Directionally Challenged
Left to Right and Right to Left Scripts in Aleph

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The Challenge

- Left to Right scripts (Latin, Greek, modern CJK)
- Right to Left scripts (Hebrew, Arabic)

- Numbers / digits and punctuation can occur in either context
  i.e. “neutral” or “ambivalent”
This sentence starts with English, continues in Hebrew 1234). And there are numbers in brackets within the Hebrew.
The solution – Define direction

- Word processors and other common programs
- HTML / XML
- In Aleph
Solution in Word processors and other common programs

- Buttons to define direction of paragraph

- Direction is not the same as alignment
• LtoR, aligned to left

Example of a Hebrew quote "undayim" in an English sentence.

• LtoR, aligned to right

Example of a Hebrew quote "undayim" in an English sentence.

• RtoL, aligned to left

in an English.unknownExample of a Hebrew quote sentence.
Solution in HTML

- attribute `<dir = ltr>` or `<dir = rtl>`
- preferably defined in style sheet (CSS)
- not same as alignment `<align = ltr>` or `<align = rtl>`

*Authoring HTML: Handling Right-to-left Scripts*
http://www.w3.org/TR/i18n-html-tech-bidi/
Aleph 500 - Solution?

- Alignment defined by “alpha”

- To change “Enter Text Mode” (F12)
- Logical order - indexing and retrieval
Direction of text in Unicode

• Three categories of bidirectional character types:
  • Strong (letters of alphabets, punctuation specific to script)
  • Weak (numbers / digits, number separators, non breaking space, formatting and control characters)
  • Neutral (spaces, paragraph separators, line breaks)

• Directional formatting codes
  • Determine direction of surrounding text
  • Within paragraph or line
  • Not displayed

Unidecode Standard Annex #9, The Bidirectional Algorithm
http://www.unicode.org/reports/tr9/tr9-11.html#Directional_Formatting_Codes
Unicode – Directional Formatting Codes

- **Explicit Directional Embedding**
  Hebrew quote in English text or English quote in Arabic text
  
  - **RLE** (Right-to-Left Embedding): Treat the following text as embedded right-to-left.
  - **LRE** (Left-to-Right Embedding): Treat the following text as embedded left-to-right.

- **Explicit Directional Overrides**
  Allow override for special cases such as part numbers, allow for nested directional
  
  - **RLO** (Right-to-Left Override): Force following characters to be treated as strong right-to-left characters.
  - **LRO** (Left-to-Right Override): Force following characters to be treated as strong left-to-right characters.

- **Terminating Explicit Directional Code**
  Terminates the effects of the last explicit code
  
  - **PDF** (Pop Directional Format): Restore the bidirectional state to what it was before the last LRE, RLE, RLO, LRO.

- **Implicit Directional Marks**
  Very light weight, local scope
  
  - **RLM** (Right-to-Left Mark): Right-to-left zero-width character
  - **LRM** (Left-to-Right Mark): Left-to-right zero-width character
Directional Formatting Codes in Aleph

- Aleph 500 ver. 18+ supports Unicode directionality formatting codes (dll files included in GUI installation)
- Added in cataloging module (floating keyboard)
- Made visible in GUI (cataloging draft) by placeholders
- Text entered in logical order, then add “directionality characters”
Setup for use of directionality characters

• Suppress for indexing

  BIB library:
  $data_tab/tab_filing in all libraries
  possibly $data_tab/tab_word_breaking
  
  possibly ADM library:
  tab_filing_call_no

• Add to GUI
  C:\AL500 \alephcom\tab
  keyboard.ini
  keyboard.txt
  spacer.ini

How to control bracket and parentheses appearance in right to left display of the web
Ex Libris Documentation Center
$data_tab/tab_filing

• $data_tab/tab_filing

!Suppress directionality characters in filing
01 N to_blank U+202AU+202BU+202CU+202DU+202E
01 N to_blank U+200EU+200FU+001E

• for directionality characters within “word”

$data_tab/tab_word_breaking

!remove directionality characters in word (090 and 080)
01 # to_blank U+202AU+202BU+202CU+202DU+202E
01 # to_blank U+200EU+200FU+001E

