Justification:** the author justifies his position exposing an argumentation.

At the end of the process, this discussion can be a useful tool for an editorial committee, allowing to arbitrating the different points of view and therefore ask more relevant modifications. The possibility to exchange information about the report or the comments thus enriches the process. More than a unilateral judgment over a text, open peer review and open commentary are dynamic processes. Actually, this recalls the intellectual discussion that can occur during a seminar, while the scientific community is face to face. This emerges in the collected feed-backs, for example when an author who initiated the discussions says:

"Personally, I found the discussion interesting. This allowed us, beyond the review, to have indications of references associated with trails to explore, which will help us to enrich the content: this would not have gone that far with a conventional review. Moreover, the referee is often someone who works in the same field: this creates a link between the referee and I, I'd like to maintain it."

Finally, we must mention that if the discussion did not take place systematically, it may be because it was voluntary. Within this experiment, since the texts were also reviewed conventionally, some authors may have preferred to wait for the final review rather than to initiate a discussion. This suggests that if only the open review had been performed, conditions would have been more favorable to discussions between authors and referees.

2.1.3. The quality of the language

This ability to discuss raises the question of how to discuss. It appears that the openness encourages a better quality of comments in their contents and in their form¹⁴, which was also revealed by other surveys¹⁵. Here, one of the discussions was problematic – which appears as a specific case and will be detailed later – and for three cases referees and contributors asked privately how to address their observations. In all three cases, one for the “review” branch and two for the “comment” branch, the evaluators/contributors did not know how to express their opinions about a manuscript. In the “review” branch for example:

“I do have a problem! Even if the subject interests me, the text is not good at all! But it may be just because I know the subject, I have many critiques to express. In my opinion, there are serious problems both in substance and in form. Either I am frank and say what's wrong, but it's a little hard for the author, or I remain more nuanced but then I'm not very useful... What shall I do?”

Here, it is because of the openness that the referee asks himself how to express his observations. It implies that in a classical blind review, the referee lets the journal to synthesize the observation and that this mediation would soften his critiques. In fact, this presumption is wrong because, as many other journals, *VertigO* gives the reports to the authors, by simply hiding the name of the referee. This episode reveals an interesting point: with open peer review, the referee becomes its own mediator. Plus, this allows overcoming the lack of standardization of reviewing practices. In an open practice where an exchange is possible between authors and reviewers, authors are able to appreciate their margins regarding the referees' requests.

Hence, open peer review personalizes the exchanges. Of course the risk is to soften the criticism, but, on the contrary, we can think, as the experiment showed, that it can become more constructive and relevant: it can be deployed in a discussion and it is forced to be appropriately explained. Once again, this recalls a “seminar effect”, where a critical but cordial exchange can occur. It could be objected that it introduces a perverse effect on career positions, but it remains that the opening – and thus the possibility for all to see the exchange – annihilates the positions of bad faith or authority's abuse. Such positions, by being public, become potentially reprehensible. In the example quoted here, the referee was simply invited to find the right tone to express his objections. Finally, the report was negative but particularly detailed. Of course, we can not generalize from this example,

14 Which is a common preoccupation, see for example : <http://blogs.plos.org/everyone/2015/05/01/plos-one-update-peer-review-investigation> (accessed on the 2/II/2016)

15 As for example : WALSH Elizabeth, ROONEY Maeve, APPLEBY Louis, WILKINSON Greg, “Open peer review: a randomised controlled trial”, in *The British Journal of Psychiatry* 176, 2000, doi: 10.1192/bjp.176.1.47

because the referee's personality is still a central factor – here, the referee does not want to be “hard” – but it can be extrapolated that the openness of the review process encourages the referee to detail a negative review to legitimate it¹⁶, which amplified the pedagogical value of the report for the author.

Same kind of problem appeared in the “commentary” branch, which also revealed the difficulty to distinguish the difference between the two branches. This is for sure caused by a lack of explanation or clarity, but also by a lack of knowledge and experience about open commentary protocols. As explained above, the “commentary” branch did not aim to review preprints but to help authors to improve them. It is precisely because these texts could not be peer reviewed yet, that they were open to commentaries. The misunderstanding is significantly expressed by a contributor:

“I’m really upset: the article is very low (understatement) and if I write commentaries it will not be friendly at all for the authors. It will show that they write about a process that they do not know, and they quote without identifying the items that would be useful for their particular study. In this case, a blind review is preferable. (...) I tend to accept every paper I review, even if I suggest many modifications. I almost never refuse a paper. But this one, it’s not possible... Here is attached the text with my comments in red, tell me if you think I can make them public or not.”

Hence, we understand that the contributor does not really make the difference between review and commentary devices. It is true that the contributor's observations were written without nuances: the sentence construction and the use of the punctuation are raw. Once again, it is by discussing with the contributor – about the improvement role of the device and the need to maintain a cordial tone – that the situation got arranged (“*You’re right, I’ll rephrase to be softer and less brutal*”).

The second example reveals the same problem, even if the principle of open commentary is understood by the contributor. But the same discomfort about the language's tone is expressed, regarding the publicity of the observations.

“In a usual and anonymous context, I would have firmly said that the article was not publishable, even with deep modifications, which would be an impossible work for the authors.”

Hence, in this case, the fact that it is not a practical review (“usual”) but a commentary protocol,

16 Which was also shown by WALSH Elizabeth, ROONEY Maeve, APPLEBY Louis, WILKINSON Greg, “Open peer review: a randomised controlled trial”, in *The British Journal of Psychiatry* 176, 2000, doi: 10.1192/bjp.176.1.47

leads the contributor to comment less “firmly”. The contributor's words also show that the non-anonymous character of the device influenced his way to comment.

According to the experiment, we can write that a critical discussion about a scientific text can be cordial. The point is to find the right way to express observations, and, openness of the process leads protagonists to do so. Another important result regarding this point is the importance of an activity of facilitation coming from the journal – actually, a specific task for a copy-editor – to debunk problematic situations, when referees or contributors do not know how to express their observations. Opening the review process, and getting familiar to such process, can surely increase the quality of the communication inside the scientific community. It is even possible to think that opening these processes can provide new forms of socialization inside the community.

2.1.4. Using the annotation tool

The experimental protocol allows users to annotate the contents with a specific tool (the Annotator software, developed as a plug-in by Hypothes.is). The last general observation that can be made concerns the difficulty to incite the protagonists to use this tool, even if it is particularly relevant for reviewing and commenting tasks. In the “review” branch, it is just half of the referees who use the tool. This is an interesting point because it seems that the common practice, according to the journal, is that referees send back an annotated version of the preprint with their report¹⁷. If the practice is not new, the usage of a different tool is. We can note that users who did not use the annotation tool, did not give any feed-back about the experiment either. This fact leads us to write that the reason is a time issue once again. For the “commentary branch”, the feed-backs lead us to think that the comment function is enough for most of the protagonists. Only one contributor used intensively the annotation tool.

