



**Building library networks with
Linked Data**

Enno Meijers 12 September 2018

www.kb.nl

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- Authoritative bibliographic Linked Data
- Building a Linked Open Library Network
- Our first steps on this road



Introduction

Founded

* 1798

Function

National Library of the Netherlands

Status

Autonomous administrative body since 31 August 1993,
financed by the Ministry of Education, Culture & Science

Digital Library

We have about 800,000 printed and digital publications
(60 million pages) made available online exposed in 18
million visits to our websites in 2017. Building the National
Digital Library.



Our mission

*The Koninklijke Bibliotheek is the national library of the Netherlands. Driven by the **power of the written word** we further **intellectual development, proficiency and creativity** in the Netherlands. To this end, we seek **collaboration** with partners in the domains of **public libraries, cultural heritage and academics**.*

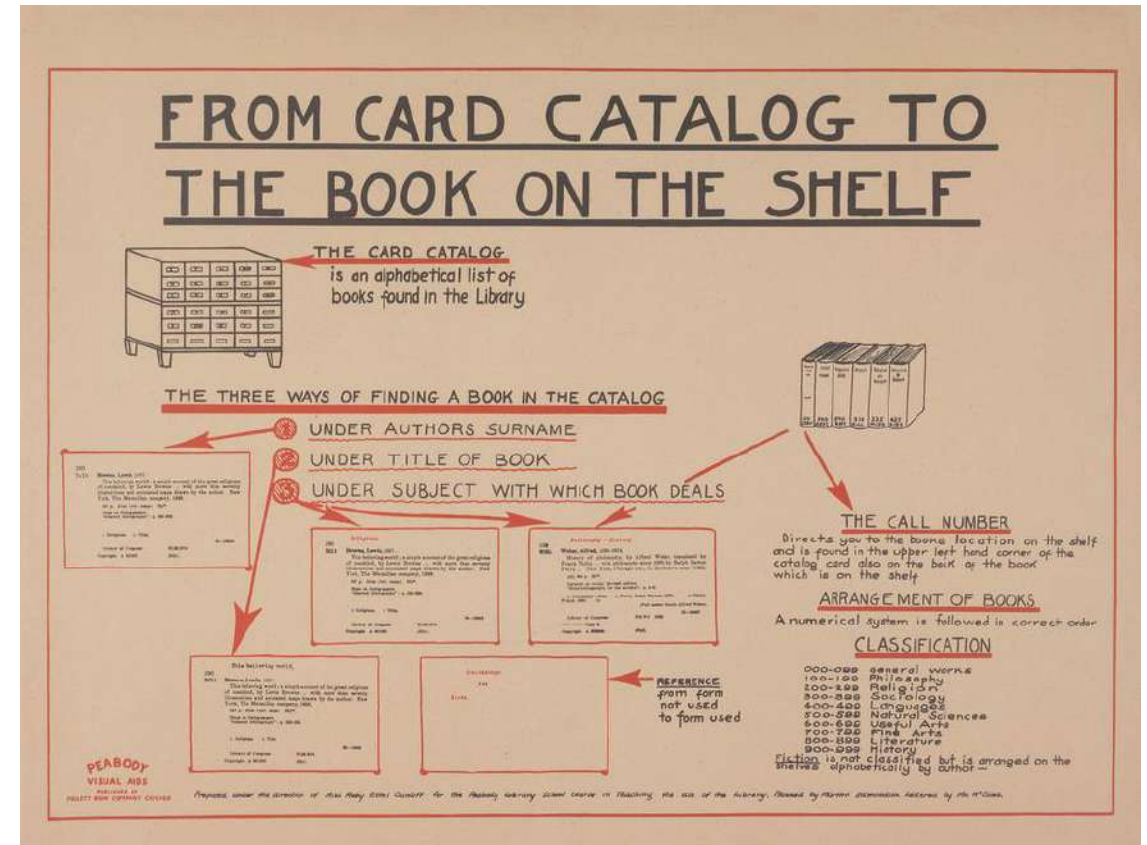
*The KB promotes the **visibility, usability and longevity** of the Dutch Library Collection, defined as the collective holdings of all publicly funded libraries in the Netherlands. **Unhindered access** to these collections furthers the development of new ideas and allows researchers to build upon the ideas of their predecessors.*

Unhindered access (1)...

