

# Uniting the Silos at the NLI

## Accomplishments and Challenges

Elhanan Adler

An **information silo** is a management system incapable of reciprocal operation with other, related information systems. ... "Information silo" is a pejorative expression that is useful for describing the absence of operational reciprocity. In Information Technology, the absence of operational reciprocity is between disparate systems also commonly referred to as disparate data systems. Derived variants are "silo thinking", "silo vision", and "silo mentality".

Wikipedia 30/5/2013

# Silos at the NLI

## **NLI Catalog**

### •Names:

- Latin a/b
- Hebrew a/b
- Arabic a/b
- Cyrillic a/b

### •Subjects:

- Latin a/b (LCSH)
- Music Dept.
- Mss. subjects

## **RAMBI (Index to Articles in Jewish Studies)**

### •Names:

- Latin a/b
- Hebrew a/b
- Cyrillic a/b

### •Subjects (unique):

- Latin a/b
- Hebrew a/b

## **Bibliography of the Hebrew Book (BHB)**

### •Names:

- Hebrew a/b



# Stages

1. Unite alphabetic sub-silos
2. Enabling cross-silo name searching
3. Enabling cross-silo subject searching

# Step 1 – uniting alphabetic sub-silos

- Clustering name headings (RAMBI and NLI catalog) : searching any alphabet retrieves the same name in all others
- Clustering subjects (RAMBI): searching subject in either Hebrew or English retrieves both
- Converting subjects (NLI catalog): convert remaining non-LCSH subjects to LCSH
- Work in progress

# Clustering headings

- Multilingual authority records (multiple 1xx fields) [not standard MARC!]
- ALEPH functionality supports searching one to retrieve the others
- Currently functions in ALEPH OPAC, soon available in new library discovery tool (“Merhav” – Ex Libris Primo)

# Clustering subjects: RAMBI

(June 2013 figures)

- Title/topical/geog. authorities (130/150/151):
  - Total: 31,458
  - Clustered: 21,714 (10,852 authority clusters): 69%
  - Unclustered: 9,744 31% (titles: 35%, topical: 5%, geographical: 60%)
- Title/topical/geog. subjects (630/650/651):
  - Total: 608,812
  - Clustered: 591,415 – **97%**
  - Unclustered: 17,396 – 3%



# Clustering names: NLI catalog

(June 2013 figures)

- Began with 8,876 matches located by VIAF (Virtual international Authority File). Aug. 2012
- Ongoing matching and clustering of authority records in current cataloging and using various algorithms
- Personal name authority headings (MARC tag 100)
  - Total: 522,542
  - Clustered: 42,728 (20,669 authority clusters) – 8%
  - Unclustered: 479,813
- Personal name bibliographic headings (100,700)
  - Total: 646,201
  - Clustered: 125,529 - 19% of all 100/700, 51% of authority controlled 100/700
  - Unclustered: 218,573
  - No authority record: 302,099

# Multiscript name authority record

ALEPH Cataloging - Version 20.01 Library: Mifal Bibliografi - AUT (MBI10) Server: 192.114.7.200:6991 (20.01) User: NNLSYS

PH View Cataloging Items Edit Actions Edit Text Record Manager Remote \*Services Help ?

AU System No. 95674 Moshe ben Maymon (Moše ben Maimon,) Year:

[R] Edit Records  
 NNL10-95674 (NE)  
 [I] Import Record  
 [T] Triggers

<b>Leader</b>	<b>LDR</b>	—	—	^ ^ ^ ^ ^ n z ^ ^ a 22 ^ ^ ^ ^ ^ n ^ ^ 4500
<b>Control No.</b>	<b>001</b>	—	—	000095674
<b>Date and Time</b>	<b>005</b>	—	—	20130425173952.0
<b>Fixed Data</b>	<b>008</b>	—	—	021010   a   aab
<b>Personal Name</b>	<b>100</b>	<b>0</b>	<b>a</b>	Moshe ben Maymon lat
<b>Personal Name</b>	<b>100</b>	<b>0</b>	<b>a</b>	משה בן מימון, 1138-1204 heb
<b>Personal Name</b>	<b>100</b>	<b>0</b>	<b>a</b>	موسى بن ميمون ara
<b>Personal Name</b>	<b>100</b>	<b>0</b>	<b>a</b>	Моше Бен Маймон, 1135-1204 cyr
<b>See1.Trac.Per.N</b>	<b>400</b>	<b>0</b>	<b>a</b>	Moše ben Maimon, Mediziner, Philosoph, 1135-1204 lat
<b>See1.Trac.Per.N</b>	<b>400</b>	<b>0</b>	<b>a</b>	Moses Ben Mimoun lat
<b>See1.Trac.Per.N</b>	<b>400</b>	<b>0</b>	<b>a</b>	Maimonidesz lat
<b>See1.Trac.Per.N</b>	<b>400</b>	<b>0</b>	<b>a</b>	Moses Maimuni lat
<b>See1.Trac.Per.N</b>	<b>400</b>	<b>0</b>	<b>a</b>	Maimonide lat
<b>See1.Trac.Per.N</b>	<b>400</b>	<b>0</b>	<b>a</b>	Moshe ben Maimon lat
<b>See1.Trac.Per.N</b>	<b>400</b>	<b>1</b>	<b>a</b>	Maimonides, Moses, 1135-1204 lat
<b>See1.Trac.Per.N</b>	<b>400</b>	<b>0</b>	<b>a</b>	Moses John Maimon lat
<b>See1.Trac.Per.N</b>	<b>400</b>	<b>1</b>	<b>a</b>	<<al->>kurtubi Al-Isra'ili, Musa Ibn 'ubaidallah lat