Indeed, to install and understand how works a new tool requires time from the user. This confirms the hypothesis saying that referees or contributors do not want to dedicate too much time to the activity. They may think that doing the work is enough and do not want to give more time to it in discovering a new tool. Indeed, using the annotation tool chosen for this experiment, Hypothes.is, requires specific attention: to create a user's account, to activate this account, to activate the plug-in on the browser, to understand how to write an annotation, to type the annotation and finally to click to publish the annotation. Even if a tutorial was uploaded to guide the users, it appears that it is not

¹⁷ Which is not systematic as we can note by having access to some of the classical reviews.

enough to incite users to annotate with the new tool. And, the bigger part of the technical support concerned Hypothes.is. Hence, it clearly appears that the tool was not attractive enough for referees and contributors, which is a real limit for the protocol. It is possible to conclude that most of the users may have give up the tool to simply avoid the difficulty.

Despite these difficulties, the annotation tool was used for every texts of both branches. Participants who used it appreciated it as they expressed it in their feed-backs:

“I didn't get any problem with Hypothes.is [and] I didn't know it before.”; “The tool is quite simple to use and fits perfectly to the exercise.”; “I needed a bit of time to understand how it works, but it is perfect.”; “I didn't understand how to install it, but I handled it by following the links you provided. Indeed, it is very useful tool for the annotation of the text, it helps to be more precise.”; “It is a good way to discuss with the referee on specific points.”

Regarding the “commentary” branch, it is important to note that all authors are living in Sub-Saharan Africa and do not possess good conditions to access the Internet. Such conditions amplify the difficulties to use the annotation tool, as the authors reported it (*“Our main difficulty is linked to our connection to the Internet, [that's why we didn't] manage to answer to the annotations.”*; *“With my very slow Internet, I preferred to answer the contributors using the comment function rather than using Hypothes.is.”*). Indeed, the plug-in needs a rather good connection because more data transit over the page. It also requires time to get familiar with it, which is less easy using a slow Internet connection. These observations were clearly expressed in the feed-backs from the authors.

Beside these problems of access, the technical problems encountered with Hypothes.is were managed through discussing with the protagonist. Which means that the copy-editor's activity includes a technical support task. These remarks lead to two main conclusions:

- The annotation tool should be directly integrated to the interface where the process takes place,
- The facilitating task operated by the copy-editor is a central point.

2.2. Specific results for the “open peer review” branch

2.2.1. Five different reviews

It was important to us to observe if an open peer review protocol would lead to homogeneous

reviews, which would mean that the form of the review influenced the review's content and the referee's attitude. Within the experiments all the reviews were different. This fact leads us to think that the openness does not lead to a specific and unique way to give recommendation to the journal for the referees. Here, all reviews results are different. Once again, it is of course difficult to turn it as a firm statistical result regarding the narrow corpus of reviewed preprints. However, to show these differences, here is an enumeration of the different cases: one text was clearly rejected (but reviewed by only one referee), one text was accepted and minor modifications were requested by both of the referees, one text was rejected by one of the referees and accepted with major modifications by the other, one text was accepted with both minor and major modifications, and the last one was accepted with minor and major modification but paradoxically (the major modifications only referred to few light observations, and, the minor modifications referred to numerous deep observations). This can be synthesized in the following table:

	Accepted without modification	Minor modifications asked	Major modifications asked	Rejected
Text 1 (only one referee found)				Referee 1 (or asking for major modifications)
Text 2		Referee 1 Referee 2		
Text 3			Referee 1	Referee 2
Text 4		Referee 1	Referee 2	
Text 5		Referee 1 (with a report and annotations referring to major observations)	Referee 2 (with a report referring to minor observations)	

Table 3: open peer review does not seem to lead to a specific recommendation

For one of the texts (text 5) for which we could compare the classical review to the open one, we can note that there is no profound difference between the reviews.

	Accepted without modification	Minor modifications asked	Major modifications asked	Rejected
Text 5				

Open peer review		Referee 1 (with a report and annotations referring to major observations)	Referee 2 (with a report referring to minor observations)	
Single blind peer review		Referee 1 Referee 2		

Table 4: Open peer review compared to classical single blind review

The significant result of this comparison is that the open peer review protocol leads the referees to detail their report more than for a classical, single blind, peer review. Taking the same text (text 5) as example, where the reviewing results are quite the same, the open protocol offers more details to the author. In the open protocol, the comments parts are widely written out, but only one of the referees annotated the content. In the single blind protocol, only the parts to check are filled, but both referees sent back an annotated document – with mainly formal comments. The reports and annotations within open protocol are still more complete as it can be clearly synthesize in the following table.

Text 5	Open peer review	Single blind peer review
Quality of the reports	454 words Reports are widely commented and argued. Parts to comment are widely filled.	138 words Comments are rare, most of the parts to comment are empty.
Annotations	12 annotations Only one referee use the annotation tool.	81 annotations Both referees send back an annotated document. Annotations mainly concern formal issues.

Table 5: Comparison of the feed-backs in classical and open peer review on one text

These observations apply to a second text (text 1) for which the classical review was finished during the time of the experiment. The open peer review by one referee suggests not to publish the text – or ask for major modifications – explaining this choice with lot of details within the report and the annotations. However, the classical review validates the publication, asking for minor modifications. In this second comparison, open peer review does not necessarily imply more

validation but does imply more detailed comments. This can be synthesized in the following tables.

Text 1	Accepted without modification	Minor modifications asked	Major modifications asked	Rejected
Open peer review				Referee 1 (or asking for major modifications)
Single blind peer review	Referee 1 (but asking for precision)	Referee 2		

Table 6: Open peer review compared to classical single blind review on a second text (text 1)

Text 1	Open peer review	Single blind peer review
Quality of the reports	588 words For one report.	138 words For both reports in total.
Annotations	22 annotations For one referee.	8 annotations A single referee send back an annotated document.

Table 7: Comparison of the feed-backs in classical and open peer review on a second text (text 1)

Once again, it should be noted that it is impossible to draw firm conclusions from our small corpus. Since, as the open peer review protocol leads to different recommendations for the different preprints, it appears that the openness does not clearly influence these recommendations. From our experiment results, open peer review does not lead to a bigger rejection or acceptance rate. But it appears that open peer review incites referees to give more details in their reviews.