- bibliographical information is key
- still modelled on the physical card catalogue
- described in an archaic metadata format

```

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002D $azonder medium$bn$2rdamedia/dut
002E $aband$bnc$2rdacarrier/dut
0030 $aOCOLC$0948974385
004A $A9780838911853$gpaperback
010@ $aeng
010E $bdut$erda
011@ $a2014
019@ $aus
020I $aMet bibliografie en index
021A $a@Library and information science$da guide to key literature
and sources$hMichael F. Bemis
028A $dMichael F.$aBemis$Baut$<$9382783883$>$8Michael F. Bemis
(1956-) (ISNI 0000 0004 0234 0092)
033A $pChicago$nALA Editions
    
```



©Char Booth - Flickr

Unhindered access (2)...

- and a workflow based on **copy cataloging**:

Copy cataloging means finding a matching existing cataloging record (bibliographic record) for an item in hand, editing the record as necessary and attaching the local holding information to the bibliographic record

The use of copy cataloging facilitates resource and bibliographic sharing. Without copy cataloging libraries, organizations, and individuals would be doing original record creation, at much greater expense and heavier use of available staff time. Sometimes records are improved and or corrected in the process of copy cataloging, such as upgrading minimal-level vendor copy.

From: https://liswiki.org/wiki/Copy_cataloging

Universal Bibliographic Control

“Universal Bibliographic Control is grounded on sharing the effort of resource description, eliminating redundancy by encouraging sharing and re-use of bibliographic data.

*A National bibliographic agency (NBA) has the responsibility for providing the **authoritative bibliographic data** for publications of its own country and for making that data available to other NBAs, libraries, and other communities (for instance archives and museums) through appropriate and timely services with the goal of increasing open access to the bibliographic data.”*

Stated by the International Federation of Library Associations and Institutions (IFLA) in 2012

<https://www.ifla.org/files/assets/bibliography/Documents/ifla-professional-statement-on-ubc-en.pdf>

Authoritative bibliographic Linked Data

National Bibliographic Agencies are responsible for providing authoritative bibliographic data for

- publications of its own country
- authorized access points for persons, families, corporate bodies, names of places
- authoritative citations for works related to its own country

Our point of view:

⇒ It's our task as a National Library to provide authoritative bibliographic

⇒ And provide this in open and reusable way (using Linked Open Data)



tor sparql queen @cm_harlow · Jul 30

the amount of inefficiency that translates to catalogers, metadataists, and others working with CHO data duplicating all kinds of their work, info, etc. across systems bc we don't build proper data infrastructure makes me weep into my coffee.



6



14



50



WaitingForDogot

@karencoyle

Following

Replying to @cm_harlow

It's one part data infrastructure, but also one part "no one's data is as good as mine". I'd like to see an open Bibliopedia for all of the people, places, material types, etc. that one could link to but would folks buy into an open authority?

11:00 PM - 30 Jul 2018

And others National Libraries are doing it...

“By basing the system on linked open data, we avoid locking away valuable information in library-specific infrastructure and formats. This reduces the threshold for wider reuse. That is in itself a paradigm shift, but it will also lead to higher quality and greater precision in describing the resources of Swedish libraries”, says Martin Malmsten, IT Architect at KB.

