

The **a**chicago BibTeX style

A Chicago Manual BibTeX style

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To do: explain conventions; put some in compsci

Abstract

Chicago Manual of Style bibliography style BIBTEX macros.

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Part I

Discussion

Warning: The dox are spotty for this bibstyle—sorry! This is a pretty stable style, however. I've included almost my entire test cases. If you're puzzled, you may compare `frankenstein.bib` with what you see in the References section at the end of this document. Or please write me.

Reference list ordering: alphabetical by author or whatever passes for author in the absence of one.

1 Pros and cons of this style

See a discussion in the documentation for the `achicago` package.

2 User documentation

No bibstyle is going to elegantly handle everything while using them in a way that's at all compatible with the majority of existing bibstyles out there. And it's not clear that such a bibstyle would be worth the effort to write and learn to use properly. The time would be better spent, I think, writing some macros to make inserting hand-done exceptions seamlessly into the bibliography, so that the whole process could remain clean and automatic.

For the sceptical, and for your entertainment, an example. I wanted to cite a certain paper by Freud in my dissertation. The cited paper has a title, date of first publication, and chapter number; I read this paper in a volume of Freud's papers with a title, volume editor, volume date, publisher, reprint date, and reprint publisher; this volume has a number in a series of publications (The International Psycho-Analytic Library) with a series editor; and also this volume has a volume number within a multivolume work with its own title (*Collected Papers*) and (supervising) translator. Readers honestly don't need all that information, but each one of those 15 pieces of information might be highly important for another citation, for which only two or three pieces of information were relevant or available. No one needs to write a bibstyle that handles it all, so at several places, the fields are assumed to be used for either one thing or another. For example, "series" either contains the title of the inclusive multivolume work or the series. When, as rarely happens, a volume is part of both at once, you have to give up one or the other.

Warning: This is a complex bibstyle and the number of potential cases is very high. Please check your output, and write me with cases that are not set according to *Chicago Manual* percepts. Please refer to *Chicago Manual* whenever possible.

To do: star the new fields.

entry type	description
address	Address of publisher of <i>cited</i> edition, whether a reprint or not.
annotation	A complete paragraph or more.

Table 1: Entry types.

entry type	description
author	
bookauthor	Book's author whenever "author" is referring to the author of a part of the book. Usually an 'inbook' or "incollection" entry refers to a book with an editor but no author, but in the case of introductions etc. you have an author for each.
booktitle	Book's title whenever "title" is referring to a part of the book.
chapter	The "title" names the "chapter" part of the book. One expects to have nonempty "booktitle". See also "type".
edition	Edition information to be given after the book's title, which is "booktitle" if that is nonempty and "title" otherwise. Example: 2d~ed., 2~vols.in1~book
editor	NOTE all f* and o* fields are only going to apply to 'book', "incollection", 'inbook' entries. FIX: check - booklet? etc.
faddress	Address of publisher of first-published edition. Not used unless "fyear" is nonempty.
flanguage	Language of first-published edition. Not used unless "translator" or "fyear" is nonempty.
fpublisher	Publisher of first-published edition. Not used unless "fyear" is nonempty.
ftitle	Title of first-published edition (probably in "flanguage"). Not used unless "fyear" is nonempty.
fyear	Publication date of first-published edition.
howpublished	
illustrator	For 'book' entries only. When the author or editor illustrates, use a construction like {theeditor}and{others}.
institution	For thesis entries only. FIX check
journal	For 'article' entries only.
key	often default with empty author, editor, organization
month	For 'journal' entries, also season, e.g., Winter
note	Begins its own block, so capitalize. Concluding punctuation is supplied automatically if not given in the field.
number	For 'journal' entry, number of the journal (if no "" volume) or number within the volume. For "book" entry, number of the book in the "series". Makes sense only when "series" is a series rather than the title of a multivolume work.
oaddress	For a reprint, address of ORIGINAL publisher.
opublisher	For a reprint, publisher of ORIGINAL edition. A nonempty value implies the cited edition IS a reprint (and so must have "oyear").
organization	
oyear	For a reprint, publication date of ORIGINAL edition A nonempty value implies the cited edition IS a reprint (and so OUGHT TO have "opublisher"). The value will almost always differ from "year".
pages	
publisher	Publisher of the cited edition.

Table 1: Entry types.

entry type	description
school	
series	Series to which “ title belongs, or title of a multivolume work where the volumes have their own titles given in “ booktitle or “ title.
seriesedition	Edition information to be given after “ series. Makes sense only when “ series is the title of a multivolume work with titled volumes. In the entry for the multivolume work, that is, when “ series and “ title are identical, use “ seriesedition not “ edition. See also “ edition. Consequence of disobeying last is when references are less than min-crossrefs (i.e., no separate entry for the multivolume work) you get the edition information for the multivolume work appearing after the title of the component volume. Note: you can't really get away with putting a series editor here. I think you'd have to use the “ note field for that; or we could make yet another field.
title	
translator	For ‘book’ entries only, the translator(s). See also “” flanguage. When the author or editor translates, use a construction like {theeditor}andothers.
type	For ‘inbook’ entries, the value overrides Chapter. When “” type is empty you get Chapter~<chapter>of. FIX: CHECK: For *-thesis entries, gives thesis-type word, e.g. Master’sThesis.
volume	For ‘journal’ entry, it’s volume. For “book” entry, its number in the “ series, or its volume number in a multivolume book.
year	Year of publication of cited edition, whether a reprint or not.
yearcomp	Year work composed. For ‘book’ entry only (so far).

Table 1: Entry types.