2.2.2. Two problematic cases

Discomfort from the referee

In two episodes, the limits of the protocol appeared: blockage from the author and discomfort from the referee. We will not detail the second one once again as long as it was explained above: a referee not knowing how to express a negative point of view over a preprint. As we explained, the

situation got debunked thanks to a simple discussion about the issue with the referee: the possibility and necessity to cordially address scientific critiques. As the advice was followed, the situation was solved by the copy-editor mediation. We can add that the novelty of this kind of open review may have been the problem. It is totally imaginable that, getting used to such a practice, the issue will not remain problematic as it simply concerns the tone of the scientific mediation within the context of publication review.

Blockage from the author

The other case is more difficult and reveals deeper problems that can be caused by open peer review. The situation started as the author complained about the preprint being online, but not considered as published, from the beginning of the experiment. Which means that he did not fully understand the conditions of the process. He felt that his article was hence “*demonetized*” and that he was loosing its “*intellectual property*”¹⁸. Afterward, as the published review was negative and suggested rejecting the preprint, the author requested his text to be unpublished: “*I don't have the time to answer to the referee, whose commentaries are not constructive and whose expertise about the research object is not convincing me.*” It took a long conversation to explain the protocol to the author once again, insuring him that he was still the intellectual owner of the text, and that he should answer cordially to the referee and express his objections. Finally, the author answered the referee, rejecting every single observations, and finally asserting online:

“The referee published an article himself (...) which I reviewed positively, even if the same reproach could have be formulated about his text. It is not asked to *Vertigo's* authors to write prospective articles but to draw reasonable hypothesis. Which is done by my article.”

Here, a real limit of the openness is reached because the critical and scientific debate does not manage to get deployed. However, the author's reaction would surely have been the same in a classical peer review, the difference would have been that his anger would not have been public and the contradiction would not have turned as a personal clash. This situation is really blocking because the author's reaction closes all discussion possibilities, as the referee asserted afterward in a private discussion:

“I am, as you may guess, a bit astonished by the author's reaction and by his answers that I sometimes felt aggressive. I don't know if he didn't understand my remarks, or simply, he doesn't accept and understand the point in being peer reviewed. I find very strange that he questioned every single point of my review, even though I just suggest reformulating a

18 Such remarks show, by the way, interesting misunderstandings about open access policies in scientific publishing.

sentence in order to be more fluent for the reader. He didn't understand that I asked him to go further than an inventory, not to write revisions or prospective, but simply to deepen his analysis. Finally, his remark saying that he refuses to explain his methodology, surprised me. (...) I don't know if it is because I made a lot of critiques about the text or because of the author's personality... but I don't know if I will accept to openly peer review an article again. Without looking for it, I got someone I don't know, very angry at me!"

The text was finally unpublished as the author asked for it. This episode shows a potential risk of open peer review: that authors refuse to participate to such protocol and, hence, avoid publications practicing open peer review. In this case, it is both the author's personality and the openness of the procedure that led to a problem. The author either fears to ruin his reputation or refuses to be criticized. However, we can think that a normalized discussion encourages the protagonists not to lose face and therefore enter in an argued discussion. Which means that in the quoted example, the author's personality plays a bigger role than the openness of the procedure; even if the situation became problematic regarding the author's personality because of the openness. This kind of problem could be dealt with a charter of good behavior, proposition that we will make later.

2.2.3. The possibility for the authors to reply

This case is not representative for the whole experiment. For another text negatively reviewed (text 3), but for which the author has not answered the referees at the time we write this article, the author is not upset by the reviews. In a private discussion, he asserts:

"It is not discouraging at all, I accept and continue to work. I'll study the commentaries and will reply because I wish to maintain the article."

Indeed, the possibility for the author to answer the referees' observations is a central advantage to open peer review. This appears in the protagonists' feed-backs but also by observing the process itself. In an open peer review protocol, the referee's point of view is not unique or unilateral insofar the author is able to answer it, to defend his point of view regarding an observation that seems illegitimate to him, as we have already mentioned above. Generally, the authors answer to indicate in which way they will modify their text regarding the referee's remarks, but they can also contradict these observations. For example:

Referee: "Should be mapped: houses, equipment, means of communication affected (...).

Author: "Buildings and infrastructures are represented on illustrations 1 and 5."

Or:

Referee: "The plan of the article is a little bit a mess, which leads to numerous repetitions. Why don't you adopt a plan, indeed classical, but more clear and convincing. For example (...)." Author: "The chosen plan answers to the specific issues announced in the introduction. The article is a feed-back on experience, which offers the possibility to get high resolution information about space and time. Information is not segmented and disparate as in technical reports."

Furthermore, the authors' answers can be a way for the journal itself, but also to the readers in general, to evaluate the relevance of the reports and how the authors are able, or not, to adapt their preprint. This represents an improvement for scientific communication. Authors can also investigate about the referees' specializations and have a better understanding of their observations and evaluate their relevance. This element appears clearly in the feed-backs. When we ask the authors if they looked for information about the referees, they answer for example:

"[I've just searched for information] about the referees today, because while I was reading their observations, I suspected that they were not really specialists on the issue."; "I think that X, considering his profile, is a good choice for my object, but I know that Y is more qualified in other fields."

As a referee put it himself, "the referee is reviewed". Indeed, the referee's hegemony, usually mediated by the journal behind the curtains of anonymity, is questioned. Thus, open peer review introduces reciprocity in the process. Despite the risks linked to the protagonists' personality, shown concretely by the experiment, the openness of the reviewing process allows a better repartition and evaluation of each other legitimacy. Here, this repartition is operated publicly, which means under the control of the community.

2.2.4. To measure the seriousness of the reviewing process

In the same way, the openness allows the protagonists to note the effort of each other. Authors – and not only the journal as in classical peer review – are able to value the time spent by the referee, regarding the quality of the report and of the annotations. On the other side, referees are able to note how their observations were followed by the authors. Finally, the journal, who has the final word regarding publishing the article, can determine how the reviewing process is relevant by observing the employment of the reviewing tool and the quality of the discussion between authors and referees

– this also implies that part of the publishing policies is turned public. Getting such data can help the journal to take a decision over an article, and the readers to understand the issues raised.

2.3. Specific results for “open commentary” branch

2.3.1. Specificity of the branch inside the device

The five texts open to commentaries were chosen because of their formal problems. Therefore, the goal was not to review them but to help authors to improve their preprint. As explained above, this was not clear for the contributors, who are accustomed to review. Hence, we can write that it would have been more relevant to make a bigger distinction between the two branches of the device. Here, the branches “review” and “commentary” were contiguous categories inside the device, which may have been confusing for contributors. They should have been more explicitly distinguished. But, about this issue once again, we can think that the novelty of such protocols leads to such confusion.

