On-line distribution of working papers through NEP: A Brief Business History[1]

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Summary

This brief article tells of the emergence and development of a service for speedy, on-line distribution of recent additions to the broad literatures on economics and related areas called NEP: New Economics Papers. This service is part of a wider project called RePEc. RePEc is a digital library for the Economics discipline. Details are also provided on how to make individual and institutional contributions.

What is NEP?[2]

"NEP: New Economics Papers"[3] is a pioneering initiative that goes beyond the legacy model of digital library services. NEP is a human-mediated current awareness service (CAS), that is, a service that informs users of new documents within a subject of interest. Most CAS's are run by publishers or producers of specialised abstracting and indexing (A&I) service. If the CAS is run by a publisher, it is usually limited to books, journals and other products of that publisher. If the CAS is run by an A&I service, the CAS is only available to subscribers to that service. Most current awareness services are produced by a computer. Usually, it means that a piece of software is looking for some terms in the document or some other criteria such as the membership of a document in a certain collection. If not produced by computer, the CAS can be quite expensive to produce.

NEP is different to other current awareness services in two fundamental aspects. First, NEP is based on a digital library called RePEc. RePEc is a free A&I database which holds both working paper data (i.e. recent research reports prior to formal publication) and article data (i.e. peer reviewed writings). RePEc thus covers material from many publishers and is available to the public at no charge. But unlike RePEc, NEP only covers only working paper data.

A second differentiating aspect of NEP is being a human-mediated current awareness services, that is, NEP is generated from an interaction of computer applications and human decision making throughout. All people involved in NEP work as volunteers using source data which is also freely available. But the fact that NEP is freely available is an added feature of its service rather than a differentiating characteristic.

NEP has a simple, two stage workflow. In the first stage, a computer program generates a list of new additions to RePEc. A human then examines that list to filter out papers that are new to RePEc but are not new. This list (called nep-all) is circulated electronically to editors who scan it for articles that pertain to a certain subject. With the assistance of a computer application editors distribute electronically their selection in the form of an issue of a subject specific NEP report.

In what follows this article details the context in which NEP was created as well as developments to date. We think that the development of NEP can provide an illustrative example for the kinds of new business models that have emerged as the Internet has been used by creative minds to provide existing services in a new way.

Pre-history of NEP

In 1993, during the early days of the Internet, Thomas Krichel[4] (then at the University of Surrey) established NetEc[5], a consortium of Internet projects for academic economists. One important part of the NetEc consortium was WoPEc, a service for electronic working papers in economics. Working papers are accounts of recent research results which usually have either been accepted for publication or deemed to be of publication quality by the authors (or their department).

Between 1996 and 1999, the NetEc group received support for its WoPEc project by the Joint Information Systems Committee (JISC) of the UK Higher Education Funding Councils, as part of its Electronic Libraries Programme (eLib). In 1997, Krichel further developed WoPEc into decentralised database of working papers, journal articles and software components called Research Papers in Economics or RePEc. RePEc then emerged as one of the leading academic digital libraries. More on RePEc is available on the RePEc web site at http://repec.org.

Origins of NEP

As part of the WoPEc project, Krichel managed a current announcement service through an e-mail distribution list that carried announcements for new papers deposited at

WoPEc. The list had a membership of 700 unique e-mail addresses. Based on the growing success of RePEc, in 1998 Krichel identified a need to move further the concept of an associated list to inform of new contributions. The reason being the legacy distribution list from WoPEc considered papers from all parts of the economics discipline. There was thus an opportunity to create subject specific reports, each distributed through its own list. Moreover, a system that would not only inform subscribers but also give them the opportunity to download articles upon request and free of charge.

On February 4, 1998, he wrote to the young economists discussion list, an electronic discussion forum that is now defunct, detailing his vision and hoping for some enthusiasts to act as editors of subject specific reports (See the full message in the appendix):

> There are a number of good reasons why the position of editor could be attractive esp. for young economists. First you have to stay on top of the literature anyway, and that is a good way of doing so. Second, being the editor of a well edited FERN report series will raise your profile in the profession. Third, you will have the opportunity of work with other editors in far away places and join the wider community working on the free dissemination of research material on the internet.