Part II

Implementation

3 Version control

Version information:

```
1 ^^A Keep the /~ %% \def\file.../ beginning exact!
2
3 %% A BibTeX bibliography style
4 %%   conforming to the Chicago Manual's A style
5 %%   but with B style author-date citations
6 %%   by Matt Swift <swift@alum.mit.edu>
7 %%
8 %% \def\fileinfo{A Chicago Manual BibTeX style}
9 %% \def\DoXPackageS {longtable}
10 %% \def\initIetelyHavECitationS {}
11 %% \def\fileversion{v1}
12 %% \def\filedate{2001/08/31}
13 %% \def\docdate{2001/08/31}
14 %%
15
```

4 Implementation

4.1 Define fields and variables

4.1.1 Global variables

`output.state` will have one of the four scalar values `before.all`, `mid.sentence`, `after.sentence`, and `after.block`, telling us where we are in producing the entry.

`Achicago` uses only *blocks*, not *sentences*, to delimit units in the bibentry (some other bibstyles use both). The `achicago` package defines `\newblock` to add a very small and rubber amount of horizontal space, relaxing somewhat the `\frenchspacing` in effect. I have not removed the programming structures that distinguish sentences and blocks, but I have not concerned myself with them either; anyone wishing to revise this style to begin using them should check their work carefully.

```
16 INTEGERS { output.state before.all mid.sentence after.sentence after.block }
```

The entry variable `principal-type` will have one of the five scalar values `author.ptype`, `editor.ptype`, `organization.ptype`, `key.ptype`, and `emergency.ptype`, telling us what type of information is in the principal field. See also the discussion of `key.special.p`.

```
17 INTEGERS { author.ptype editor.ptype organization.ptype key.ptype
18           emergency.ptype }
```

These are used during the forward and reverse passes to hold information about the previously-processed record.

```
19 INTEGERS { last.year.tag.num }
20 STRINGS  { last.leaditem last.label.and.year following.year.label.tag }
```

These variables are used locally within various functions or function groups, where their particular use is documented.

To do: document which if any are used in a nonlocal way

Warning: Suspect a conflict among these scratch variables if a strange problem occurs! I think *u* is the only one that will hold its value past an output.

```
21 INTEGERS { j nameptr namesleft numnames len }
22 STRINGS { s t u v w }
```

4.1.2 Bibfields

The list of fields that will be examined in database records, if they exist. Fields in the **bib** database not on this list will be ignored. Not every entry type makes use of every field. Each entry type function below lists its required, optional, and ignored fields. Expected use of these fields is documented above in the user documentation.

```
23 ENTRY
24   { address
25     annotation
26     author
27     bookauthor
28     booktitle
29     chapter
30     edition
31     editor
32     faddress
33     flanguage
34     fpublisher
35     ftitle
36     fyear
37     howpublished
38     illustrator
39     institution
40     journal
41     key
42     month
43     note
44     number
45     oaddress
46     opublisher
47     organization
48     oyear
49     pages
50     publisher
51     school
52     series
53     seriesedition
54     title
55     translator
56     type
57     volume
58     year
59     yearcomp
60   }
```

Entry variables have a per-record value but are not initialized from a field.

The integer `principal-type` will contain one of the scalars `author.ptype`, `editor.ptype`, etc. (see their declarations above for further information). `principal-type` is set in the function `set.principal-field.principal-type`.

```
61 { principal-type }
```

The strings `label`, `year.label` and `year.label.tag` are used to construct the citation (the running text at the location of the user's `\cite` command). In most cases, `label` will contain a string derived from the `principal-field` (see `make.label`).

```
62 { label }
```

`year.label` will contain a string representing the date. It's not necessarily the same as "year" (see `make.year.label`). `year.label.tag` will either be empty or be a lower-case letter, as determined in the forward and reverse passes.

```
63 year.label year.label.tag
```

`principal-field` will contain one of the fields, depending on entry type and what fields are nonempty (see `set.principal-field.principal-type`).

In most cases, `leaditem` will contain the `principal-field` properly formatted for appearance at the beginning of the bibliography entry (see `make.leaditem`). When it is identical to the previous entry's `leaditem`, it will be wrapped in `\SCduplicate` by the forward and reverse passes.

```
64 principal-field
65 leaditem
66 }
```

4.2 Define macros

These are macro abbreviations required by convention in every bibstyle. The user can redefine them with `@STRING` declarations in the `bib` database.

```
67 MACRO {jan} {"January"}
68 MACRO {feb} {"February"}
69 MACRO {mar} {"March"}
70 MACRO {apr} {"April"}
71 MACRO {may} {"May"}
72 MACRO {jun} {"June"}
73 MACRO {jul} {"July"}
74 MACRO {aug} {"August"}
75 MACRO {sep} {"September"}
76 MACRO {oct} {"October"}
77 MACRO {nov} {"November"}
78 MACRO {dec} {"December"}
```

4.3 Debugging functions

```
debugval
debugmsg 79 FUNCTION {debugval}
80 { ":" *
81   swap$ *    %
82   "] in " * cite$ *    %
83   top$      %
84 }
```

```

85
86 FUNCTION {debugmsg}
87 { " in " * cite$ * top$
88 }

```

4.4 Initialization functions

`init.scalars` This should be called before any processing begins.

```

89 FUNCTION {init.scalars}
90 { #0 'before.all :=
91   #1 'mid.sentence :=
92   #2 'after.sentence :=
93   #3 'after.block :=
94
95   #0 'author.ptype :=
96   #1 'editor.ptype :=
97   #2 'organization.ptype :=
98   #3 'key.ptype :=
99   #4 'emergency.ptype :=
100 }

```

4.5 Boolean logic

```

not
and 101 FUNCTION {not}
or 102 { { #0
103   }
104   { #1
105   }
106   if$           %%
107 }
108
109 FUNCTION {and}
110 {   'skip$           %%
111   { pop$           %%
112     #0
113   }
114   if$           %%
115 }
116
117 FUNCTION {or}
118 {   { pop$           %%
119     #1
120   }
121   'skip$           %%
122   if$           %%
123 }

```

4.6 Constant functions

`comma` These definitions are made so that later functions are easier to read and so that
`period` adapting this bibstyle to another language will be simpler.