It is also the unique origin of the preprints that characterizes the “commentary” branch, as long as they all come from Sub-Saharan Africa. For scholars who have few occasions of exchanges with the international academic community and who lack financial and documentary resources, the “commentary” branch is surely useful. It opens a space where researchers can discuss and develop their work. By the way, even a non-specialist can understand the importance of these articles, which study issues such as the quality of water or reduction of atmospheric pollution. This common origin is a source of difficulty insofar the authors do not have good conditions to access the Internet. Besides, we can think that authors did not communicate around the experiment as long as their local colleagues meet the same kind of technical limitations.

2.3.2. How to find contributors

It was difficult to find contributors for the “commentary” branch. This is constant problem for such devices as it can be observed for every open-access journals whose articles are open to commentaries. On *VertigO*'s blog itself, where a section is dedicated to comment articles published in the journal, it is quite rare that readers post comments. On 29 postprints open to commentaries, 9 are commented, and never more than two times¹⁹. This observation is true for most of Hypotheses' blogs, where the comment-function is not so much used.

19 At the end of January 2016.

Within the context of an open commentary device, itself linked to an open peer review device, the question of the contributors' legitimacy was widely raised. Even if the texts from this branch needed formal advises as much as content advises, only few scholars spontaneously commented the preprints. Therefore, different strategies were employed to find contributors. First, the journal advertised about the experiment, inviting its readers to comment the texts, without getting any improvement. Once again, we think that the joined presentation of both parts of the experiment – open peer review and open commentary – was confusing. Open peer review is not open to anyone, but only to two referees designated by the journal. This confusion clearly came out when a contributor commented a preprint submitted to open peer review, thinking he was commenting a preprint open to commentaries.

Untargeted communication

Facing the lack of contributors, two successive communication campaigns were set; the first one failed to captivate contributors. It consisted to send hundreds of emails to scholars found on university laboratories contact-directories. This email did not point out a specific text but the open commentary device in general, paying attention in distinguishing it clearly from the open peer review device – which was not mentioned at all. Even though this strategy did not bring contributors, it is interesting to note the numerous answers we got for this kind of impersonal communication campaign: on the average, one answer out of ten emails sent. All these answers reveal once again the interest for this kind of editorial innovation – “*exciting*”, “*totally interesting*”, “*practice that should be developed*”, “*very relevant*”, “*very interesting principle*” to quote some of these answers. Once again, the issue of available time was evoked, but maybe more interesting, the invitation was often declined because of a lack of scientific knowledge about the objects of the texts. Here are some examples: “*I'm not specialist at all in this field*”, “*I feel far away from these issues*”, “*I'm not sure to have the proper competences*. ” This is interesting because the invitation was mainly pointing out the formal problems of the preprints, on which anyone with an academic experience can propose advises. This shows the difficulty to separate form from content and brings the conclusions that it is difficult to open texts to commentaries only in a formal point of view. Hence, this first communication strategy reveals the legitimacy issue about commenting an academic text but also the difficulty of the interdisciplinary exchange. Once again, we can think that if this kind of commentary devices were more common, this question would be less relevant.

Targeted communication

As this first strategy did not manage to captivate the attention of the contributors, and regarding the answers received, another one was employed. The second wave of communication targeted scholars regarding their specialty. Therefore, they were not invited interacting on the texts open to commentaries in general but they were signaled that one specific text was open to commentaries. The principle of the device was also explained to them – the goal is to improve, not to review the preprint. Hence, searching for contributors is just like searching for referees, even if it is not the same work that is demanded. This second communication campaign bore fruits: all contributors except two of them were found this way. This way of contacting scholars regarding their specialization appears as the proper way to generate interactions around texts open to commentaries. Using this strategy, the number of contributors increased from two to ten, even if they got differently implied in the comment process.

This strategy showed another interesting result. About twenty persons, who are not scholars, were contacted to comment the preprints. They were chosen by their professional profile – in particular for texts about water and water treatment. None of them answered despite they were contacted again. Here, more than available time, we can wonder if this is linked to a legitimacy issue once again or if this reveals the importance of the deep work that has to be done to permit interaction between the scientific community and non-academic experts.

To conclude, the open commentary device is a success as long as all texts had been commented, even if it is unequal in terms of number of comments and annotations. This fact distinguishes the device set on *VertigO*'s blog from other devices of the same kind, which drudge to attract contributors. The main and important result here is the necessity to drag experts namely regarding their specialization.

2.2.3. Modalities of the discussions between authors and contributors

The observations made over the preprints concerned both the form and the content, as the authors note themselves in their feed-backs. Even if both technical functions to comment have been used – blog-comments and annotations – it is the blog-comment function that has been mainly used. This can be explained once again by the specific effort that the annotation tool requires. About the utilization of these two functions, it is interesting to note that the blog-comment function is mainly used for observations over the content, whereas the annotation tool is mainly used for observations

over the form (typography, spelling and syntax). This remark does not apply to the “review” branch. For example, for one of the commented texts, contributors took back the different parts of the plan of the article to comment each of these parts. However, from a practical point of view, the annotation tool would have been more relevant to insert point to point observations. This leads us once again to think that the annotation tool would have been more used by contributors if it was directly implemented on the blog.

All authors from this branch who gave a feed-back about the experiment – three over five – appreciated submitting their text to the device. All of them assert that they would participate again to such a protocol in order to improve their preprints. Five texts were commented, four of them had their modified versions sent back within the time of the experiment, which proves the authors' interest and commitment to the exercise. Once again, the only evoked limit concerns the conditions of access to the Internet, which is explained by the geographical situation of the authors.

3. RECOMMENDATIONS AND SOLUTIONS TO THE TECHNICAL LIMITATIONS

From the narrative of the experiment and from what it revealed, three important elements enable to formulate recommendations in order to implement efficiently open peer review and open peer commentary devices. The first one concerns the technical means: the technical limitations of the prototype and the solutions that could be found. The second element concerns the need of specific human mediation to facilitate the process; this aspect will be detailed, a working-time and a cost by article will be estimated. The last one, which was not yet evoked but which was revealed during the experimentation time, concerns the possibility to credit to referees and contributors thanks to the openness of the reviewing process – this possibility articulates open access and open peer review.

3.1. Hypotheses platform: a suitable place

3.1.1. A well-known academic blogs platform

Relevance of the utilization of Hypotheses

The experiment showed the relevance to use a blog hosted on Hypotheses. The blog-form is adequate for two main reasons: the simple way to administrate it and its intrinsic possibility to post comments²⁰. First of all, uploading the preprints has to be easy for a copy-editor. This task does not

²⁰ About utilization and appropriation of the blog-form by the scientific community see : DACOS Marin et MOUNIER

have to require specific and deep knowledge and it does not have to take too much time. On one hand, Hypotheses allows this by using WordPress, which utilization is not difficult to learn and to manipulate. On the other hand, the main advantage of a blog is of course the possibility to post comments. Even if this fact is not a result of the experiment as long as it was not a part of the inquiry, it seems that the known and renowned character of Hypotheses offers a certain legitimacy to an innovative protocol such as open peer review.