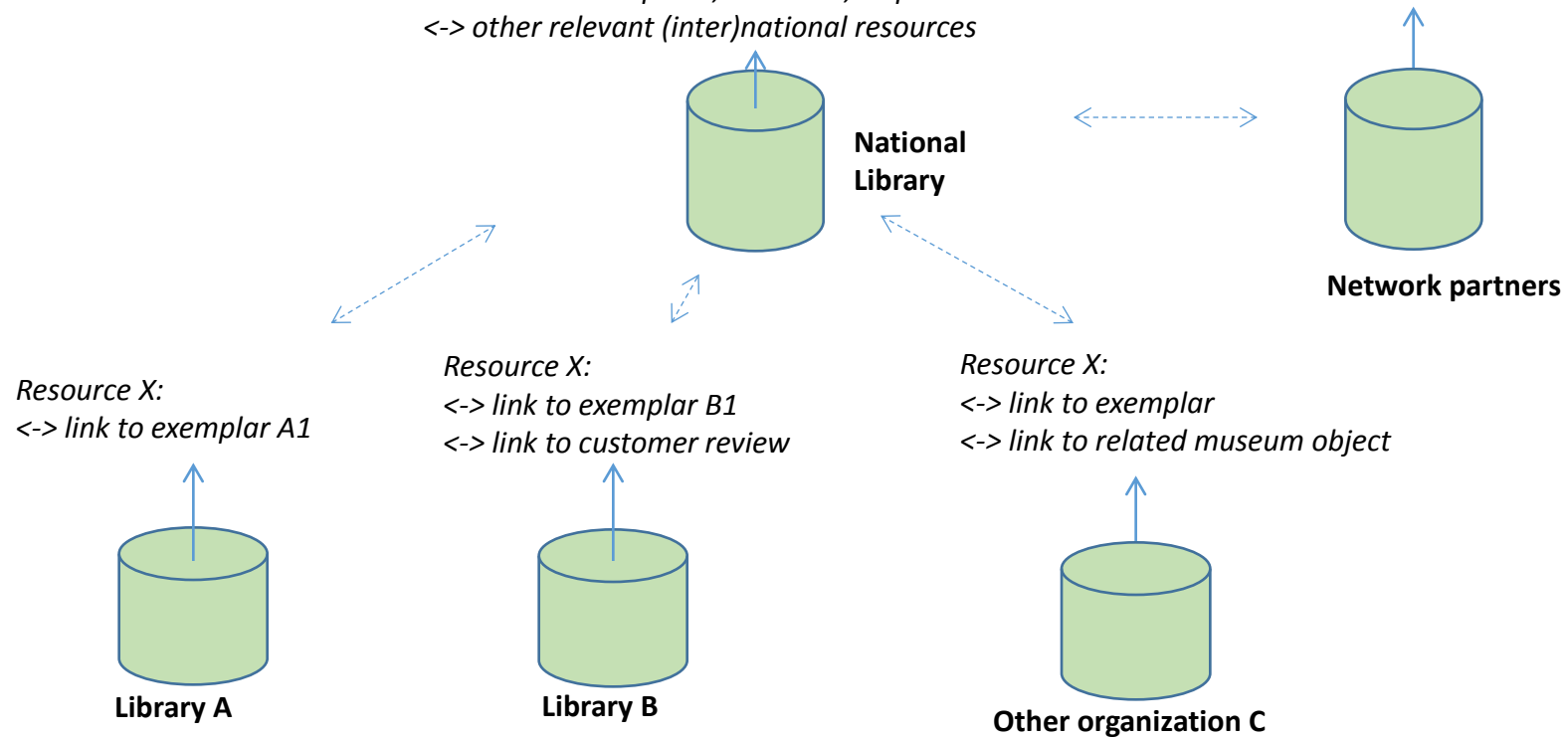
[The National Library of Sweden becomes the first national library to fully transition to linked data \(July 2018\)](#)

Linked Open Library Network...

**Resource X: authoritative bibliographic description
created in cooperation with publishers
published as LOD including links to:**

- <-> related works, editions
- <-> related resources from other National libraries
- <-> relevant Wikipedia, Wikidata, Dbpedia resources
- <-> other relevant (inter)national resources

Resource X:
<-> links to summaries
<-> links to reviews



Challenges for a Linked Library Network

- Trust and readiness to cooperate
- Changing old habits, awareness
- Lack of support by library systems vendors
- Business models
- Restrictions on metadata reuse
- Limitations of Linked Data tools for generation, publication, linking, discovery

Impact for publishing reusable data

- Provide sustainable access
- Offer linking and matching functionality
- Redesign metadata distribution process
- Cooperate on shared goals for quality and completeness
- Support for additional information
- Identify and link additional sources

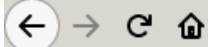
Linked Data generation process

```
# Publication event:
for seq in `seq -w 0 $n` ; do echo '
ECHO "Publication event {seq}:\n";
SPARQL
DEFINE sql:log-enable 3
INSERT INTO GRAPH <http://data.bibliotheken.nl/nbt-schema/>
{
  ?URI schema:publication [
    schema:organizer [
      rdf:type schema:Organization;
      schema:name ?uitgever
    ] ;
    schema:location ?plaatsen ;
    schema:startDate ?datumUitgave
  ] .
}
WHERE { GRAPH <http://data.bibliotheken.nl/nbtraw/> {
  ?s pica:002-/pica:002-0 ?type .
  ?s pica:003-/pica:003-0 ?ppn .
  OPTIONAL { ?s pica:033A/pica:033An ?uitgever }
  OPTIONAL { ?s pica:011-/pica:011-a ?datumUitgave }
  OPTIONAL {
    SELECT ?s (GROUP_CONCAT(distinct ?plaatsUitgave; separator = ", ") AS ?plaatsen)
    WHERE { ?s pica:033A/pica:033Ap ?plaatsUitgave . }
    GROUP BY ?s
  }
  BIND(IRI(CONCAT("http://data.bibliotheken.nl/id/nbt/p", ?ppn)) AS ?URI )
  FILTER REGEX (?type, "(^A|^O|^F|^M|^K|^I|^S)")
  FILTER REGEX (STR(?ppn), "^.{seq}")
}};
' | perl -pe "s@{seq}@${seq}@" ; done
```