1. Messages | 2. Tag Information | 3. Browser | 4. HOI Records | 5. Objects |

# Multiscript search

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Main Catalogue



Basic Advanced Browse Recent Search Previous Searches e-Shelf Other Libraries

We have launched the new [Merhav](#) library catalog which searches in all the library databases. You are invited to use it.

## Browse an Alphabetical Index

Search Option:

Author (last name first)

Search For:

Моше Бен Маймон,

Browse List: **Authors**

[< Previous Page](#) [Next Page >](#)

No. of Records	Entry
1	<a href="#">Мошвенсон, А. Г.</a>
999+	<a href="#">Моше Бен Маймон, 1135-1204 - [References]</a>
6	<a href="#">Моше Бен Нахман - [References]</a>
	<a href="#">Моше Гакоген - [References]</a>
	See: <a href="#">Ликверман, Моисей Хаимович</a>
4	<a href="#">Мошеев, Иосиф Борисович, 1936- - [References]</a>
1	<a href="#">Мошенцева, Прасковья Николаевна - [References]</a>
4	<a href="#">Мошин, Владимир Алексеевич - [References]</a>
1	<a href="#">Мошинская, В. И.</a>
1	<a href="#">Мошинская, Римма - [References]</a>
1	<a href="#">Мошкина, Зоя Вениаминовна - [References]</a>

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Browse List: **Authors**

You Searched the Catalog for: **משה בן מיימון, 1135-1204** Sorted by: **Title/Year (descending)**

Sort options: [Author/Year\(d\)](#) [Author/Year\(a\)](#) [Year\(d\)/Author](#) [Year\(a\)/Title](#) [Author/Title](#) [Title/Year\(d\)](#) [Title/Year\(a\)](#) [Title/Author\(a\)](#) [Year \(d\)/Title](#) [Tradition/Mat.](#) [Material/year\(d\)](#) [Source/Title](#) [System-No.](#)

Sorting and display limited to first 1000 records

Format options: [Brief View](#) | [Table View](#)

Click the No. to view full record **1 - 20 of 1344**

[Next Page >](#)

Jump to #

#	Author	Title	Year	Lib/Items	Ext. Link	SFX
<a href="#">1</a>	<input type="checkbox"/> 1138-1204 משה בן מיימון,	/ (הלכות מתנות עניים)	1679	<a href="#">All copies</a>		
<a href="#">2</a>	<input type="checkbox"/> 1138-1204 משה בן מיימון,	/ ... (משנה תורה)	1480	<a href="#">All copies</a>	<a href="#">For online version click here</a>	
<a href="#">3</a>	<input type="checkbox"/> Moshe ben Maymon	The 8 chapters of the Rambam שמונה פרקים לרמב"ם : a classic work on the fundament	2008	<a href="#">All copies</a>		
<a href="#">4</a>	<input type="checkbox"/> Moshe ben Maymon	Die aelteste astronomische Schrift des Maimonides.Aus zwei Manuscripten der National-Bibliothek i	1902	<a href="#">All copies</a>		
<a href="#">5</a>	<input type="checkbox"/> Moshe ben Maymon	Un albero di vita :le regole della lettura della Toràh secondo il Mishnè Toràh di R. Moshè Be	1993	<a href="#">All copies</a>		
<a href="#">6</a>	<input type="checkbox"/> Moshe ben Maymon	Ascolta, Israele :una spiegazione dello Shema' e le norme della sua recitazione [secondo il Mishn	1990	<a href="#">All copies</a>		
<a href="#">7</a>	<input type="checkbox"/> Moshe ben Maymon	Die astronomischen Kapitel in Maimonidis Abhandlung über die Neumonscheiligung [Hilkho[t] Kiddus	1880	<a href="#">All copies</a>		
<a href="#">8</a>	<input type="checkbox"/> Moshe ben Maymon	Ein Beitrag zur Geschichte der Medizin des XII. Jahrhunderts, :an der	1906	<a href="#">All copies</a>		

# Translating LCSH headings to Hebrew (creating English-Hebrew clusters)

- The NLI uses LCSH-style English subject headings for all uniform title, topical and geographic subjects (MARC 630/650/651)
- In order to enable Hebrew subject searching, the NLI is creating parallel Hebrew terms for all LCSH subjects.
- The Hebrew terms are for searching only. The English LCSH terms appear alone in the bibliographic records.