Publishing consistency

The articulation between the journal and its blog, and the fact that they can be both identified in a same renowned publishing environment – OpenEdition – gives an important support to the development and legitimacy to the protocol. Another important point offered by OpenEdition is the guarantee of sustainability of the online contents. These observations lead us to think that the articulation between the publishing space – definitive publication by the journal – and the reviewing/commenting space – here, the journal's blog – has to be clear and consistent; which is not the case when journals use an external service for reviewing. Furthermore, this formula allows the journal to keep hold on its reviewing process, to adapt it to its needs and editorial policies, disposing of a specific place – separated but clearly articulated – to review preprints.

As the experiment did not take place over a long time, it was not possible to test the final publication of a text which has been open peer reviewed. But it is obvious that a clear link between the postprint and the preprint should exist. To expose such a consistency between the different versions seems important to assert the validation of the process inside and by an institutional context, which answers the need – proved by the experiment – of an adaptation of the scientific community to such open practices. Furthermore, this publishing consistency might facilitate the crossing of references on affiliated platforms, and facilitate harvesting of metadata whenever those would also mention data about the review process.

3.1.2. Possible technical improvements

Editorial improvements

If a Hypotheses' blog is suitable for open peer review and open commentary devices, few improvements would turn it even more operational. As a non-participant expresses it, it would be

Pierre. "Les carnets de recherche en ligne, espace d'une conversation scientifique decentrée". in *Lieux de savoir; T.2, Gestes et supports du travail savant*, 2010, Albin Michel, Paris, pp.333-352 (disponible sur HAL: <sic_00439849>)

comfortable for users to be able to easily export the content in order to read it before commenting it or reviewing it offline. On the same model, it would be useful for authors to easily export annotations and comments. In fact, in the “review” branch, the referees were also provided with a file containing the text. Hence, this possibility could be generalized and automatized. The exported document should just clearly mention that it is a preprint, to avoid any confusion. Another improvement would be the numbering of the paragraphs, as done in Revues.org for example. This would allow referees and contributors to easily refer to specific parts of the text that they want to comment. These modifications concern the WordPress theme which is employed. The CommentPress Core²¹ plug-in developed by WordPress could be an alternative. But according to me, this form is less convenient for posting a long comment as a reviewing report about an entire text, while it seems really relevant to annotate the content. A balance should be found.

Integrating the annotation tool

Beside these features, which are clearly not crucial, a central improvement would be the integration of the annotation tool directly in the blog. The experiment showed the difficulty to incite the protagonists to use Hypothes.is in order to post detailed and precise annotations inside the content. In addition to those who used the tool and did not encounter any problem with it, we should quote the other ones, who got problems with it or decided not to use it:

“For me, it was difficult to understand how to use Hypothes.is, without your follow up, I would have simply given up and only focus on the comment function and general observations.” (referee); “I had a look to it but it appeared too complex to me” (contributor); “I accessed the annotations thanks to the link you sent me but I didn't create an account to use the software myself.” (author); “Our principal difficulty was to create our account and to access the annotations.” (author).

Thus, the alternative would be to integrate the tool upon the interface where the review and/or commentary process takes place. Therefore, this solution would standardize its utilization without depending on the different web-browsers of the users, and would also simplify the technical support. Such an integrated tool would also be a mean to create a unique login for authors/referees/contributors on a platform, which would facilitate indexing their different works, reviews as comments as publications. Choosing the suitable tool, regarding the facility of its utilization, seems to be a central improvement that could be brought.

21 For example, see: futureofthebook.org/commentpress, or its utilization for open peer review on <http://adareview.fembotcollective.org> (accessed the 2/II/16)

Other improvements

Finally, a fact that the experiment showed and failed to do, is to distinguish clearly the two branches – open peer review and open commentary – of the device, w they are two parts of a same open protocol. A clearer explanation which introduces each of the text, or a message systematically displayed when accessing a text, would be a simple way to improve this distinction. This would also be a way to familiarize the scientific community to such protocols.

A last improvement would be to find a way to automatize the uploading of the reviews. Within the prototype that was set, the copy-editor transcribes the reports once they are sent back, in order to publish them online. Online forms to fill in could be developed, where some parts are uploaded to be turned public and other staying confidential only for the journal.

Recommendations 1

- Find the suitable publishing environment – from the journal to its open peer review/commentary interface – that offers support and legitimacy to the device, easily recognizable by the community.**
- Allow a unique identification of the users, indexing their publications, reviews and comments in the same way.**
- Integrate the annotation tool directly to the interface where the open peer review/commentary process takes place.**
- Promote the accessibility, the reader's comfort and the quotation possibilities – for example: possibility to export contents, to number paragraphs of the contents...**

3.2. The necessary human facilitation

The experiment demonstrated that open peen review and open commentary can not exist only as technical devices. They have to be accompanied and facilitated appropriately in order to be efficient and really interactive. First, an important work of explanation is necessary which is asked by the protagonists themselves. Once again, it seems important to keep in mind that such protocols are quite new for most scholars, who have to get familiar with them. The experiment also showed that when the process got blocked, it was because the explanation work was not specific enough.

3.2.1. Guiding the quality of the discussions and the efficiency of the device

It was sometimes necessary to help the protagonists to find the proper tone to interact. Hence, a specific copy-editing activity is required: being quickly available and having mediation skills. In order to improve and control the quality of the language employed by protagonists, specific good behavior charters for open review and commentary could be proposed. Such rules could be a way to guide authors, and could be a reference for a journal in order to know who is an efficient referee or contributor to contact. Someone who did not respect the rules would not be asked to be a referee or contributor again. We think that such a system would be better than a system with points, which could become too instrumental and abstract.

Secondly the facilitation activity is necessary as a technical support. If the comment-function was clear to use for every protagonists, the utilization of the annotation tool had to be specially supported. Hence, it is important to note that setting open peer review and open commentary devices does not exempt a journal for copy-editing tasks. Openness of the reviewing process modifies the tasks of the copy-editor but does not remove them. Once again, we insist on the fact that these protocols are quite new in social sciences and humanities, and that they have therefore to be guided properly. Only a specific human meditation is able to facilitate this familiarization.