`hyphen`

`colon`

`space`

`delimiter.name-part`

`delimiter.name`

`delimiter.sub-sortkey`

`tie`

`etal`

`unidentified`

The reason these are functions not macros is so the user cannot change them.

```
124 FUNCTION {comma}
125 { ","
126 }
127
128 FUNCTION {period}
129 { "."
130 }
131
132 FUNCTION {hyphen}
133 { "-"
134 }
135
136 FUNCTION {colon}
137 { ":"}
138 }
139
140 FUNCTION {space}
141 { " "}
142 }
143
144 FUNCTION {delimiter.name-part}
145 { " "}
146 }
147
148 FUNCTION {delimiter.name}
149 { " "}
150 }
151
152 FUNCTION {delimiter.sub-sortkey}
153 { " "}
154 }
155
156 FUNCTION {tie}
157 { "~"}
158 }
159
160 FUNCTION {etal}
161 { " et~al."}
162 }
```

Below, we need to be able to set a string to a value which would never be generated from any string in a bibliography database. It's safe to assume that this string is such a one.

```
163 FUNCTION {unidentified}
164 { "HiGHLY*Peco@LIEr"
165 }
```

4.7 Output functions

The `output` function automatically handles interunit punctuation.

`output` should be called with a string and a punctuation mark on the stack. The punctuation mark is what should *precede* the string in the case the string begins in the middle of a sentence. Strings which begin sentences are preceded

by periods. Strings which begin a new block are preceded by periods and the `\newblock` command. (It makes no sense for a string to begin at the end of a sentence.)

Calls to `output.internal` leave the string on the stack until the next time `output.internal` is called, when it will get written. The function `output.begin` puts an empty string on the stack, and should be called before beginning any series of calls to `output`. `output.end` cleans up and should be called at the conclusion of a series of calls to `output`.

```

output.begin Prepare for a series of calls to output. Put an empty string on the stack and set output.state to before.all.
166 FUNCTION{output.begin}
167 { ""
168   before.all 'output.state :=
169 }

output.end Conclude a series of calls to output. Simply calls write$.
170 FUNCTION {output.end}
171 { write$           %%
172 }

new.block Begin a new block.
173 FUNCTION {new.block}
174 { output.state before.all =
175   'skip$             %%
176   { after.block 'output.state :=
177   }
178   if$                %%
179 }

new.sentence Begin a new sentence. FIX: hmm, wouldn't we want to put a TeX command here for intersentence space now? Why do we mess with the usual spacefactor for periods anyway? When in bibliographies are the usual TeX rules not going to be what we want, and give too much space after a period? answer: when a lowercase letter followed by period, in e.g. sec. 2 and so on. often bibstyle will put tie there, but sometimes not I think, so need to have that be not an intersentence space. well, if i start using sentences instead of blocks, I think perhaps doing the same hskip after a sentence with a new command \newsentence perhaps as in \newblock would be the right thing to do.
180 FUNCTION {new.sentence}
181 { output.state before.all = output.state after.block = or
182   'skip$             %%
183   { after.sentence 'output.state :=
184   }
185   if$                %%
186 }

output.internal \stackpunct string/entry(nonnull) null
187 FUNCTION {output.internal}
188 { 's :=      % s := string/entry(nonnull)
189   space * 't :=      % t := punctuation + space
190   output.state mid.sentence =

```

```

191 { t * write$      %%
192 }
193 { output.state after.block =
194   { add.period$ write$      %%
195     newline$      %%
196     "\newblock " write$      %%%
197   }
198 { output.state before.all =
199   'write$      %%

```

Final case is `output.state` = ‘after.sentence’, which means we just add a period, but no newline or `\newblock` command.

```

200   { add.period$ space * write$      %%
201   }
202   if$      %%
203   }
204   if$      %%

```

We are now mid-sentence, whether we were before or not.

```

205   mid.sentence 'output.state :=
206   }
207   if$      %%

```

The actual string given to ‘`output.internal`’ is left on the stack here for next time we call ‘`output.internal`’ or ‘`output.end`’, whichever comes next.

```

208 s
209 }

```

`output \stackstring/entry` punct either null OR punct string/entry(nonnull)
Check if string/entry is null. If it’s null do nothing. If it’s nonempty call `output.internal` on it with the given punctuation.

```

210 FUNCTION {output}
211 { swap$ duplicate$ empty$
212   { pop$      %%
213   pop$      %%
214   }
215   'output.internal
216   if$      %%
217 }

```

`output.bibitem` The optional argument to `\bibitem` will be made the definition of `\b@foo` where `foo` is the `cite$` key. `\b@foo` will be executed by all the various citing commands with a definition of `\SCcite` that is appropriate to each citing command.

The `thebibliography` environment actually ignores the optional argument to `\bibitem`. The environment sets the formatting so that the first part of the main entry hangs out to the left and looks like a label.