> This is just an initial call, if you would be interested in an editing position please get in touch with me privately, stating what subject area you would like to cover. If you would like to help with organising the list infrastructure (as kind of a super editor) I would also like to read from you.

The initial name of the project was 'FERN', the Free Economics Research Network. The label FERN was invented by Bob Parks[6] (Washington University) for a large scale mailing to many economists to advertise services like EconWPA, WoPEc, etc. This mailing was a one-off campaign in June 1996, long before junk mail became a plague on the Internet. The name FERN then lay dormant until Krichel's e-mail quoted above. After discussions with respondents to this e-mail, the name NEP: New Economic Papers, suggested by Sune Karlsson[7] (then at the Stockholm School of Economics), was adopted. At the time, NEP was mainly used as an abbreviation for a brief experiment of economic policy in Russia in the mid 1920s.

There were a number of good reasons why a name too close to the existing Economics Research Network (ERN) was not thought to be the best solution. One was a potential

threat of legal action by Social Science Electronic Publishing (SSEP[8]), who traded under the name of ERN. Second the inclusion of the word 'free' was considered bad marketing. It was felt that academic economists, as target audience, would look with some suspicion something that was 'freely available' and make the project look like a "poor-woman's" ERN. This never has been the objective. The aim was to be better than ERN and become the best service for rapid dissemination of recent additions to academic literature. The ethos of remaining a free service should only be perceived as an additional advantage.

Another problematic point of the initial e-mail is that it confused e-mail lists with reports. Mailing lists are technical devices. What was at stake in the creating of NEP is a new type of serial, that would have issues that contain descriptive data on new additions to the RePEc working paper stock. Thus, each editor is responsible of at least one report – as editing multiple reports was allowed and actually encouraged. The mailing list is just a means to circulate report issues.

A third problem with the initial e-mail was the promise that editing a report "would not take much of your time". This was true at the time when the e-mail was written. At that time, one could typically expert 30 new papers to look at. It is no longer true today, when one can expect that number to be 300 papers. Bumper crops of over 600 papers are not unheard of.

The initial e-mail did not state the motivation for the creation of NEP, thus we have to speculate. Reading between the lines, it appears that the main motivation was a reaction to the announcement services that were run by SSEP. The name FERN points to that, but also the reference to "big cheeses on the editorial board" as SSEP services were established and promoted by well known academics such as Michael Jensen (Harvard Business School)[9]. SSEP also boasted editors of established hard-copy, peer-reviewed outlets and other famous economists on "advisory boards". There is no evidence of what has been the added value or actual role of these advisory boards, but the lack of a similar structure for RePEc seems to have been a concern for those setting up NEP as well.

There were two respondents of note to the initial e-mail by Thomas Kritchel. First, John Irons[10] (then at the Massachusetts Institute of Technology) was interested in becoming the "super editor", later called General Editor. Secondly, Vania Sena (then at the University of York) who helped Thomas Krichel to work on a general document that was

to serve as a "constitution" for the service, as well as a general guide to the project. Its first version was discussed at a meeting in York on 14 February 1998. The document was thus called the York protocol.

Implementation

The software to scan the RePEc contents and extract a list of new additions was written by José Manuel Barrueco Cruz (Universitat de Valencia)[11]. He also wrote software to distribute the list of new additions to all the editors – as detailed in a central register which also acted as the NEP's web page[12].

The basic work at the level of the subject editor has remained quite stable over time. Generating a report had remained largely unchanged from the early days of the project until 2003. The software written by José Manuel Barrueco Cruz would compile a report of new working paper additions to RePEc and this file was then edited by the General Editor for 'offending' content. This was distributed as a text-based e-mail report (called nep-all) to individual editors. It also formed a report in its own right, because it was---and is---deemed suitable for general consumption. Individual editors manually removed references to articles considered inappropriate to the subject area of the individual NEP report and then forward this message to subscribers with the aid of the e-mail distribution manager (e.g. Mailbase, JISCmail and then Mailman).