Facilitation for the “review” branch

For the “review” branch it is necessary to guide authors, as much as referees. In a classical review process, the main task is to make sure that referee will send back their review in time. In an open peer review process, both referees and authors have to be followed, especially to invite each other to interact around the review. In the frame of the experiment, it appeared necessary to invite authors to react to the reviews.

Facilitation for the “commentary” branch

For the “commentary” branch, it appeared clearly that advertising the implementation of the device was not enough to find contributors. It is obviously necessary to namely invite specialists to comment preprints otherwise the commentary process does not take place. Besides, the experiment noted that a scholar who accepts to participate in the commentary process has to be followed in order to have him effectively involved in the experiment. Then, as for the “review” branch, it is necessary to invite authors to react to the commentaries.

3.2.2. Estimation of the necessary working-time

It is not easy to precisely determine the necessary working-time that has to be granted to open peer review and open commentary devices. But such devices obviously depend on an efficient human mediation, and the hub represented by the copy-editor²². It is often asserted that open peer review allows a quicker reviewing process. It seems that the velocity of the process is mainly linked to the time spent over the journal. It can be recommended that the copy-editor has a certain knowledge of the journal's scientific field in order to control the specificity of the communication in the field and to be able to easily identify potential contributors and referees. In the frame of the experiment described here, a fulltime activity was devoted for ten texts in the period of four months, reducing the review delay to one month, which is a quite short review feed-back. This time was also occupied by a peripheral research. For an identical number of preprints – five per branch – without counting the setting of the device the working-time could be estimated to a minimum of 17 hours a week²³. It could then be divided in 7 hours for the “review” branch, 10 hours for the “commentary” branch, which has to include the search for contributors.

Recommendations 2

- Open peer review and open commentary devices imply specific copy-editing tasks.
- An important explanation work has to be done, and, discussions between authors and referees/contributors have to be followed, guided and incited.
- It is necessary to namely invite contributors regarding to their specialization in order to create interactions around the preprints open to commentaries.
- Estimated costs: 17 hours (448€) for an open peer reviewed text, 24 hours (638€) for a preprint open to commentaries, which is not excessive compared to an average cost²⁴.

3.3. How to credit referees and contributors

Why referees should be credited ?

Beyond the certification of the scientific quality of an article, open peer review reveals another issue in academic publishing. Reviewing is an essential part of the publishing process, however it is

22 CONTAT Odile et GREMILLET Anne-Solweig, “Publier : à quel prix ? Étude sur la structuration des coûts de publication pour les revues françaises en SHS”, in Revue française des sciences de l’information et de la communication, 7, 2015, (accessed on the 11/II/16), URL : <http://rfsic.revues.org/1716>

23 Considering that this task occupied half of the working-time during this experiment, which means 17 to 20 hours a week.

24 Estimation based on the survey quoted above. This cost is situated in the low ranks of the evaluation of the price of a scientific article, which means that open peer review and open commentary does not implies more expensive cost per article for a journal.

invisible. Open peer review breaks this invisibility as long as it allows giving credit to referees. Hence, they can be symbolically rewarded for the work they have done, such as scholars are usually rewarded by signing a publication. This issue is at the core of initiatives like Publons. This website proposes to index reviews, in collaboration with publishers. This interest raises by such a practice can be quantify to the 54 000 referees referenced, and the 16 000 publications which use the site to externalize their reviewing activity. As asserted by a Publon's correspondent, the intuition that led to the creation of the website was to find a way to give credit to the reviewing activities of the scientific community:

“Our founder, Andrew Preston, had plenty of first hand experience with the needs of academics while pursuing his PhD and publishing his own papers. He felt that vision of a hub for post-publication engagement with papers could only succeed if researchers could use it to further their careers. This intuition proved accurate despite asking researchers to use a completely new and unrecognized system being too great a request at first.”

Publons' existence and success prove the interest to credit scholars for their reviewing activity. Besides, the possibility to get credit from this work can be a way to attract more researchers, when commenting and reviewing activities are quite neglected – which is proved by the difficulty mentioned above to find available and efficient referees and contributors. Therefore, the issue is to find a way to give credit to referees/contributors without using an externalized service such as Publons or Reviewer Page. As we already suggested, the best solution seems to be to reference the modalities and information about the review or commentary process in the metadata.

Crediting by quotation

In the frame of the experiment, different solutions were considered in order to credit participating referees and contributors. In the “review” branch, names and affiliations are mentioned on the page where the reviewing process took place – the content itself is unpublished only if the preprint is rejected. But as long as the page still exists online, the mention is sustainable. The journal is also advised to mention referees' names and affiliations in the final published version of the article. In the “commentary” branch, the same model is adopted on the page where the preprint was published. The authors are also suggested adding the contributors' names in their thanking paragraph – which has been done in the four corrected versions we got in the experiment time.

The fact that the referee's and contributor's names are published on a sustainable page is a way to leave a trace of this work, and also a way for referees and contributors to be able to reference these

activities. Once again, successful initiatives like Publons and Reviewer Page make us think that the community wish to be able to quote their reviewing activities. Finally, as already suggested, the best solution would be to reference referees – and contributors in a less urgent way – in the metadata of the publications, but also to add metadata to preprint versions.

Recommendations 3

- Referees and contributors have to be formally credited for their work. This accreditation has to be sustainable in order to be quoted easily.**
- Published articles should mention the way they were reviewed and mention the referee's names, authors whose preprint has been open to commentaries have to thank the contributors in their final version. The journal shall look after this fact.**
- All information linked to the reviewing process should be integrated in the metadata of the preprints and the postprints.**

OVERTURES AND PERSPECTIVES

The main point that should be recalled about this experiment, is how it was enthusiastically welcomed. A large literature exists about open peer review showing its advantages and limitations. If the existence itself of such a literature is already a clue, none of these articles – at least those, that I accessed – do express how the scientific community seems largely eager to renew the reviewing processes. To conclude, and before turning the prototype described here into a model, three elements will be explored as overtures and perspectives. But before that, we will express some general facts that appear from the implementation of this experiment. First of all, open peer review and open commentary devices are means to demystify the reviewing practices, which are quite paralyzed by the career issues which they subtend. Classical blind review practice got imposed by convention and it seems difficult to overstep it. The openness can be a solution to go beyond this difficulty. Secondly, it should not be neglected that what is done in open peer review, is already the common practice adopted by the scientific community during seminars, conferences and colloquies. Hence, opening the reviewing modalities is just turning public some necessary and usual parts of the scholar's work. Therefore, the issue is important in order to weave between academic experts but also between the scientific community and the society – the first one just being a part of the second one, a common fact that should not be forgotten. In the publishing domain, we can argue that if this practice is a danger for careers, the problem may reside in the career-advancement-system rather than how scholars can and must communicate within and about their fields of

expertise.