The unexpandable protection is necessary, instead of a simple protection, in order to work with `newclude`’s `tag` option.

I guess we use `write$` for each part instead of catenating them and using a single `write$` in case the catenation gets longer than `BIBTEX` can handle. I don’t know, this is how I found it. It seems like catenation and a single call to `write$` would be faster. FIX.

```

218 FUNCTION {output.bibitem}
219 { newline$      %%

```

```

220  "\bibitem[\UnexpandableProtect\SCcite{" write$      %%%
221  label write$          %%%
222  "}" {" write$          %%%
223  year.label year.label.tag * write$      %%%
224  "}] {" write$          %%%
225  cite$ write$          %%%
226  "}" write$          %%%
227  newline$          %%%
228 }

```

4.8 Simple auxiliary functions

`field.or.null` \stackfield literal field contents or null string if the field was missing

```

229 FUNCTION {field.or.null}
230 { duplicate$ empty$
231   { pop$          %%%
232   ""
233   }
234   'skip$          %%%
235   if$          %%%
236 }

```

`italicize` \stackstring or entrystring

Italicize the top string on the stack and provide italic corrections. Null goes to null. We want to explicitly italicize rather than use `\emph`, since semantic emphasis might be indicated in some other way in the document, e.g., slanted type.

```

237 FUNCTION {italicize}
238 { duplicate$ empty$
239   { pop$          %%%
240   ""
241   }
242   { "\textit{switch{" swap$ * "}" *      %%%
243   }
244   if$          %%%
245 }

```

`parenthesizer` \stackstring-or-entry:S"(" + S + ")"

```

246 FUNCTION {parenthesizer}
247 { duplicate$ empty$
248   { pop$          %%%
249   ""
250   }
251   { "(" swap$ * ")" *      %%%
252   }
253   if$          %%%
254 }

```

`format.clip` \stackstringstring FIX: the difference between `entry.max$` and `global.max$`: max for an entry string, max for a global string.

`format.clip` \stackstring-Sstring-S-possibly-shortened

Clips a string down to the smaller of `entry.max$` and `global.max$`.

```

255 FUNCTION {format.clip}
256 { #1 entry.max$ substring$
257   #1 global.max$ substring$
258 }

format.sortify.clip  purify$, downcase, and clip a string on the stack. \stack⟨string⟩⟨string⟩
259 FUNCTION {format.sortify.clip}
260 { % duplicate$ "sinful" debugval %%
261   purify$ %
262 %  duplicate$ " pure" debugval %%
263   "l" change.case$ %
264   format.clip %
265 %  duplicate$ "humble" debugval %%
266 }

check.empty \stackS warningS Issues warning if the string is empty.
267 FUNCTION {check.empty}
268 { 't :=
269   duplicate$ empty$%
270   { "empty" t * " in " * cite$ * warning$%
271   }
272   'skip$ %
273   if$ %
274 }

multipage.p \stacknothing#0 or #1
Set t to ‘’ pages. Look at t character by character for a hyphen, comma, or plus. If we find one, return true immediately; else return false.
275 FUNCTION {multipage.p}
276 { pages 't :=
277   #0 'j :=
278   % WHILE
279   { j not
280     t empty$ not %
281     and
282   }
283   { t #1 #1 substring$ %
284     duplicate$ hyphen =
285     swap$ duplicate$ comma =
286     swap$ "+" =
287     or
288     or
289     { #1 'j :=
290     }
291     { t #2 global.max$ substring$ 't :=
292     }
293     if$%
294   }
295   while$%
296   j
297 }

format.n.dashify \stackstringstring

```

```

        Make single-dashes into double-dashes.

298 FUNCTION {format.n.dashify}
299 { 't :=
300   ""
301   % WHILE
302   { t empty$ not }           %%%
303   { t #1 #1 substring$ hyphen =
304     { t #1 #2 substring$ "--" = not             %%%
305       { "--" *
306       t #2 global.max$ substring$ 't :=
307     }
308   { % WHILE
309     { t #1 #1 substring$ hyphen = }             %%%
310   { hyphen *
311   t #2 global.max$ substring$ 't :=
312 }
313   while$                   %%%
314 }
315 if$                      %%%
316 }
317 { t #1 #1 substring$ *
318   t #2 global.max$ substring$ 't :=
319 }
320 if$                      %%%
321 }
322 while$                   %%%
323 }

tie.or.space.connect \stackstring stringstring
If the second string has less than 5 characters, the two are tied together,
otherwise they are catenated with a space between them.

324 FUNCTION {tie.or.space.connect}
325 { duplicate$ text.length$ #5 <
326   { tie
327   }
328   { space
329   }
330 if$
331 swap$ * *
332 }

either.or.check \stackmsg fieldnull If field is not empty, give a warning appropriate for saying
this field and an already-existing field can't be both used in the same entry.

333 FUNCTION {either.or.check}
334 { empty$
335   'pop$
336   { "can't use both " swap$ * " fields in " * cite$ * warning$
337   }
338 if$
339 }

```

4.9 Queue functions START FIXING DOX HERE

Queue functions expect a string on the stack. If it is empty, and the field for which the function is named is nonempty, the string will be replaced with that field. (e.g., `author.q` will put “author” on the stack if “author” is nonempty and the `author.q` was passed an empty string). A chain of queue functions must begin with something on the stack, and will leave the first nonempty field named in the chain on the stack.