Modelling: schema.org compliant

Used vocabularies:

- cc Creative Commons Rights Expression Language
 - dcterms DCMI Metadata Terms
 - foaf FOAF Vocabulary
 - owl OWL Web Ontology Language
 - rdf RDF syntax
 - rdfs RDF schema
 - schema Schema.org, shared vocabulary for structured data on the internet
 - skos SKOS Simple Knowledge Organization System
-
- Schema.org to be discoverable for the rest of the world
 - Future support for domain specific models (f.e. IFLA-LRM, BIBFRAME, EDM)



Nederlandse Bibliografie Totaal (NBT)

<http://data.bibliotheken.nl/id/dataset/nbt>

BETA DECEMBER 2017

rdfs:label	Nederlandse Bibliografie Totaal (NBT) @nl
cc:attributionName	Nederlandse Bibliografie Totaal (NBT) @nl
schema:description	Nederlandse Bibliografie Totaal (NBT) bevat publicaties die in Nederland, over Nederland of in de Nederlandse taal zijn verschenen @nl
schema:name	Nederlandse Bibliografie Totaal (NBT) @nl
rdf:type	void:Dataset schema:Dataset
rdfs:seeAlso	< https://www.kb.nl/bronnen-zoekwijzers/dataservices-en-apis > < https://www.kb.nl/organisatie/voor-uitgevers/informatie-over-de-nederlandse-bibliografie >



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Paul Otlet (Q1868)

Belgian author and visionary

[edit](#)

Paul Marie Ghislain Otlet | Paul Marie Otlet

[In more languages](#) [Configure](#)

Language	Label	Description	Also known as
English	Paul Otlet	Belgian author and visionary	Paul Marie Ghislain Otlet Paul Marie Otlet
Dutch	Paul Otlet	Belgische bibliograaf, theosoof, pacifist en ondernemer	

[National Thesaurus for Author Names ID](#)

070644683

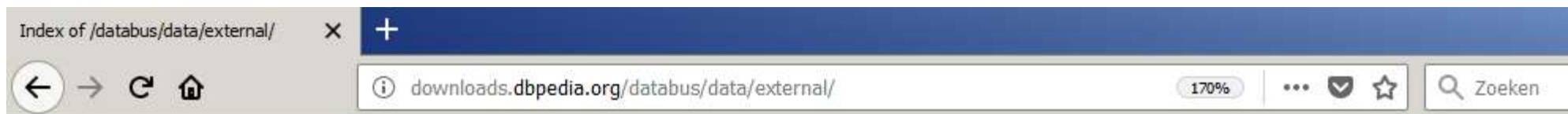
[edit](#)

[1 reference](#)

[+ add value](#)

<http://data.bibliotheken.nl/id/thes/p070644683>

Alignments in Wikidata



Index of /databus/data/external/



../	17-Apr-2018 05:12
dnb.de/	17-Apr-2018 05:12
geonames.org/	17-Apr-2018 05:12
kb.nl/	17-Apr-2018 05:12
kurzum.net Sebastian+Hellmann/	17-Apr-2018 05:12
permid.org/	17-Apr-2018 05:12



Braakensiek, Albertus (sr. ; 1811-1883 ; graveur, lithograaf, tekenaar)

<http://data.bibliotheken.nl/id/thes/p070009031>

rdfs:comment medewerker van zoons A.B.H. en J.C. (Scheen)



```
<datafield tag="700" ind1="1" ind2=" " >  
  <subfield code="a">Braakensiek, Albertus</subfield>  
  <subfield code="c">sr.</subfield>  
  <subfield code="d">1811-1883</subfield>  
  <subfield code="g">graveur, lithograaf, tekenaar</subfield>  
  <subfield code="9">070009031</subfield>  
</datafield>
```

rdfs:label	Braakensiek, Albertus (sr. ; 1811-1883 ; graveur, lithograaf, tekenaar)
schema:deathDate	1883
schema:name	Albertus Braakensiek
schema:birthDate	1811
schema:familyName	Braakensiek
schema:givenName	Albertus
rdf:type	schema:Person
owl:sameAs	http://viaf.org/viaf/34756443
foaf:isPrimaryTopicOf	_98e5fe88dcf48fe265ac0550497f6ce4