Before proposing a model from the prototype that we experimented, three important emerging elements have to be mentioned. The first one is the need to progressively introduce openness in the reviewing modalities. The second one is the possibility to hybrid different forms of reviewing modalities in order to familiarize the community. The last one, revealed by an interview with the director of a publishing structure in social sciences and humanities, is the possibility to extend such practices to monographs and collective editorial works – in other words, not only to articles for journals but also to books.

Practices to set progressively

From the interviews about the experiment with two non-participating scholars, a significant point emerges. They both assert that the openness of the reviewing modalities has to be implanted progressively as long as the community is not yet familiar to them – an observation that also appeared in the results of the experiment.

“I already faced referees who were not qualified at all and rejected articles for reasons that seemed to me out-of-the-topic. So I think that anonymity should disappear, and that it should be possible to discuss directly with referees. According to me, the problem is linked to a tradition. I'm not sure that everyone is ready, even if your experiment shows that it obviously works! The first step is to show that it works, and that it stays reliable, before generalizing it. Step by step.”; “It is easy to imagine that the openness of the review is going to get more and more developed. Just as open access for scientific publications. But first, the ones who think that nothing has to change will have to get used to it.”

Therefore, the question is to find the proper way to get the community “used to it” before “generalizing it”. The best solution seems indeed to do it “step by step” to prove the efficiency of the device and continue to improve it. As it is said in these quotes, the main blockage seems to come from the tradition of anonymity. Of course, anonymity is a way to avoid aggressive reactions from the author as the one described above – at least, it avoids them to be turned public and personified, which is indeed important. But it does not avoid ideological quarrels. We can even think that it might encourage them as long as the referee is protected by anonymity. To overstep the effect of tradition, a progressive setup on the open protocols has to be considered. The words quoted seem to answer well the main question about open peer review: there is no reason to think that it is

less efficient and that it does not guarantee scientific quality. From the results of the experiment, we think that the most import point is to promote the implantation and let the community itself appreciate its effects.

Hybridizing the models

This first observation leads to a second one, different models could be hybridized in order to familiarize the scientific community to these kinds of practices. For example, the text which are already published could be open to commentaries, in a human mediated protocol, in order to encourage discussions. Another hybridization would be to submit few texts of a same journal to open peer review allowing the community to observe the process. As the feed-backs collected express, there are not any major unwillingness to this kind of review protocols, the only negative one coming from the referee who experienced a bad situation with the author.

Open peer review for monographs

In this same perspective of progressive introduction, the reviewing process of scientific books could also be extended to monographs and collective works, not only to articles. Actually, the reviewing process of articles and books are not so far, but they differ on the question of the anonymity. As it was described to us by the director of a publishing structure in social sciences and humanities, a committee first appreciates the relevancy of a draft. Then, it is submitted to review. But once the first draft is accepted, the common practice described is to let the referee and the author work together. Hence, if the first appreciation is a blind review – as the author does not know namely who accepts the draft in the first place, the direct work on the text is done through a discussion between the expert and the author, without any specific editorial mediation. This work is obviously a reviewing activity as long as the expert acts like a referee: asking for modifications to the authors. The openness of the situation does not cause any problem as the publisher says:

“The formal mediation is easy to do. But the scientific mediation is way much harder. Within the example I gave, the expert knows exactly what he has to say to the author: “To be more readable, you should avoid this kind of example because it is no so interesting, you should work on the transition between these two chapters, etc...” (...) These are all the scientific observations that we won't do afterward, because we'll rather adopt common-reader's point of view. So it is very usual to relate directly the collection director, the reading committee or the expert with the author. They all have the same responsibility and some autonomy with the

author. They are really committed to help us [the publisher] to make a book readable.

- And these relations are good, generally?

- Very good. (...) These relations are good as long as the author is ready to work on his text. If they don't want do it, they simply don't..."

Therefore, we could imagine that the review of a book would happen online and publicly in order to leave a trace, where the work of the referee over the book could be visible. On the other hand, finalized books could be open to commentaries. Such a process would offer an extension to the postprint and continue to make the book evolve. This kind of model already exists, with high level of openness, the typical example being Kathleen Fitzpatrick's book, *Planned Obsolescence*²⁵.

A synthesis of the prototype: OPRISM – Open Peer Review facilitation through Social Media

The experimental prototype developed by OpenEdition from November 2015 to February 2016 can be modeled and systematized as an open peer review and open commentary model proposition. Three dimensions support this prototype:

Publication and discussion: a publishing interface for scientific contents to review including a technical possibility to post comments,

Annotation: a tool enabling to annotate contents,

Facilitation: a human backing of facilitation.

The opportunities of interactions between authors and referees allowed by the openness (disclosed and signed reviews) of the process on a dedicated interface, facilitated by a specific work of a copy editor, name this prototype as: OPRISM, Open Peer Review facilitation through Social Media.

As part of the experiment testing the prototype described here, these three dimensions are respectively a journal's research blog hosted by Hypotheses (<http://en.hypotheses.org>), the use of the annotation software Annotator via Hypothes.is (<http://annotatorjs.org>) and a copy editor. To describe this model, we will first explain how this experience has proven its efficiency inside a relevant environment – meaning it can be considered as a TRL6 prototype – and how such a device could be generally appropriate for scientific publishing platforms dedicated to journals' articles, monographs and collective scientific works. The relevancy of the three dimensions

25 FITZPATRICK Kathleen, *Planned Obsolescence : Publishing, Technology and the Future of Academy*, NYU Press, New York, 2011, 256 p. Voir également : <http://www.plannedobsolescence.net> et <http://mcpublish.media-commons.org>

characterizing the device will then be described: the need of facilitation, the interface offered by Hypotheses and the choice of the software developed by Annotator.

OPRISM – a prototype experimented in a relevant environment

The open peer review and open commentary facilitated device OPRISM has been tested in a relevant environment: a scientific open access journal which contents are systematically peer reviewed²⁶. The prototype was developed and tested in real conditions.

Two distinct devices were tested as part of this experiment, both involving pre-publications:

- an **open peer review** device where the evaluation reports, following a standard grid, are published on the same page just after the content, and where annotations are published inside the content. These reports and annotations are signed and can lead to a discussion between authors and referees.
- an **open commentary** device where contents that are not yet submitted to review are discussed and annotated in a non-anonymous way to be improved. A discussion is able to take place from these observations.