Queue functions also increment an integer variable, `j`, whenever they are passed an empty string. At the end of the queue, `j` tells us which function in the queue contributed the string that results at the end of the queue, starting with zero for the first queue function after `start.a.q`. In order for this to work, queue functions must always be called in the same order: “author (#0)”, “editor (#1)”, “organization (#2)”, and “key (#3)”. For entry types where a certain field should not appear in the queue, use ‘`blank.q`’ in its place in the order.

The value of `j` is consulted when setting `leaditem`, but not in other cases where queue functions are used.

`start.a.q` must begin a queue. It initializes `j` and passes an empty string to the first queue function.

```
start.a.q
340 FUNCTION {start.a.q}
341 { #-1 'j :=
342   ""
343 }

inc.j
key.q 344 FUNCTION {inc.j}
organization.q 345 { j #1 + 'j :=
  editor.q 346 }
  author.q 347
  blank.q 348 FUNCTION {key.q}
    349 { duplicate$ empty$
      350   { pop$           %%
        351     key field.or.null
        352     inc.j
      353   }
      354   'skip$           %%
      355   if$               %%
    356 }
  357
  358 FUNCTION {organization.q}
  359 { duplicate$ empty$
    360   { pop$           %%
      361     organization field.or.null
      362     inc.j
    363   }
    364   'skip$           %%
    365   if$               %%
  366 }
  367
  368 FUNCTION {editor.q}
  369 { duplicate$ empty$
```

```

370      { pop$          %%  

371          editor field.or.null  

372          inc.j  

373      }  

374      'skip$          %%  

375  if$          %%  

376 }  

377  

378 FUNCTION {author.q}  

379 { duplicate$ empty$  

380     { pop$          %%  

381         author field.or.null  

382         inc.j  

383     }  

384     'skip$          %%  

385  if$          %%  

386 }  

387  

388 FUNCTION {blank.q}  

389 { duplicate$ empty$  

390     'inc.j  

391     'skip$          %%  

392  if$          %%  

393 }

```

`check.q \stackstring-S warning-stringstring-S`

This should be the final queue command, though it is not a true queue command, since an extra warning string should be on the top of the stack above the string that has passed along the queue. The warning string should be an English disjunctive list of the queue commands that have come before it, so the user can tell which fields are missing. For example “author, organization, or key” if the queue has been `author.q 'blank.q' 'organization.q' key.q`.

If the queue string is empty, `check.q` issues the warning and puts on the stack an emergency string of the L^AT_EX key (i.e., `cite$`), which should allow BIBL^ET_EX to proceed.

```

394 FUNCTION {check.q}  

395 { 't :=  

396   duplicate$ empty$  

397     { pop$          %%  

398       cite$ format.clip 'u :=          %%  

399       "Need " t * " in " * cite$ * "; using: " * u * warning$  

400       u  

401       inc.j  

402     }  

403     'skip$          %%  

404  if$          %%  

405 }

```

4.10 Format functions dox

The format functions modify a string on the stack. They make no warnings, produce no output, and place no spaces or punctuation before or after their string, just modify it somehow.

4.11 Format names functions

`format.names.for.label` Format string on stack it to produce something appropriate for `label`.
 Comma usage examples in the *Chicago Manual*: “A et al.” and “A, B, et al.”
 The *Chicago Manual* recommends for labels: use up to 3 names, and above 3 use 1st + et al. When this would lead to ambiguity, use one of 3 solns: use all names, use as many as needed to disambiguate, or include a (short) title to disambiguate: (Zipursky et al., *Brief Title*, 1988).

The *Chicago Manual* does not appear to distinguish between “et al.” and “and others”. It’s possible to change the logic here to distinguish between the cases where the bibstyle is truncating the list of authors, and the case where “and others” appears in the `bib` file. But I’m not doing that now.

Labels:

FIX: this stuff not implemented yet 1 author	Foo
2 authors	Foo and Bar
3 authors	Foo, Bar, and Baz
4+ authors	Foo et al.
1+ author “and others”	Foo et al.

This function is probably more general than it needs to be, but it’s a nice model.

```

406 FUNCTION {format.names.for.label}
407 { 's :=
408   s num.names$ 'numnames :=                               %%
409   s #1 "{vv~}{ll}" format.name$                         %%
410   s numnames "{ff}{vv}{ll}{jj}" format.name$ "others" = %% 
411   numnames #3 >
412   or
413   % more than 3 names, or final name is "others"
414   { etal *
415   }
416   { numnames #1 - 'namesleft :=
417     #2 'nameptr :=
418 % WHILE
419 { namesleft #0 > }
420 { nameptr numnames =
421   % we're on the final name (and it's not "others")
422   { numnames #2 >
423 { comma *
424 }
425 'skip$      %%
426   if$      %%
427   " and " * s nameptr "{vv~}{ll}" format.name$ *      %%
428   }
429   % we're not on the final name (in this case: 2d of 3 names)
430   { comma * space *
431     s nameptr "{vv~}{ll}" format.name$ *                %%
432   }
433   if$      %%
434   nameptr #1 + 'nameptr :=
435   namesleft #1 - 'namesleft :=
436 }
437   while$      %%