• for directionality characters in call numbers

$data_tab/tab_filing_call_no

!for directionality characters in call nos
0 L to_blank U+202AU+202BU+202CU+202DU+202E
0 L to_blank U+200EU+200FU+001E
To add new tab to floating keyboard: keyboard.ini

Unidecode General Punctuation

To add new tab to floating keyboard: keyboard.ini
<table>
<thead>
<tr>
<th>0</th>
<th>200</th>
<th>201</th>
<th>202</th>
<th>203</th>
<th>204</th>
<th>205</th>
<th>206</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>NDS</td>
<td>SP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>MNS</td>
<td>NB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>ENS</td>
<td>SP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>EMS</td>
<td>SP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>3/M</td>
<td>SP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>4/M</td>
<td>SP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>5/M</td>
<td>SP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>FSP</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>PS</td>
<td>SEP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>TSP</td>
<td>SEP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>NSP</td>
<td>IRLE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>ZSP</td>
<td>RLE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>NJ</td>
<td>PDF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>J</td>
<td>LRO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>LHM</td>
<td>RLO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>RLM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
spacer.ini

![Spacer.ini file]

```ini
[spacer]
! Spacer ini file

COL 1. 4; ALPHA_NUM; ;
    Spacer value;
    Hexa;

COL 2. 4; ALPHA_NUM; ;
    From Unicode value;
    Hexa;

COL 3. 4; ALPHA_NUM; ;
    To Unicode value;
    Hexa;

1 2 3

!!!-!!!!!-!!!!!
005F 0300 0315
005F 0334 0338
005F 033D 0344
005F 0360 0361
25CC 0316 0333
25CC 0339 033C
25CC 0345 0345
2192 200E 200E   !! 200E is LEFT-TO-RIGHT MARK
2190 200F 200F   !! 200F is RIGHT-TO-LEFT MARK
25BC 202C 202C   !! 202C is POP DIRECTIONAL FORMATTING
250C 202A 202A   !! 202A is LEFT-TO-RIGHT EMBEDDING
2510 202B 202B   !! 202B is RIGHT-TO-LEFT EMBEDDING
25BA 202D 202D   !! 202D is LEFT-TO-RIGHT OVERRIDE
25C4 202E 202E   !! 202E is RIGHT-TO-LEFT OVERRIDE
```
Hebrew and English Text with Hyphens

The National Library of Israel
Main Entry

כרכר, לור
Title
X-Men
Alternate title
X-Men
Imprint
Filing Place
tל אבר
Descr.
ברונש המ��ית: פורטס הורט.
LtoR starts with Hebrew, Punctuation

<table>
<thead>
<tr>
<th>Field</th>
<th>Code</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leader</td>
<td></td>
<td>LDR</td>
</tr>
<tr>
<td>Control No.</td>
<td></td>
<td>001</td>
</tr>
<tr>
<td>Date and Time</td>
<td></td>
<td>005</td>
</tr>
<tr>
<td>Fixed Data</td>
<td></td>
<td>008</td>
</tr>
<tr>
<td>Personal Name</td>
<td></td>
<td>100 1</td>
</tr>
<tr>
<td>Main title</td>
<td></td>
<td>245 10</td>
</tr>
<tr>
<td>Local Note</td>
<td></td>
<td>599</td>
</tr>
<tr>
<td>Subject-Top.Tm</td>
<td></td>
<td>650 4</td>
</tr>
<tr>
<td>Subject-Top.Tm</td>
<td></td>
<td>650 4</td>
</tr>
<tr>
<td>Subject-Top.Tm</td>
<td></td>
<td>650 4</td>
</tr>
<tr>
<td>Host item Entry</td>
<td></td>
<td>773 0</td>
</tr>
<tr>
<td>Source - Jnl</td>
<td></td>
<td>920</td>
</tr>
<tr>
<td>Exec.Loc.Acc</td>
<td></td>
<td>856 42</td>
</tr>
</tbody>
</table>