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## Browse an Alphabetical Index

Search Option:

Subject starts with... 

Search For:

פסח

Search

Browse List: **LC Subjects**

< [Previous Page](#)   [Next Page](#) >

**No. of Records**

**Entry**

4	[References] - פסוקי דזמרה (תפלה) - פסח
999+	[References] - פסח
3	[References] - פסח באמנות
1	[References] - פסח באמנות -- קטלוגים
7	[References] - פסח -- ביקורת ופרשנות
1	[References] - פסח בספרות
2	[References] - פסח בספרות רבנית
2	[References] - פסח -- דרמת נוער
1	[References] - פסח -- הוראה מתכנתת
9	[References] - פסח -- היסטוריה

< [Previous Page](#)   [Next Page](#) >

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Modify Limit Select All Deselect View Selected Create Subset Add to My e-Shelf Rank Set SDI Request Save/Email  
Browse List: LC Subjects

You Searched the Catalog for: פסח באמת Sorted by: Year (descending)/Author

Sort options: Author/Year(d) Author/Year(a) Year(d)/Author Year(a)/Title Author/Title Title/Year(d) Title/Year(a) Title/Author(a) Year  
(d)/Title Tradition/Mat. Material/year(d) Source/Title System-No.

Sorting and display limited to first 1000 records

Format options: Brief View | Table View

Click the No. to view full record 1 - 3 of 3

Jump to #  Go

#	Author	Title	Year	Lib/Items	Ext. Link	SFX
1	<input type="checkbox"/> Szyk, Arthur, 1894-1951	Freedom illuminated : understanding the Szyk Haggadah /	2008	All copies		
2	<input type="checkbox"/> al-Majma' al-'Ilmi al-'Iraki	Die zweite Nürnberger und die Jehuda Haggada :jüdische Illustratoren zwischen Tradition und For	1999	All copies	For online version click here	
3	<input type="checkbox"/> 1905-1993 , בן-ציון, בן	/ חד גדיא	1956	All copies		

Modify Limit Select All Deselect View Selected Create Subset Add to My e-Shelf Rank Set SDI Request Save/Email

## Record View

[Full Record View](#) [Short Record View](#) [Name Tags](#) [MARC Tags](#)

[Add to My e-Shelf](#)

### Record 1 out of 3

<b>Title</b>	Freedom illuminated : understanding the Szyk Haggadah / edited by Byron L. Sherwin and Irvin Ungar.
<b>Alternate title</b>	<a href="#">Szyk Haggadah</a>
<b>Edition</b>	[Limited ed.].
<b>Imprint</b>	Burlingame, Calif. : Historicana, c2008.
<b>Descr.</b>	247 p. : col. ill., facsims. ; 29 cm.
<b>Gen. Note</b>	"This book is published as a companion volume to the Historicana edition of The Szyk Haggadah"--Colophon. "Four hundred copies are trade-bound in red linen cloth with matching slipcase."--Colophon.
<b>Bibliogr.</b>	Includes bibliographical references.
<b>Per.Sub.</b>	<a href="#">Szyk, Arthur, 1894-1951</a>
<b>Subject - Lib.Cong.</b>	<a href="#">Jewish illumination of books and manuscripts</a> <a href="#">Passover in art</a>
<b>Add.Entry</b>	<a href="#">Szyk, Arthur, 1894-1951</a> <a href="#">Sherwin, Byron L., 1946-</a> <a href="#">Ungar, Irvin</a>
<b>ISBN</b>	9780979954610 (hbk. : red cloth)
<b>Record Number</b>	002667611



## Record View

[Full Record View](#) [Short Record View](#) [Name Tags](#) [MARC Tags](#)

Record 3 out of 3

<b>Main Entry</b>	בן-ציון, בן, 1905-1993
<b>Title</b>	חד גדיא / בען ; אריינפיר [=מבוא] פון מאנעס ספערבער.
<b>Imprint</b>	פריס : א"ב צרטה, תשט"ז 1956.
<b>Filing Place</b>	פריס
<b>Descr.</b>	[27] ד' : איורים ; 23 X 30 ס"מ.
<b>Gen. Note</b>	אלבום איורים. "דער אלבום איז דערשינען אין 200 נומערירטע עקזעמפלארן ..."
<b>Title Sub.</b>	<a href="#">Haggada shel Pesah -- Illustrations</a>
<b>Subject - Lib.Cong.</b>	<a href="#">Passover in art</a>
<b>Add.Entry</b>	ספרבר, מנס
<b>Old Classification</b>	296.382.1 Pesah, Passover - Comprehensive works. Y743.929.631.3 Drawings and illustrations - Haggada shel Pesah; Passover Haggada.
<b>Donor Code</b>	340 -2
<b>Record Number</b>	001844432
<b>Permanent Link</b>	<a href="http://aleph.nli.org.il:80/F/?func=direct&amp;doc_number=001844432&amp;local_base=NNLALL">http://aleph.nli.org.il:80/F/?func=direct&amp;doc_number=001844432&amp;local_base=NNLALL</a>
<b>Location</b>	<a href="#">All copies</a>