At the initiative of John S. Irons and Christian Zimmerman[13] (then at the Université du Québec à Montréal) there was a move to streamline the work of editors as it was getting quite burdensome to generate the reports on a purely manual system due to the growing number of on-line working paper series being incorporated into RePEc. Irons programmed a first version. Sune Karlsson then greatly improved it and produced a fully functional web-based interface to create reports. This 'tool' had an immediate impact in reducing the time for individual editors to generate a report. However, reports were still limited to text-based messages as editors had to 'cut and paste' content into individual e-mail accounts for distribution.

NEP reports were originally posted to subscribers through e-mail distribution lists administered by Mailbase[14] at the University of Newcastle. Mailbase was a funded by JISC, the Joint Information Systems Committee of the UK Higher Education Funding Councils. Mailbase' remit was to explore and develop electronic exchanges between British academics. This project included the development of the software infrastructure

to manage and support e-mail distribution lists. In November 2000 the service moved to a more cost effective provider at Rutherford Appleton Laboratory in Oxfordshire while the rights to the 'Mailbase' name were kept by Newcastle University. Since then, services for academic mailing in the United Kingdom were to be managed by the National Academic Mailing List Service or JISCmail[15]. Another important change was that e-mail lists and e-announcement service were to be hosted with the aid of an 'off the shelf' package called 'Listserv'[16] rather than under purpose built software as was Mailbase. Like its predecessor at Mailbase, e-mail lists, e-discussion forums and announcements at JISCmail were really meant for the benefit of the UK academic community. Initially this poised no threat to NEP because, WoPEc was also a project of the JISC. The only requirement for NEP was that at least one list owner must be a UK academic. This person was originally called the 'mailbase person'. Thomas Krichel took on that responsibility until October 2000 when Bernardo Bátiz-Lazo[17] (then at the Open University) took the position. As NEP grew he effectively became the single biggest owner of JISCmail lists.

A review of services provided by JISCmail in May 2002, however, threatened the continuity of NEP. Although the review was satisfactory and positive for the future of NEP within JISCmail, Thomas Krichel and Bernardo Bátiz-Lazo decided there was a real risk of JISCmail ending NEP with very little notice. They then decided to migrate NEP to the same machines based at Washington University of St. Louis that hosted the US mirror of NetEc. Reports were then to be distributed using Mailman[18], an open source (i.e. freely available) mailing list manager software.

Work on the migration started in September 2002 and stretched itself well into 2003. Jeremiah Cochise Trinidad Christensen (then a student at Long Island University) helped Thomas Krichel. Setting up the lists on Mailman was not a problem, but getting the historic information from the, old system definitely was. Three basic problems ruined the historical record. The first was that both JISCmail and Mailbase removed parts of the headers in the archived files. In particular, the "From:" headers of intermediary machines did not appear. Many times ,the only date data available seems to have been the date on the mail client of the editors sending the report issue. Since time on personal computers is not well kept, dates could be well out of line. Dates of a report could be read from the contents of the report but some editors took the habit to change the ISO

formatted date into something they felt looked more welcoming. As a consequence, there is a suspicion that many editors did not to a timely job on report delivery.

The second problem was that most of the time, editors would cut-and-paste from the web tool into their mail client. Character set on the clipboard would be highly dependent on the editor's locale. As a result, many of the characters in the reports were badly affected. In particular, the "handle" (i.e. the unique identifier) of individual papers was often garbled. Some editors used HTML mail clients which further added to the problem.

Finally the mechanisms for filtering of handles that had already been passed on to individual editors was not as "water-tight" as one would have hoped. As a consequence some papers were presented to subject editors several times, and some editors included them twice or more times. Under these circumstances, estimating the timeliness of a report issue became almost impossible.