Recently used in [AdamNet project](#)

Source: [Lukas Koster ELAG 2018](#)

pilot for Europeana metadata aggregation based on schema.org

Session 3.3

Solutions for NGOs & Cultural Heritage

 **Time:** Thursday, September 13, 2018 - 10:15 to 11:15

 **Place:** Danube Suite 1

Aggregation of Cultural Heritage Collections through the Web of Data

The existence of many digital libraries, maintained by different organizations, brings challenges to the discoverability of cultural heritage (CH) resources. Metadata aggregation is an approach where centralized efforts like Europeana facilitate their discoverability by collecting the resource's metadata. Nowadays, CH institutions are increasingly applying technologies designed for the wider interoperability on the Web. In this context, we have identified the Schema.org vocabulary and linked data (LD) as potential technologies for innovating CH metadata aggregation.



Antoine Isaac

Europeana Foundation



Nuno Freire

Europeana Foundation



Enno Meijers

Koninklijke Bibliotheek, National Library of the Netherlands



René Voorburg

Koninklijke Bibliotheek, National Library of the Netherlands

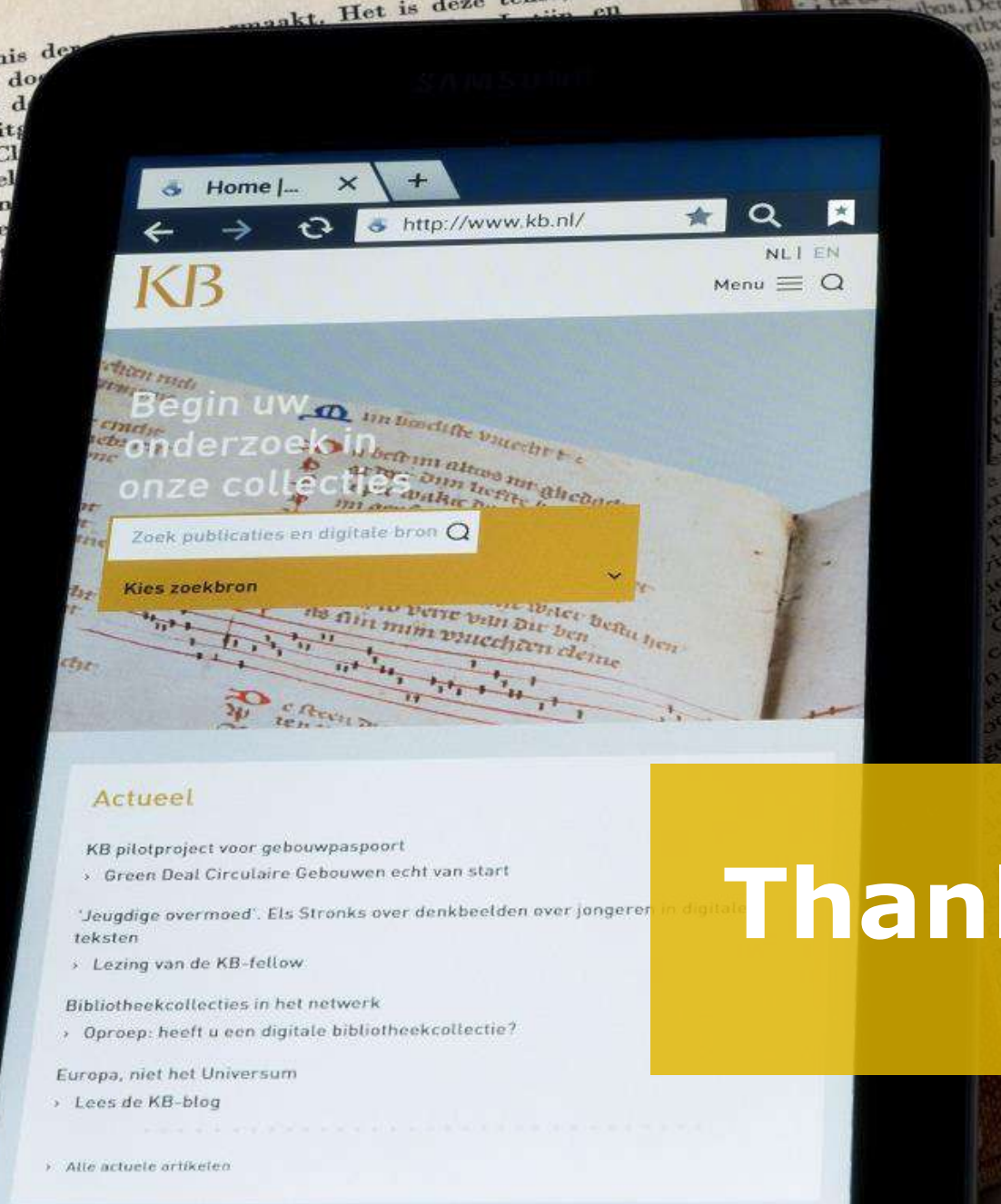
um odoratarumque nonnullarum
Purgantium historiae libri IV,
riae pemptades sive libri XXX.
et groot Cruydtboeck, hetwelk
zouden uitgeven en in gansch
Plantin had zich langzamer-
an al de houtblokken, die bij
kers voor andere herbariums
gd bij die van zijn eigen uit-
lustratiemateriaal uit zonder
het Museum Plantin Moretus
van Pieter van der Borcht, in
overwegend en niemand min-
roote kunst, die de Mechelsche
ag legde. „Het is mij”, schrijft
en tijd in het bekijken van de
uydtboeck van Dodoens ver-
ik, daarna in den tuin rond-
en bloem en heester geschaard
eidscher dos meende te zien
der takken, de levendigheid
ormatie der wuivende kronen,
voor mij geopenbaard, en ik
ren in den eeuwig afwisselen-
as. De prenten van Dodoens
epping duidelijker en dieper
as de trouwe illustratie van
ater der levende natuur ge-