# Project timetable

- Announced early 2012
- Begun Dec. 2012
- As of June 2013
  - Created authority records for 415,000 verified LCSH headings (21,000 still unverified/questionable)
  - Of the verified unique LCSH headings in use, 392,000 (94%) have Hebrew translations
  - Of the total LCSH headings in use (2.5 million) 98% have Hebrew translations

# How did we do this?

- Created an English-Hebrew 'dictionary' of individual subfields (with subfield code), e.g.
- **a**Tefillin, **a**Israel, **z**Israel, **v**Bibliography, **x**History, **y**19th century, etc.
- The dictionary currently contains 65,000 entries (which translate 392,000 LCSH headings)
- Each evening all subject authority records are checked against the dictionary, new or changed translations are loaded to the authority file, and a list of subfields still needing translation is produced.

# The dictionary

- Originally 'seeded' with 16,000 translations from Bar-Ilan + additional translations from Open University of Israel
- Many place names (Israel and abroad) loaded from Excel files received
- Ongoing translation based on frequency, subject area, etc. (Excel sheet)
- Batch load additions from the Excel sheet
- Manual additions/corrections

## Terms needing translation – can be sorted on various columns

	6 Audiometry	a	1310
	1 Audiometry, Evoked response	a	1311
	1 Audiometry, Speech	a	1312
	2 Auditions	x	1313
	3 Auditory evoked response	a	1314
	8 Auditory pathways	a	1315
	1 Auditory scene analysis	a	1316
	1 Audouinella	a	1317
	2 Aufbau (New York, N.Y.)	a	1318
	4 Auffay	z	1319
	1 Auger effect	a	1320
	1 Augmented reality	a	1321
	9 Augsburg confession	a	1322
	1 Augustales	a	1323
	1 Augustow (Poland : Powiat)	a	1324
	2 Augustow (Suwalki)	z	1325
	1 Aulua language	a	1326
	1 Aulus-les-Bains	z	1327
	1 Aundh (Princely State)	a	1328
	2 Aunis	z	1329
	1 Aunis (France)	a	1330
	1 Aureate terms	a	1331
	2 Aureomycin	a	1332
	1 Aures Mountains (Algeria)	a	1333
	1 Aurich	z	1334
	1 Aurignacian culture	a	1335
	1 Auroville (India)	a	1336
	6 Auscultation	a	1337
	2 Ausdehnungslehre	a	1338
	1 Austenitic stainless steel	a	1339
	1 Austenitic steel	a	1340
	1 Australian Jewish herald	a	1341
	1 Australian Jewish times	a	1342
	1 Australian lungfish	a	1343
	1 Australianisms	a	1344
	3 Australopithecines	a	1345
	3 Austrian State Treaty	a	1346
	2 Austro-Hungarian Compromise, 1867	a	1347
	1 Authentēs (The Greek word)	a	1348

# Translation aids

- Google Translate
- Babylon [online dictionary]
- Academy of the Hebrew Language terms database
- Hebrew bibliographic records
- Wikipedia
- Personal knowledge

# Copy/paste to Google Translate



Sign in

Try a new browser with automatic translation. [Download Google Chrome](#) [Dismiss](#)

Translate

From: English - detected



To: Hebrew

Translate



English Hebrew Spanish **English - detected**

Audiometry  
Audiometry, Evoked response  
Audiometry, Speech  
Auditions  
Auditory evoked response  
Auditory pathways  
Auditory scene analysis  
Audouinella  
Aufbau (New York, N.Y.)  
Auffay  
Auger effect  
Augmented reality  
Augsburg confession  
Augustales  
Augustow (Poland : Powiat)  
Augustow (Suwalki)  
Aulua language  
Aulus-les-Bains  
Aundh (Princely State)  
Aunis  
Aunis (France)  
Aureate terms  
Aureomycin  
Aures Mountains (Algeria)  
Aurich  
Aurignacian culture  
Auroville (India)  
Auscultation



**Hebrew** English Spanish

audiometry  
תגובה עורר ,Audiometry  
דיבור ,Audiometry  
אודישנים  
שמיעתי עורר תגובה  
מסלולים שמיעתיים  
ניתוח סצנה שמיעתי  
Audouinella  
(ניו יורק, N.Y.) Aufbau  
Auffay  
אפקט אוז  
מציאות מוגברת  
יודו אוגסבורג  
Augustales  
אוגוסטוב (פולין : Powiat)  
אוגוסטוב (Suwalki)  
שפה Aulua  
אאולוס-les-Bains  
Aundh (מדינת נסיכים)  
Aunis  
Aunis (צרפת)  
מונחי Aureate terms  
Aureomycin  
הרים (אלג'יריה) Aures  
Aurich  
תרבות Aurignacian  
Auroville (הודו)  
האזנה