Then in June 2004 and thanks to some UK government funding left over from the WoPEc project, Thomas Krichel funded Roman D. Shapiro to start the development of a new system to edit NEP reports. Krichel wrote a paper describing a generic infrastructure called ernad (*e*diting *r*eports on *n*ew *a*cademic *d*ocuments). The advantage of ernad was considered to be

- the centralisation of editor control on one system

- the separation of contents from presentation through the use of XML

- a better integration between report creation and distribution

- enabling HTML-based reports

- enabling editors to sort the report result by bringing the papers they like best to the top of the issue

In 2004 and 2005 Thomas Krichel and Nisa Bakkalbasi started to work on a system that would use statistical learning techniques to learn the preference of editors. At the time of writing, this system has not been released.

Governance

For much of its lifetime, NEP was formally lead by a single person known as the general editor. This post was occupied by John S. Irons between June 1998 and October 2000, and by Bernardo Bátiz-Lazo between October 2000 and December 2004. Initially the

General Editor would ensure that content added to RePEc was suitable for NEP reports. For instance, that content was free of unwanted material (either machine- or man-generated). Another common occurrence was that two authors from different institutions each submit the same paper to RePEc through their local working-paper series. In that situation it was impossible for the computer to determine if a paper is really new and there was thus a need for human intervention, ideally by the General Editor to act before individual editors were confronted with such a situation.

Another problem has been that the RePEc data does not, as a matter of routine, associate dates with individual papers. If the date is available, the report gathering script filters out the paper. But if such a date in not available, the judgment of the General Editor is called for. Many times, a date for a paper can be gleaned from its handle. Otherwise, the actual paper has to be inspected. Other common occurrences include papers that had been previously submitted re-appearing. There have could be dealt by a machine. However, the computational power to deal with them is too costly at present. Hence the need to have human intervention. The issue of non-English contributions will be dealt below in detail.

In the early days of the project, a fairly major task of the General Editor was recruiting volunteers to man new subject-specific reports. At the beginning, expanding the number of reports and finding good people to act as editor was an uphill battle. In the midst of the so called 'dot-com' bubble, institutions had to be persuaded about the benefits of lending their collections while individuals had to allocate scarce research time for a project of unproven reputation. Not surprisingly and but for a couple of exceptions, the first editors were either doctoral students in economics or young faculty members.

Other tasks of the General Editor included overseeing the performance of individual editors, liaising with the technical support team at RePEc, Mailbase and JISC as well as representing NEP and its editors within the RePEc community. NEP grew from strength to strength but so did the tasks and demands on the time of the General Editor. Part of the ethos of RePEc has been to avoid a single point of rupture and as a result, the appointment of Marco Novarese[19] (Universitá degli Studi del Piemonte Orientale) as Deputy General Editor in June 2003 had been long in the make.

The introduction of ernad in January 2005 was accompanied with the first major change in NEP's governance structure. Since then NEP has been led by a triumvirate. Each member of the triumvirate has different responsibilities:

- Managing Director - This is the person who oversees the expansion of NEP. S/he has the power to appoint new editors and create new reports. This person often acts as point of contact with editors (for matters other than performance), subscribers and the wider RePEc community. The current managing director is Bernardo Bátiz-Lazo.

- General Editor - This is the person who every week ascertains that content available to individual editors is free of unwanted material (either machine- or man generated). The current general editor is Marco Novarese.

- Performance Controller - This is the person who oversees the performance of NEP. S/he has the power to retire subject editors who don't issue reports in a timely manner. The current controller is Christian Calmès[20] (Université du Québec en Outaouais).

As mentioned, all NEP editors are volunteers. Most of them dedicating part of their research time to furnish the wider community with specialised reports in a topic area. Openings are advertised but individuals are free to approach the Managing Director with proposals of new NEP reports. In every case a group of standing editors, chaired by the Managing Director, forms a Selection Committee and meets (electronically) to select between candidates for an opening as editor of NEP. Selection is based on evidence of commitment to the subject area as demonstrated by the candidate's curricula. It is worth emphasising that NEP aims to have a broad coverage and some times relevant industry experience has been preferred over academic credentials. NEP aims to attract diverse age groups, expertise, gender and is keen to open opportunities for people in emerging markets.

Finally, Thomas Krichel is much involved in maintaining the technical infrastructure of NEP. This includes he system administration of the machine ernad runs on.