```

```

438      }
439      if$           %%
440 }

format.names.lastfirst Pop a string containing a name list. Push a string with the first author last-name-first and subsequent authors first-name-first.

441 FUNCTION {format.names.lastfirst}
442 { 's :=
443   s num.names$ 'numnames :=    % numnames = num.name$(s);
444   numnames 'namesleft :=
445   #1 'nameptr :=              % nameptr = 1;
446   % WHILE
447   { namesleft #0 > }
448   { nameptr #1 =
449     { s nameptr "{vv~}{ll}{, jj}{, ff}" format.name$      %%
450     }
451     { comma *
452       s nameptr "{ff~}{vv~}{ll}{, jj}" format.name$ 't := %%$
453       nameptr numnames =
454       % final name
455       { t "others" =
456         { etal *
457         }
458         { " and " * t *
459         }
460         if$           %%
461       }
462       % names both precede and follow this name
463       { space * t *
464       }
465       if$           %%
466     }
467     if$           %%
468     nameptr #1 + 'nameptr :=      % nameptr += 1;
469     namesleft #1 - 'namesleft := % namesleft -= 1;
470   }
471   while$           %%
472 }

format.names.firstfirst Same as format.names.lastfirst but all names are first name first.

473 FUNCTION {format.names.firstfirst}
474 { 's :=
475   s num.names$ 'numnames :=    % numnames = num.name$(s);
476   numnames 'namesleft :=
477   #1 'nameptr :=              % nameptr = 1;
478   % WHILE
479   { namesleft #0 > }
480   { s nameptr "{ff~}{vv~}{ll}{, jj}" format.name$ 't := %%$
481     nameptr #1 =
482     't
483     { nameptr numnames =
484       % final name
485       { numnames #2 >
486         { comma *

```

```

487          }
488          'skip$           %%
489          if$             %%
490          t "others" =
491          { etal *
492          }
493          { " and " * t *
494          }
495          if$             %%
496          }
497          % names both precede and follow this name
498          { comma * space * t *
499          }
500          if$             %%
501          }
502          if$             %%
503          nameptr #1 + 'nameptr :=      % nameptr += 1;
504          namesleft #1 - 'namesleft :=    % namesleft -= 1;
505          }
506  while$           %%
507 }

```

4.12 Make functions

Make functions expect nothing on the stack, and leave one string there. Any side effects of setting global variables are noted in the comments. If a nonempty string cannot be made due to lack of the right fields, leave an empty one on the stack.

make.annotation Annotations can be omitted by nullifying the `SCannotation` environment.

```

508 FUNCTION {make.annotation}
509 { annotation empty$      %%
510   { ""
511   }
512   { "\begin{SCannotation}"
513     annotation *
514     "\end{SCannotation}" *
515   }
516   if$      %%
517 }

```

make.edition We use some logic here because we want to use the ‘‘seriesedition’’ for the ‘‘edition’’ in certain cases.

```

518 FUNCTION {make.edition}
519 { edition empty$           %%
520   { seriesedition empty$ not series field.or.null title field.or.null = and %% 
521     { seriesedition
522     }
523     { ""
524     }
525     if$      %%
526   }
527   { edition
528   }

```

```

529   if$                                %%
530 }

make.year.month  Make a year string. We don't we use year.label because that string is sterilized
make.year.nomonth to make it appropriate for use in running text in citations (and for sorting I think);
in the bibliography entry, we can be a little more lax, accepting special characters,
and text that is not simply four numerals.

```

```

531 FUNCTION {make.year.month}
532   { year empty$                      %%
533     { ""
534     }
535     { year year.label.tag *          %%
536 month empty$                      %%
537   'skip$                            %%
538   { comma * space * month *        %%
539     }
540 if$                                %%
541   }
542   if$                                %%
543 }

544 FUNCTION {make.year.nomonth}
545 { year empty$                      %%
546   { ""
547   }
548   { year year.label.tag *          %%
549   }
550   if$                                %%
551 }

```

`make.year.or.oyear.month` Push a string with year information. If ‘‘oyear is empty, call `make.year.month`. Warn in the almost-certainly-erroneous case of an ‘‘oyear without a ‘‘year.

```

552 FUNCTION {make.year.or.oyear.month}
553 { oyear empty$                      %%
554   { make.year.month
555   }
556   { year empty$                      %%
557     { "oyear without year in " cite$ * warning$
558     }
559     'skip$                            %%
560   if$                                %%
561   oyear year.label.tag *
562   month empty$                      %%
563   'skip$                            %%
564 { comma * space * month *
565   }
566   if$                                %%
567   }
568   if$                                %%
569 }

```

`make.leaditem.with.tags` Push `leaditem` and if it's an editor, include a nice taggy.

```

570 FUNCTION {make.leaditem.with.tags}
571 { leaditem

```

```

572   principal-type editor.ptype =
573     { editor num.names$ #1 >           %%
574   { ",~eds." *
575 }
576 { ",~ed." *
577 }
578   if$           %%
579   }
580   'skip$         %%
581   if$           %%
582 }
```

make.editors.secondary Give editors' names when not for the leaditem.

```

583 FUNCTION {make.editors.secondary}
584 { editor empty$           %%
585   { ""
586   }
587   { output.state after.sentence =
588     output.state after.block = or
589     { "E"
590     }
591     { "e"
592     }
593     if$           %%
594     "dited by " * editor format.names.firstfirst *
595   }
596   if$           %%
597 }
```

make.bookauthors.secondary This is for making authors' names that follow a title. When we use this, we are only going to be interested in the " bookauthor.

```

598 FUNCTION {make.bookauthors.secondary}
599 { bookauthor empty$           %%
600   { ""
601   }
602   { output.state after.sentence =
603     output.state after.block =
604     or
605     { "B"
606     }
607     { "b"
608     }
609     if$           %%
610     "y " * bookauthor format.names.firstfirst *
611   }
612   if$           %%
613 }
```