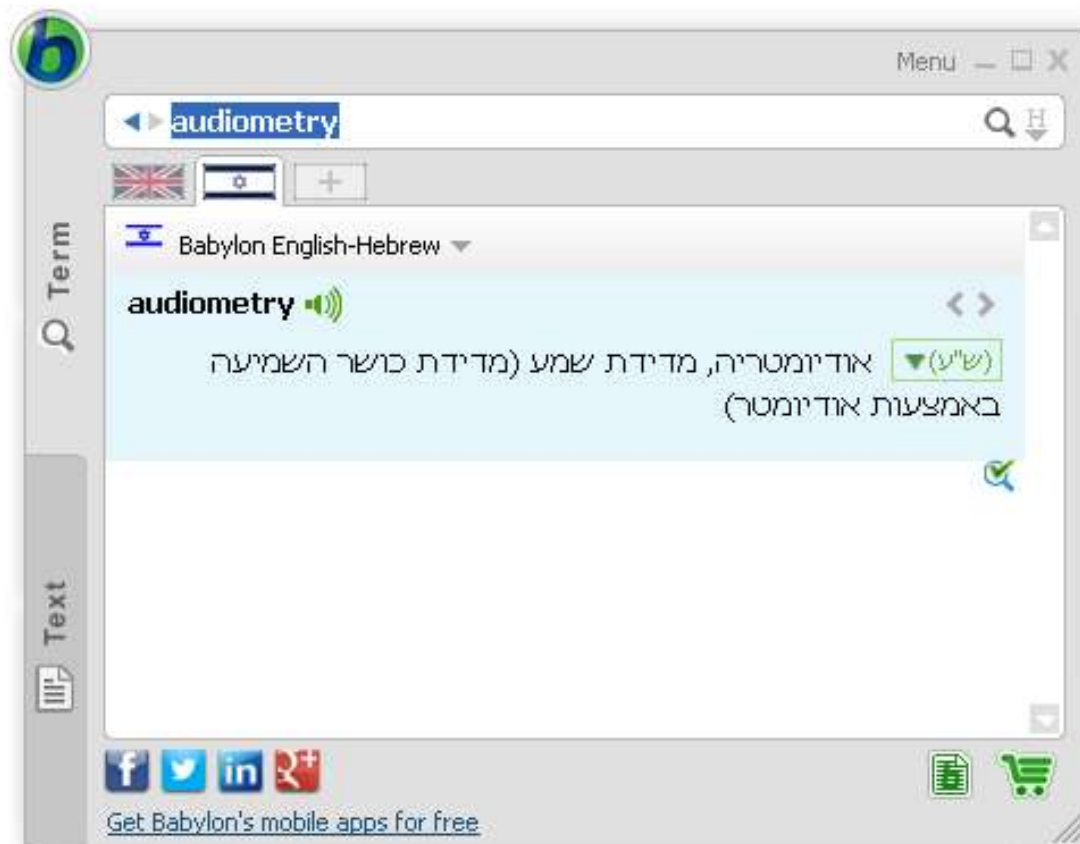


# Copy/paste from Google Translate

G	F	E	D	C	B	A
				6	Audiometry	a 1311
			Audiometry, תגובה עורר	1	Audiometry, Evoked response	a 1311
			Audiometry, דיבור	1	Audiometry, Speech	a 1312
			אודישנים	2	Auditions	x 1313
			שמיעתי עורר תגובה	3	Auditory evoked response	a 1314
			מסלולים שמיעתיים	8	Auditory pathways	a 1315
			ניתוח סצנה שמיעתי	1	Auditory scene analysis	a 1316
			Audouinella	1	Audouinella	a 1317
			Aufbau (ניו יורק, N.Y.)	2	Aufbau (New York, N.Y.)	a 1318
			Auffay	4	Auffay	z 1319
			אפקט אוז	1	Auger effect	a 1320
			מציאות מוגברת	1	Augmented reality	a 1321
			יודי אוגסבורג	9	Augsburg confession	a 1322
			Augustales	1	Augustales	a 1323
			אוגוסטוב (פולין: Powiat)	1	Augustow (Poland : Powiat)	a 1324
			אוגוסטוב (Suwalki)	2	Augustow (Suwalki)	z 1325
			Aulua שפה	1	Aulua language	a 1326
			les-Bains אאולוס-les-Bains	1	Aulus-les-Bains	z 1327
			Aundh (מדינת נסיכים)	1	Aundh (Princely State)	a 1328
			Aunis	2	Aunis	z 1329
			Aunis (צרפת)	1	Aunis (France)	a 1330
			מונחי Aureate	1	Aureate terms	a 1331
			Aureomycin	2	Aureomycin	a 1332
			Aures (אלג'יריה) הרים	1	Aures Mountains (Algeria)	a 1333
			Aurich	1	Aurich	z 1334
			תרבות Aurignacian	1	Aurignacian culture	a 1335
			Auroville (הודו)	1	Auroville (India)	a 1336
			האזנה	6	Auscultation	a 1337
				2	Ausdehnungslehre	a 1338
				1	Austenitic stainless steel	a 1339
				1	Austenitic steel	a 1340
				1	Australian Jewish herald	a 1341
				1	Australian Jewish times	a 1342
				1	Australian lungfish	a 1343
				1	Australianisms	a 1344
				3	Australopithecines	a 1345
				3	Austrian State Treaty	a 1346
				2	Austro-Hungarian Compromise, 1867	a 1347
				1	Authentes (The Greek word)	a 1348