Contents of NEP Reports

Each report reviews literature that has recently been made available on the Internet or in print. Its function is a simple form of peer review. Information about a paper is included in an issue of the report if it did not appear in an earlier issue of the report and if the editor of the report considers that the paper(s) fits within the scope of the report. The scope of the report has two elements, which are subject coverage and quality. As far as subject coverage is concerned, NEP aims for complete subject coverage for broad categories.

As far as quality control is concerned, the appropriate role of the editors is to make announcements about new on-line papers in their field with the relevant abstracts, but not to 'review' the papers for quality. The announcements can still be selective. Only about 80% of all new papers to RePEc make it to one or more NEP reports. NEP is relying on the editors' judgment for simple filtering.

Results of an internal survey amongst NEP editors in February 2005 confirmed that editors had a uniform view that NEP cannot be regarded as a vehicle for a preliminary peer review. Moreover, that editors' only concern to disseminate new working papers was based on the subject matter.

An ongoing issue, however, is how to deal with contributions in languages other than English. For some reports (such as those focusing in Latin America or the Confederation of Independent States) it is a strength to carry relevant research of non-English sources (e.g. Spanish or Russian). But clearly this adds to the work of all editors, some of whom might want to focus on research that is freely accessible to the widest audience and, English being the 'lingua franca' of academia, non-English contributions should be discouraged and, for some, even banned. In light of the paradox a decision was taken by Bernardo Bátiz-Lazo and Marco Novarese that non-English contributions should not be encouraged but that submissions would be accepted and the final decision to include them in a report taken by individual editors.

Making a Contribution

The NEP Project, therefore, works as a simple refereed electronic announcement service for each specific subject list. It is truly international in membership, subscription and content. Moreover, it is an outlet that combines research from top academics such as those based at the University of Pennsylvania, University of Cambridge, University Paris I (Panthéon-Sorbonne), 'blue chip' institutions such as the World Bank, International Monetary Fund, Bank of Italy and Bank of England with other of the less known research active centres and individuals. NEP thus acts as a forum for academics, academic institutions and researchers in industry to share ideas and their research with peers elsewhere in the world.

If you have a working paper but would like to make it available for inclusion in NEP reports, you have two alternatives:

- You can encourage your institution to register with RePEc to become a RePEc archive. Step-by-step instructions for creating such an archive can be found at http://ideas.repec.org/stepbystep.html.

- You can make the paper available at Bob Parks' Economic Working Paper Archive http://econwpa.wustl.edu/. He includes his holdings in a RePEc archive.

The main difference between these alternatives is that institutions keep the actual articles in their machines. Institutional contributions are text-based files which include a unique identifier for that organisation, the name of each paper, abstract and a hyperlink to the machine hosting the paper. Individual contributions through the Economic Working Paper Archive upload a pdf version of their paper to be hosted at Bob Park's machine at Washington University. He then informs RePEc as any other institution would. Regardless of the route chosen, contributions reach individual editors for inclusion in a report in no more than ten days time (as update processes are normally run once a week).

Generating a report can take individual editors as little as 15 minutes or as long as two hours. Much depends on the volume of current additions to RePEc and the topic area of the report. Frequency of contributions to RePEc has grown in such a way that weekly NEP reports have been feasible for some time. Again, contributions to topic areas vary from week to week as some are more popular (and regular) than others. For instance, there is usually more than enough contributions in macroeconomics but very few in sports economics.

As of December 2004, NEP had distributed over 104,662 items listed in RePEc through 7,977 reports. As of March 2005, NEP encompassed 61 reports (an increase of 22% since April 2002) and a membership of 13,649 unique addresses (an increase of 148% since July 2001). Fields of immediate interest to members of the European Association for Banking and Financial History include:

Nep-his   Business, Economic and Financial History

Nep-hpe   History & Philosophy of Economics

Others of potential interest include (but are not limited by):

Nep-cba   Central Banking

Nep-cfn   Corporate Finance

Nep-fin	Finance
Nep-fmk	Financial Markets
Nep-mfd	Microfinance & Financial Development
Nep-mon	Monetary Economics
Nep-rmg	Risk Management

Expansion plans for 2006/7 include a more comprehensive treatment of subject areas in economics and perhaps to open one report for each JEL code (that is, the classification of the Journal of Economic Literature) as well as a drive to attract more collections in business and management through dedicated reports. For the latter NEP will most likely follow the US-based Academy of Management guidelines as approaches to the British Academy of Management in April 1998, May 2002 and January 2005 received mute interest.