tgever door de banden eener
den. Toen Dodoens in 1584
gedurende een paar jaren
was, liet Plantin dit met
emeenschappelijken vriend

, als blijk van vriendschap,
verbeterden en vermeerder-
dschen tekst van zijn ge-

Hinc abscudit...
...mala multa. Et David alibi
...fundis vultum timore

schiedenis der
in 1616 do
in 1618 d
werd uitg
Met Cl
Deze gel
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Begin uw
onderzoek in
onze collecties

Zoek publicaties en digitale bron

Kies zoekbron

Actueel

- KB pilotproject voor gebouwspaspoort
 - Green Deal Circulaire Gebouwen echt van start
- 'Jeugdige overmoed'. Els Stronks over denkbeelden over jongeren in digitale teksten
 - Lezing van de KB-fellow
- Bibliotheekcollecties in het netwerk
 - Oproep: heeft u een digitale bibliotheekcollectie?
- Europa, niet het Universum
 - Lees de KB-blog
- Aller actuele artikelen

Thank you!

145

34 plaats, in uitvoerige ac-
id (noos. Knoll 1734 6 April.
De nu volgende jaren staan in
nisse in het land en op de Haag-
de jaren 1737 tot 1747 staakte
st „door ongelukkige tijden en
den uitweg om — gebruik ma-
t gecon trolleerde „aucties onder de
erkoofte fondsen onderling in vervol-
ring, te transporteren aan de bankiers.
obligaties te betalen, en die vervol-
and, te transporteren van geld. Hierbij schijnt
hebben gespeeld. Hij en zijn zoon Pieter,
Gosse, die tegen 1740 uitliepen op de „Compag-
ne de vier anderen moesten zich laten verve-
de veilingen, maar alleen de voornaamste koo-
ges, zijn niet alleen de voornaamste koo-
de majeure, hun speculatiën faalden. In 1744
e de vier anderen moesten om toezicht te hou-
gedel en bewerken der fondsen.” Gosse had reeds in
gegeven zijn zaken in Duitschland te liquideeren en
licht hij het tot stand dat heel zijn bezit, huis en
ligaties natuurlijk, werd overgebracht op zijn
genie. — De firma was intusschen uitgebreid
de oudste zoon, Henri Albert was
de firma was getrouwd met den Haag
Coutelier te Parijs. Zou
de dit Libraire à F
chez H. A
Libraire
à Geneve