# Babylon



# Academy of the Hebrew Language

מעודכן לל' באייר תשע"ג, 30 באפריל 2013.  
מותאם לצפייה בדפדפן אקספלורר

## האקדמיה ללשון העברית

THE ACADEMY OF THE HEBREW LANGUAGE

מאגר המונחים Hebrew Terms Database

חזרה לחיפוש

מילה \*AUDIOMETRY

אפשר לחפש מילה בעברית או באותיות לטיניות; אפשר להחליף חלקי מילה בנוכחית; לחיפוש צרופים יש לחפש את אחד מרכיבי הצירוף.

מילון	מונח לועזי	מונח עברי
פיזיקה: אקוסטיקה (תשמ"ה), 1985	audiometry	<b>אודיומטריה</b> [מונחי פיזיולוגיה ואקוסטיקה: השמיעה ופגעי השמיעה] אודיומטריה (רי"ש בחיריק, יו"ד בדגש)





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## Auger effect

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The **Auger effect** (pron.: */oo'ʒeɪf/*) is a physical phenomenon in which the filling of an **inner-shell** vacancy of an **atom** is accompanied by the emission of an **electron** from the same atom.<sup>[1]</sup> When a **core electron** is removed, leaving a vacancy, an electron from a higher energy level may fall into the vacancy, resulting in a release of **energy**. Although sometimes this energy is released in the form of an emitted **photon**, the energy can also be transferred to another electron, which is ejected from the atom. This second ejected electron is called an **Auger electron**,<sup>[2]</sup> after one of its discoverers, **Pierre Victor Auger**.

Upon ejection the **kinetic energy** of the Auger electron corresponds to the difference between the energy of the initial **electronic transition** and the **ionization energy** for the **electron shell** from which the Auger electron was ejected. These energy levels depend on the type of atom and the chemical environment in which the atom was located. **Auger electron spectroscopy** involves the emission of Auger electrons by bombarding a sample with either **X-rays** or energetic electrons and measures the intensity of Auger electrons as a function of the Auger electron energy. The resulting spectra can be used to determine the identity of the emitting atoms and some information about their environment. **Auger recombination** is a similar Auger effect which occurs in **semiconductors**. An electron and **electron hole** (electron-hole pair) can recombine giving up their energy to an electron in the conduction band, increasing its energy. The reverse effect is known as **impact ionization**.

### Discovery

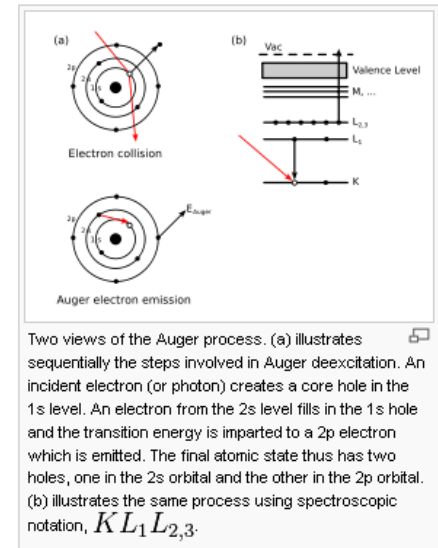
[\[edit\]](#)

The Auger emission process was discovered in 1922 by **Lise Meitner**,<sup>[3]</sup> an Austrian-Swedish physicist, as a side effect in her competitive search for the nuclear beta electrons with the British physicist **Charles Drummond Ellis**. The French physicist **Pierre Victor Auger** also discovered it in 1923<sup>[4]</sup> upon analysis of a Wilson **cloud chamber** experiment and it became the central part of his PhD work.<sup>[5]</sup> High-energy X-rays were applied to ionize gas particles and observe **photoelectric** electrons. Observation of electron tracks independent of the frequency of the incident photon suggested a mechanism for electron ionization that was caused from an **internal conversion** of energy from a radiationless transition. Further investigation and theoretical work showed that the effect was a radiationless effect more than an internal conversion effect by use of elementary quantum mechanics and transition rate and transition probability calculations.<sup>[6][7]</sup>

### See also

[\[edit\]](#)

- Auger electron spectroscopy
- Coster–Kronig transition
- Electron capture
- Radiative Auger effect
- Charge carrier generation and recombination



Two views of the Auger process. (a) illustrates sequentially the steps involved in Auger deexcitation. An incident electron (or photon) creates a core hole in the 1s level. An electron from the 2s level fills the 1s hole and the transition energy is imparted to a 2p electron which is emitted. The final atomic state thus has two holes, one in the 2s orbital and the other in the 2p orbital. (b) illustrates the same process using spectroscopic notation,  $KL_1L_{2,3}$ .