The open peer review experiment shows different results from the accepted article with minor or major corrections to the rejected article. The experience feedback gathered from the protagonists does not express that the referees specifically controlled their critics because of the openness of the reviewing process. However, it shows that many referees specifically took care of the quality of their review to make their observations as comprehensible as possible because of the openness. On the authors' side, the feedback shows that the identification of the referees made them able to have a better appreciation of the observations made, being able to check their legitimacy in the domain or directly discussing the observations with them. Even if the issue is quite different within the two parts of the prototype – review and commentary – these remarks are also effective for the open commentary device. Of course, the issue is more directly appreciable in the open peer review device as long as it determines the final publication of the text and the volume of corrections asked.

A model to be generalized to all sorts of publications and to integrate on scientific publication platforms

26 *VertigO*, digital journal of environmental sciences (vertigo.revues.org)

The research associated to the prototype's implementation shows that scientific publishers are looking for solutions in order to renew the review modalities for all kind of publications: articles, monographs, collective scientific works. As a matter of fact, it seems necessary to stimulate reviewing functions and modalities which are, by the force of the habit, neglected and marked by disinterest. To introduce innovation in scientific communication about pre-publication in one hand, and enable the protagonists – authors, referees, publishers – to appreciate the thoughts of each other in a more collaborative way may be an important option to stimulate the pre-publication review and commentary process. This peripheral research also shows that creating a direct contact between an author and a referee for the correction of a monograph is a common, and beneficial, practice. This means that anonymity, which is still presented as a credibility certification in peer review processes, loses all interest when it comes to review and correct monographs. In the same way, the anonymity in open commentary does not make any specific sense. The pre-publication open commentary process is relevant when the contributors can identify their respective academic specializations to balance and evaluate the legitimacy of the comments.

Since this prototype can be declined to all kind of scientific publications, its systematization as an add-on to digital scientific publishing platforms can be considered. Hence, publishers and editors would own a specific developed space and tool able to open the review processes, to potentially open contents to commentaries, and finally to archive and to turn public the different versions of a reviewed publication including the discussion that led to the final text.

Facilitation: the necessity of the human backing

Experimenting the prototype demonstrates the need of facilitation of the process. The existence of the technical tool is not enough for the model to operate efficiently. OPRISM has to be backed and escorted by human resource, which should be an adapted activity of copy editor. This is a facilitation work since the copy editor has to:

- facilitate the understanding of the openness process,**
- facilitate the contact and the discussion modalities,**
- facilitate the technical aspects of the process.**

This facilitation activity is important as the openness of the review modalities are not familiar to the scientific community, especially in social sciences and humanities. Therefore, a didactic work

has to be done and a deep explanation of the device should be accomplished. In another hand, as for a classical peer review process, a reminder work has to be completed. This reminder work is more important in an open peer review process because the copy editor does not have to simply revive the referees who get late but also has to encourage the discussion between authors and referees. It is necessary to personally invite the protagonists to interact once observations are posted. In a more practical way, the facilitator has to fix the technical difficulties that the users face. Finally, he also publishes himself a part of the review process as explained later.

If the facilitation work may appear more important for open peer review than for open commentary, this is contradicted by the experience. Open commentary induces a commitment of the contributors which does not lie on a formal involvement. Consequently, the facilitator has to constantly encourage the specialized scientific community and the part of the society which may be concerned by the object treated to contribute to the content. In fact, contrary to open peer review, open commentary should be able to invite contributors beyond the borders of the scientific community and allow the potentiality of a larger social discussion.

Publication and discussion: a publishing interface for scientific contents to review including a technical possibility to post comments

The experimented prototype was set on a research blog, attached to a journal, hosted by Hypotheses. From this model, it can be considered that OPRISM could be hosted by Hypotheses, which is a renown scientific blog platform and which is appropriately technically structured:

- **simple utilization,**
- **different structural possibilities regarding the content to review,**
- **possibility to content and discuss.**

The mobilization of Hypotheses as an open peer review and open commentary interface is articulated to the necessity of facilitation. The technical simplicity of Hypotheses' scientific blog does not require any deep technical knowledge. It can be admitted that this work can be realized by anyone who has an average knowledge about digital publishing, which should be the case of any copy editor in a digital publication. Hypotheses' blogs are based on the free and open source content management system WordPress, usually used for blogging. The possibility to structure a WordPress blog in categories and subcategories allows, for example, to easily reproduce a

chaptered-hierarchy. Finally, the central point is that a WordPress blog enables to publish commentaries following a content, and answers to the comments.

Within the prototype developed by OpenEdition, the facilitator published himself the first reviews, which means that he has to transcribe the standard grid filled by the referee. In this way, when several reviews are published, the copy editor can formalize the transcriptions in order to make them comparable for the author.

Finally, the choice of Hypotheses is relevant since the platform is already well-known and used by the scientific community, especially in social sciences and humanities. At the end of January 2016, Hypotheses hosts 1433 academic blogs.

Annotation: a tool enabling to annotate contents

To annotate the preprints inside the text, the prototype experimented by OpenEdition uses the open-source JavaScript library via Hypothes.is plug-in. It works as a layer that can be deployed on a webpage thanks to the internet browser, but a better development could be considered by integrating the tool directly to the publishing platforms. This solution would be even more comfortable and rapid for the user. Activated from the browser or from the platform, the advantage of such a tool is the ability to display annotations directly in the content rather than redirecting the user to a collaborative document – i.e. Framapad or Googledoc – where the annotations would be collected.

The Annotator version developed by Hypothe.is presents others functionalities that make the tool relevant for an open peer review and open commentary model. It has an answer function, creates a permalink for each annotation, it allows creating groups in order to restrain the quantity of users if needed. Finally, from a practical point of view, Annotator, such as Hypothes.is, are free and open-source.

An open peer review and open commentary facilitated model operational for scientific digital publication platforms

OPRISM prototype experimented by OpenEdition is a viable and operational model to set a wider open peer review and/or open commentary device. In one hand, the experience demonstrates the

relevancy of the prototype's three articulated dimensions which are the appropriate space provided by Hypotheses, the annotations' means allowed by Annotator and the need of a specific human facilitation. In the other hand, the experience shows the opportunity to apply this model to all kind of scientific publications. Thus, OPRISM could be a platform-integrated tool, permitting publishers and editors to easily open their reviewing modalities.

THANKS

This experiment implemented by OpenEdition is part of the European project OpenAire2020 and implemented in partnership with the Couperin consortium and the journal *VertigO*. The author would like to thank the numerous participants to the experiment (authors, referees and contributors), Eric Duchemin and Jessica Onitsoa Andriamasinoro (journal *VertigO*) for their availability, Emmanuelle Corne (Editions de la Maison des Sciences de l'Homme) for accepting to be interviewed, and all those who fed his thoughts about peer reviewing.

Finally, the author particularly thanks Pierre Mounier (OpenEdition) for following, thinking and committing with him about the device and this article.

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