- 00000nam^a22^u^4500
- 000493334
- 20100725143827.0
- 091201s2010^r^0^ger^d
- Kottsieper, Ingo
- ein Beitrag zum hebräischen Lexikon und zum Verhältnis von CD zu 1QS.
- Dead Sea Scrolls: language
- Dead Sea Scrolls: "Serekh ha-Yahad"
- Dead Sea Scrolls: "Damascus Document"
- Revue de Qumran
- 24,3 <95> (2010) 405-419
- Revue de Qumran. Paris
- http://libnet.ac.il/~libnet/pqd/opac_uls.pl?0633836
- Display ULS record for this journal
in some cases more than one directionality character is necessary:
<table>
<thead>
<tr>
<th></th>
<th>296.76 (תור)</th>
<th>296.76 (תור)</th>
<th>296.76[83] (מר)</th>
<th>296.760.22</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>296.76 (תור)</td>
<td>296.76 (תור)</td>
<td>296.76[83] (מר)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>296.76 (תור)</td>
<td>296.76 (תור)</td>
<td>296.76[83] (מר)</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>296.76[83] (מר)</td>
<td>296.760.22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>296.76 (תור)</td>
<td>296.76 (תור)</td>
<td>296.76[83] (מר)</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>296.76 (תור)</td>
<td>296.76 (תור)</td>
<td>296.76[83] (מר)</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>296.76 (תור)</td>
<td>296.76 (תור)</td>
<td>296.76[83] (מר)</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>296.76 (תור)</td>
<td>296.76 (תור)</td>
<td>296.76[83] (מר)</td>
<td></td>
</tr>
</tbody>
</table>
Structure of call numbers has a constant pattern, therefore one can make rules / algorithms to add directionality characters globally:

IF field begins with number or with Loaizi character = E or H
AND
has Hebrew in parentheses followed by number = (עברית) number
OR Hebrew in parentheses followed by number in square brackets = (עברית) [number]
ADD 200E → after closing parenthesis
Directionality Characters in Templates
Directionality characters in Z30_CALL_NO

- Copy Call No from BIB to HOL and from HOL to Item

- Setup:
  
  $\text{data\_tab/tab100 in XXX50 and XXX60}$

```plaintext
#!/ X852-ITEM-OVERRIDE
!# Values:Y N  Default: Y
!# Type: Text; Max Length: 01
!# tab100 of library: Yes; tab100_<server_type>: No.

Y = item location subfields (sublibrary, collection, call no.) are updated from the 852 field of the linked HOL record. The line

  setenv correct_852_subfields

in aleph_start controls which 852 subfields update the Z30 (item) location fields.

"Y" must be set in both the xxx50 and xxx60 libraries.
```
$ alephe_root/aleph_start

setenv correct_852_subfields "2hijklm"

$data_tab/tab100 in XXX60

!! CREATE-852-HOL
!! Values: Y N  Default: N
!! Type: Text; Max Length: 01
!! tab100 of library: Yes; tab100_<server_type>: No.
!!
!! * Applicable only to the HOL library (USM60).
!! Y = automatic generation of 852 subfields from call
!! number fields in the BIB record (099, 098, 090, 092,
!! 096, 050, 055, 060, 070, 082, 086i)
<table>
<thead>
<tr>
<th>Seq.</th>
<th>B-C</th>
<th>Sublibrary</th>
<th>Description</th>
<th>Call number</th>
<th>Collection</th>
<th>Status</th>
<th>Notes</th>
<th>Loans</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>6717600001</td>
<td>Machon Ben Zvi</td>
<td>1st Floor</td>
<td>Regular</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Item Display
- Barcode: 67176000001
- Sublibrary: YB1
- Collection: LV1
- Copy Number: 01
- Material Type: BOOK
- Hol. Link: 45973
- 85X Type/Linking Number: 0
- Call No. Type/Call No.: $hE115 (חקלא-ויבש מ[711])
- 2nd Call No. Type/Call No.: 
- Description:

### General Information
- Item Status: 01
- Item Process Status: Enum. Level.1 (A)(Vol.)
- Enum. Level.2 (B): 
- Temporary Location: 

### Serial Information

### Levels

### HOL Links

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The National Library of Israel
Need Directions?

Thank You!
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