## אפקט אוז'ה

**אפקט אוז'ה** היא תופעה בפיזיקה שבה **פליטת אלקטרון מאטום** גורמת לפליטה נוספת של **אלקטרון**<sup>[1]</sup>. כאשר אלקטרון עוזב את **רמת היסוד** של האטום, ומשאיר אחריו חוסר מבחינת מספר האלקטרונים, אלקטרון מרמת אנרגיה גבוהה יותר עשוי ליפול לחלל שנשאר, מה שיגרום לשחרור **אנרגיה**. למרות שבחלק מהמקרים האנרגיה משתחררת בצורה של פליטת פוטון, האנרגיה עשויה לעבור לאלקטרון אחר, שנפלט מהאטום. האלקטרון השני שנפלט נקרא **אלקטרון אוז'ה**<sup>[2]</sup>.

ברגע הפליטה שלו, **האנרגיה הקינטית** של אלקטרון אוז'ה מתאימה להפרש בין האנרגיה של המעבר האלקטרוני ההתחלתי ואנרגיית היינון של **קליפת האלקטרונים** שממנה נפלט אלקטרון אוז'ה. רמות האנרגיה הללו תלויות בסוג האטום ובסביבה הכימית שבה נמצא האטום. **ספקטרוסקופיית אלקטרוני אוז'ה** עושה שימוש בפליטה של אלקטרוני אוז'ה על ידי הפצצה של דגימת **חומר בקרני X** או באלקטרונים אנרגטיים, והיא מודדת את מספר אלקטרוני אוז'ה כ**פונקציה** של אנרגיית אלקטרון אוז'ה. **הספקטרום** שמתקבל כתוצאה מכך משמש לקביעת הזהות של האטומים הפולטים וכן מספק מידע על הסביבה שבה הם נמצאים.

רקומבינציית אוז'ה היא אפקט אוז'ה דומה שמתרחש במוליכים למחצה. כאשר אלקטרון **וחור** יכולים להתחבר ולשחרר את האנרגיה שלהם לאלקטרון אחר בפס ההולכה. האפקט ההפוך נקרא יוניציית פגיעה. אפקט אוז'ה קרוי על-שמו של **פייר ויקטור אוז'ה**, פיזיקאי צרפתי ואחד ממגלי התופעה.

## היסטוריה

[עריכה]

התהליך ביסוד אפקט זה, התגלה בשנות ה-20 על ידי לזה מייטנר, **פיזיקאית אוסטרית יהודייה**. אפקט אוז'ה עצמו התגלה ב-1925 על ידי פייר ויקטור אוז'ה בעקבות ניתוח תוצאות מניסוי **בתא ערפל**.

קרני X עתירות אנרגיה כונו על חלקיקי **גז** מיוננים וגרמו לפליטת אלקטרונים פוטואלקטריים. הצפייה במסלולי האלקטרונים שלא היו תלויים בתדירות של הפוטון הפוגע רמזה על כך שיש מנגנון לינון האלקטרונים שנגרם ממעבר פנימי של אנרגיה שאינו יחסי לגודל מסוים. בדיקה מעמיקה יותר ועבודה תאורטית נוספת הראו שמידת חוסר היחס של האפקט הייתה גדולה בהשוואה לזו של אפקט מעבר פנימי. דבר זה הושג באמצעות שימוש בחישובים של **מכניקה קוונטית** בסיסי, קצב מעבר והסתברות מעבר.

## הערות שוליים

[עריכה]

- "The Auger Effect and Other Radiationless Transitions". Burhop, E.H.S., Cambridge Monographs on Physics, 1952

- ↑ Auger effect [1]
- ↑ Auger electron [2]

קטגוריות: מכניקת הקוונטים | פיזיקה אטומית

## משוב על הערך

משובים קודמים

...:

באן ניתן לכתוב משוב על הערך...

## Extract headings with translations (column D) and load to dictionary

אודימטריה	6	Audiometry	a	1310
אודימטריה, גרר תגובות	1	Audiometry, Evoked response	a	1311
אודימטריה, דיבור	1	Audiometry, Speech	a	1312
אודישנים	2	Auditions	x	1313
גרר תגובה שמיעתי	3	Auditory evoked response	a	1314
מסלולים שמיעתיים	8	Auditory pathways	a	1315
ניתוח סצנה שמיעתית	1	Auditory scene analysis	a	1316
	1	Audouinella	a	1317
אופבאו (ניו יורק, ניו יורק)	2	Aufbau (New York, N.Y.)	a	1318
	4	Auffay	z	1319
אפקט אוז'ה	1	Auger effect	a	1320
מציאות מוגברת	1	Augmented reality	a	1321
יודי אוגסבורג	9	Augsburg confession	a	1322
אוגוסטים	1	Augustales	a	1323
אוגוסטוב (פולין: מחוז)	1	Augustow (Poland : Powiat)	a	1324
אוגוסטוב (סובלקי)	2	Augustow (Suwalki)	z	1325
	1	Aulua language	a	1326
	1	Aulus-les-Bains	z	1327
	1	Aundh (Princely State)	a	1328
	2	Aunis	z	1329
	1	Aunis (France)	a	1330
מונחי זהב	1	Aureate terms	a	1331
אוריאומיצין (תרופה)	2	Aureomycin	a	1332
	1	Aures Mountains (Algeria)	a	1333
	1	Aurich	z	1334
	1	Aurignacian culture	a	1335
	1	Auroville (India)	a	1336
ראזנה (בסטטוסקופ)	6	Auscultation	a	1337
	2	Ausdehnungslehre	a	1338