make.translators Translators and illustrators are always secondary, until I write some extensions.

```

make.illustrators 614 FUNCTION {make.translators}
615 { translator empty$           %%
616   { ""
617   }
618   { output.state after.sentence =
```

```

619      output.state after.block =
620      or
621      { "T"
622      }
623      { "t"
624      }
625      if$           %%
626      "ranslated " *
627      flanguage empty$           %%
628      'skip$           %%
629      { "from the " * flanguage * space *
630      }
631      if$           %%
632      "by " * translator format.names.firstfirst *
633      }
634      if$           %%
635  }
636
637 FUNCTION {make.illustrators}
638 { illustrator empty$           %%
639     { ""
640     }
641     {   output.state after.sentence =
642       output.state after.block =
643       or
644       { "I"
645       }
646       { "i"
647       }
648       if$           %%
649       "llustrated by " * illustrator format.names.firstfirst *
650     }
651     if$           %%
652  }

make.booktitle.ital  FIX: multilingual
make.title.ital 653 FUNCTION {make.title.ital}
make.as.ftitle.ital 654 { title field.or.null italicize
655 }
656
657 FUNCTION {make.booktitle.ital}
658 { booktitle field.or.null italicize
659 }
660
661 FUNCTION {make.as.ftitle.ital}
662 { ftitle empty$           %%
663     { ""
664     }
665     { "as " ftitle italicize *
666     }
667     if$           %%
668  }

make.title.inquotes  Put the title in quotes on the stack. \Wrapquotes is going to properly handle

```

punctuation that follows the closing quotation marks by sucking it inside the quotes. FIX: make generic function `format.wrapquotes?` like `format.emphasize?`
 FIX: make all those function that transform a string on the stack into “format” functions.

```

669 FUNCTION {make.title.inquotes}
670 { title empty$                      %%
671   { ""
672   }
673   {
674     "\Wrapquotes{" title * "}" *
675   }
676   if$                                %%
677 }

678 FUNCTION {make.pages}
679 { pages empty$                      %%
680   { ""
681   }
682   { pages format.n.dashify
683   }
684   if$                                %%
685 }

```

`make.vol.series.num.month.pages`

For articles, the number of cases to handle these fields is very large: 32 to do it properly! These cases could perhaps be collapsed, but it is going to be much easier to read here and to maintain if we do it brutishly by elaborating each case. The only exception I’ve made is when two adjacent leaves are very similar. The way I’ve laid out this funciton here, adjacent leaves are going to be the pairs of cases with and without a nonempty “pages”.

There are 5 relevant fields, each of which can be empty or not ($2^5 = 32$). In the comments below, I mark each case with a series of 1 to 5 letters represent the cases where that field is nonempty: V for “volume”, S for “series”, N for “number”, M for “month”, and P for “pages”. Thus, the case marked with the comment **SMP** is the one where the “series”, “month”, and “pages” fields are nonempty, and “volume” and “number” are empty.

FIX: when I use `make.pages` in this function, it’s slightly inefficient, since `make.pages` does a check for empty pages which is unnecessary here.

FIX: this does not yet handle entries with nonempty “series”.

FIX: go through and combine adjacent leaves.

We could really put the punctuation that should precede this unit right at the beginning of the string we’re making here, but let’s conform better to the conventions and put this in the scratch variable ‘`u` instead. I don’t think this function will ever get called at any time other than mid-sentence, after the journal title, but who knows. So a call to this function should look like:

`make.vol.series.num.month.pages u output`

Remember that when `output.internal` writes the punctuation, it adds a space following, so it is unnecessary to begin the string this function returns with a space. (Occasionally below, we want (and produce) a colon followed by no space; we can do this because we are directly creating this string, not using the `output` routine.)

686 FUNCTION {make.vol.series.num.month.pages}

```

687 { volume empty$                      %%
688     { series empty$                   %%
689         { number empty$              %%%
690         { month empty$               %%%
691 { pages empty$                      %%%
692             % none of VSNMP
693     { space 'u :=                  """
694             """
695     }
696             % P
697     { comma 'u :=                  multipage.p
698             { "pp." pages format.n.dashify
699     }
700 }
701             { "p." pages
702 }
703             if$                      %%
704             tie.or.space.connect
705     }
706     if$                      %%
707 }
708 { pages empty$                      %%
709             % M
710     { comma 'u :=                  month
711             }
712             % MP
713     { comma 'u :=                  month comma * space * make.pages *
714             }
715             }
716     if$                      %%
717 }
718 }
719     if$                      %%
720     }
721     { month empty$               %%
722 { pages empty$                      %%
723             % N
724     { comma 'u :=                  "no." number tie.or.space.connect
725             }
726             % NP
727     { comma 'u :=                  "no." number colon * make.pages * tie.or.space.connect
728             }
729             }
730     if$                      %%
731 }
732 }
733 { pages empty$                      %%
734     % NM
735     { comma 'u :=                  "no." number tie.or.space.connect
736             space * month parenthesize *
737             }
738             % NMP
739     { comma 'u :=

```

```

741           "no." number tie.or.space.connect
742           space * month parenthesize *
743           colon * space * make.pages *
744       }
745   if$           %%
746 }
747   if$           %%
748 }
749   if$           %%
750 }
751   { number empty$           %%
752   { month empty$           %%%
753 { pages empty$           %%%
754   % S
755   {
756 }
757   % SP
758   {
759 }
760   if$           %%
761 }
762 { pages empty$           %%
763   % SM
764   {
765 }
766   % SMP
767   {
768 }
769   if$           %%
770 }
771   if$           %%
772 }
773   { month empty$           %%
774 { pages empty$           %%%
775   % SN
776   {
777 }
778   % SNP
779   {
780 }
781   if$           %%
782 }
783 { pages empty$           %%
784   % SNP
785   {
786 }
787   % SNMP
788   {
789 }
790   if$           %%
791 }
792   if$           %%
793 }
794   if$           %%