Appendix

Full text of Thomas Krichel's message of February 4, 1998, to the young economists discussion list:

There is a large-scale development going on to unify the provision of electronic working papers through the internet, called the RePEc project, see http://netec.mcc.ac.uk/RePEc. The NBER, the US Federal Reserve Banks and WoPEc are working together in that project, and so are a few others. Currently new additions to that database are circulated through the WoPEc-announce mailing list, see http://www.mailbase.ac.uk/lists/wopec-announce/. This carries announcements for new papers. However the interest of the list is limited by the fact that it carries papers from all parts of the discipline. Despite that fact there are over 700 people on the list.

I am now thinking of opening a series of lists that would operate peer-reviewed announcement [*sic*]. That is each list would be headed by an editor, correspond to a subject that the editor has specified and would only receive annoucements [*sic*] of papers that the editor thinks fit into the subject [*sic*] of the list. Each editor would receive a list of new additions to RePEc each week, and would pass on the edited information to the list as (s)he sees fit. All lists put together would be called FERN (like Free Economics Research Network). They would concentrate on delivering contents, rather than administrative information or the names of the big cheeses on the editorial board. Each individual list would be called "FERN reports on XXX", where XXX is the subject stated by the editors. There is no limit to the subjects that could be covered.

This is a call for editors to come forward. As an editor, you would receive a list of additions to the RePEc dataset each week for you to filter, and pass on a selected few to your list. That would not take much of your time, and if you do not feel like sending anything, well then there would be no FERN report on your topic for that week. You will receive absolute power to manage your list as you see fit. You will need to remove dead addresses from time to time, that is all. The reason being the legacy distribution list from WoPEc considered papers from all parts of the economics discipline. There was thus an opportunity to create subject specific reports, each distributed through its own list. Moreover, a system that would not only inform subscribers but also give them the opportunity to download articles upon request and free of charge.

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Notes

Unless otherwise stated, contents for individual web pages were checked on 21/Mar/05.

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[1] Helpful comments of Damir Jelic, John S. Irons, Janette Rutterford, Hubert Bonin and Stéphane Trebucq are gratefully acknowledged. The usual caveats apply.

[2] Unless otherwise stated this section borrows freely from Krichel, Thomas and Chu, Heting (2003) 'NEP Current Awareness Service of the RePEc Digital Library', *Digital Libraries Magazine*, vol. 9, no. 12. http://www.dlib.org/dlib/december03/chu/12chu.html

[3] http://nep.repec.org

[4] http://openlib.org/home/krichel/

[5] http://netec.mcc.ac.uk/

[6] http://economics.wustl.edu/faculty/faculty.php?id=20

[7] http://ideas.repec.org/e/pka1.html

[8] SSEP's lists were established in 1994. They were re-bundled as the Social Science Research Network or SSRN (http://www.ssrn.com/, accessed 28/Dec/04). Charges for accessing their collections and subscribing to their distribution lists were introduced 'circa' 1996.

[9] See further "SSRN Celebrates its 10th Anniversary". Available at http://ssrn.com/update/general/mjensen.html

[10] http://www.americanprogress.org/site/pp.asp?c=biJRJ8OVF&b=229206

[11] http://openlib.org/~barrueco

[12] http://nep.repec.org

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[13] http://ideas.repec.org/e/pzi1.html
[14] http://www.mailbase.ac.uk/
[15] http://www.jiscmail.ac.uk/
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[17] http://econpapers.hhs.se/RAS/pba14.htm
[18] http://www.gnu.org/software/mailman
[19] http://econpapers.hhs.se/RAS/pno2.htm
[20] http://econpapers.hhs.se/RAS/pca19.htm