# Hebrew translation in subject authority record

<i>Leader</i>	<b>LDR</b>	—	—	^^^^cz^^a2200157n^^4500
<i>Control No.</i>	<b>001</b>	—	—	000647824
<i>Control No. ID</i>	<b>003</b>	—	—	DLC
<i>Date and Time</i>	<b>005</b>	—	—	19870615133127.4
<i>Fixed Data</i>	<b>008</b>	—	—	860211  ^anannbab ^ b^ana^^^^^^
<i>LC Control No.</i>	<b>010</b>	—	a	sh 85009472
<i>Catalog. Source</i>	<b>040</b>	—	a	DLC
		—	c	DLC
		—	d	DLC
		—	a	RF294
<i>LC Class. No.</i>	<b>053</b>	—	a	RF294
<i>Topical Term</i>	<b>150</b>	0	a	Audiometry
		—	g	lat
<i>Topical Term</i>	<b>150</b>	—	a	
<i>See1.Trac.Topic</i>	<b>450</b>	0	a	Audiometer
		—	g	lat
<i>See1.Trac.Topic</i>	<b>450</b>	0	a	Hearing
		—	x	Testing
		—	g	lat
<i>SAF.Trac.Topic</i>	<b>550</b>	0	w	g
		—	a	Hearing
			g	lat

אודיומטריה  
heb

# Work is not finished...

- Fixing inconsistencies in translations from different sources
- Fixing inconsistencies in spelling from different sources: male/haser, different Hebraization of place names (תורכיה/טורקיה), etc.
- Sharing the translated subjects with other Israeli libraries using LCSH
- Cooperative expansion with other libraries (SACO-Israel)



## Step 2 – Enabling cross-silo name searching

### a. NNL-RAMBI

- Move authority control of names in RAMBI to the NLI authority file
- Will make many RAMBI names multi-script searchable
- But:
  - Unique names in RAMBI may have different form in NLI
  - Unique names in RAMBI may not be the same person in NLI
  - Unique names in RAMBI may not be non-unique in NLI (distinguished by dates, etc.)

## Step 2 – Enabling cross-silo name searching

### b. NNL-BHB (Bibl. of the Hebrew Book)

- Names primarily Hebrew
- BHB authority records (about 20,000) are rich in biographical information
- But very different forms of headings
- Stage 1 – link BHB and NLI authority records
- Stage 2 – transfer biographical data from BHB to NLI (RDA tags)
- Stage 3 – Add BHB forms/references to NLI authorities to expedite single search of both databases



# Different forms of headings

## NLI

- ויצמן, חיים, 1874-1952
- רביקוביץ, דליה, 1936-2005
- בן גוריון, דוד, 1886-1973
- משה בן מימון, 1138-1204

## BHB

- וייצמאן, חיים בן עוזר
- ראביקוביץ, דליה בת לוי
- בן-גוריון, דוד יוסף בן אביגדור
- משה בן מימון (רמב"ם)

# Identify same persons by

- Ignoring some vowel-letters, patronymics, qualifiers
- Checking birth dates (BHB in authority record, NLI in heading)
- Checking for ‘fuzzy’ matches with identical titles
- Manual checking (hopefully a small number of leftovers)

# Step 3 – Enabling cross-silo subject searching (Change RAMBI subjects to LCSH)

- RAMBI uses unique subjects (Hebrew or English, now largely clustered within RAMBI)
- RAMBI subjects assume Jewish context
  - Education = Jewish education
  - Music = Jewish Music
  - etc.
- Geographic facet is prominent
  - France: Antisemitism
  - France: Music
  - etc.
- RAMBI data in a larger database (discovery tool!) loses the Jewish context
- RAMBI + NLI
- RAMBI via Ebsco Discovery Service (EDS) and Proquest Central

# RAMBI subjects to LCSH

- Identify cases where identical subjects have different context (Education, Music)
- Create crosswalks to transfer RAMBI subjects to LCSH and phase out RAMBI thesaurus in favor of the NLI thesaurus (LCSH + Hebrew translations)
- Since RAMBI is article-level, many specific subjects will have to be created (and translated) in the NLI subject thesaurus.

# Timetable

- 2013
  - Complete conversion to LCSH of NLI music and manuscript subjects
  - Merge RAMBI name headings with NLI headings and authority control
  - Link BHB and NLI name headings
- 2014
  - Convert RAMBI subjects to LCSH