```

```

795      }
796      if$           %%
797      }
798      { series empty$          %%
799      { number empty$          %%%
800      { month empty$          %%%
801 { pages empty$             %%%
802      % V
803      { comma 'u :=          "vol." volume tie.or.space.connect
804                                         }
805      % VP
806      { space 'u :=          volume colon * make.pages *
807                                         }
808                                         }
809      }
810      if$           %%
811 }
812 { pages empty$             %%
813      % VM
814      { comma 'u :=          "vol." volume tie.or.space.connect
815                                         }
816                                         space * month parenthesize *
817      }
818      % VMP
819      { space 'u :=          volume space *
820                                         }
821                                         month parenthesize * colon * space * make.pages *
822      }
823      if$           %%
824 }
825      if$           %%
826      }
827      { month empty$          %%
828 { pages empty$             %%
829      % VN
830      { space 'u :=          volume ", no." number tie.or.space.connect *
831                                         }
832      }
833      % VNP
834      { space 'u :=          volume space *
835                                         }
836                                         number parenthesize * colon * space * make.pages *
837      }
838      if$           %%
839 }
840 { pages empty$             %%
841      % VNM
842      { space 'u :=          volume ", no." number tie.or.space.connect *
843                                         }
844                                         space * month parenthesize *
845      }
846      % VNMP
847      { space 'u :=          volume space * number parenthesize * colon * space *
848                                         
```

```

849          make.pages * space * month parenthesize *
850      }
851      if$           %%
852  }
853      if$           %%
854  }
855      if$           %%
856  }
857      { number empty$           %%
858      { month empty$           %%%
859  { pages empty$           %%%
860      % VS
861      {
862  }
863      % VSP
864      {
865  }
866      if$           %%
867  }
868  { pages empty$           %%%
869      % VSM
870      {
871  }
872      % VSMP
873      {
874  }
875      if$           %%
876  }
877      if$           %%
878  }
879  { month empty$           %%%
880  { pages empty$           %%%
881      % VSN
882      {
883  }
884      % VSNP
885      {
886  }
887      if$           %%
888  }
889  { pages empty$           %%%
890      % VSNM
891      {
892  }
893      % VSNMP
894      {
895  }
896      if$           %%
897  }
898      if$           %%
899  }
900      if$           %%
901  }
902      if$           %%

```

```

903      }
904      if$                                %%
905 }

make.crossref
906 FUNCTION {make.crossref}
907 { "\citeNP{" crossref * "}" *
908 }

output.series.number Outputs the number with appropriate capitalization. Warns if we also have
nonempty ‘seriesedition’.
909 FUNCTION {output.series.number}
910 { series empty$                      %%
911   { number empty$                      %%
912     { ""                                %%
913     }                                %%
914     { "Can't use 'number' without 'series' in " cite$ * warning$ %%
915     ""                                %%
916   }
917   if$                                %%
918 }
919   { number empty$                      %%
920 { series
921   seriesedition empty$                %%
922   'skip$                                %%
923   { comma output
924     new.block
925     seriesedition
926   }
927   if$                                %%
928 }
929 { series space *
930   "no." *
931   number tie.or.space.connect
932 "number and seriesedition" seriesedition either.or.check
933 }
934   if$                                %%
935 }
936   if$                                %%
937   comma output
938 }

output.volume.series The ‘series’ is not required. FIX: why do we output stuff here? can't we use a
make function like elsewhere?
939 FUNCTION {output.volume.series}
940 { volume empty$                      %%
941   { ""                                %%
942   }
943   { "Volume" volume tie.or.space.connect
944   series empty$                      %%
945   'skip$                                %%
946   { " of " * series italicize *
947     seriesedition empty$                %%
948     'skip$                                %%

```

```

949         { comma.output
950             new.block
951                 series.edition
952             }
953         if$           %%
954     }
955     if$           %%
956     "volume and number" number either.or.check
957   }
958   if$           %%
959   comma.output
960 }

```

`make.chapter.of` To say for example “Part 3” instead of “Chapter 3”, put “Part” into the “type” field, and the number and the preposition into the “chapter” field, e.g., “3 of”. A tie is automatically put in between the “type” field and the “chapter” field in this case. We can’t make a decision based on the length of the “chapter” field when it’s going to contain the preposition.

OK, putting the preposition in the chapter field doesn’t work out when you do crossreferences. So let’s try “of” as a general preposition.

```

961 FUNCTION {make.chapter.of}
962 { chapter empty$      %%
963   { ""
964   }
965   { type empty$      %%
966     { "Chapter"
967     }
968     { type "t" change.case$      %%
969     }
970   if$           %%
971   chapter tie.or.space.connect
972   " of " *
973 }
974 if$           %%
975 }

```

`make.chapter`

```

976 FUNCTION {make.chapter}
977 { chapter empty$      %%
978   { ""
979   }
980   { type empty$      %%
981     { "Chapter"
982     }
983     { type "t" change.case$      %%
984     }
985   if$           %%
986   chapter tie.or.space.connect
987 }
988 if$           %%
989 }

```

`make.number.tr`

```

990 FUNCTION {make.number.tr}
991 { type empty$                      %%
992   { "Technical Report"
993   }
994   { type "t" change.case$           %%
995   }
996   if$                                %%
997   number empty$                      %%
998   'skip$                             %%
999   { number tie.or.space.connect
1000   }
1001   if$                                %%
1002 }

```

4.13 Label and principal field functions

`calc.labels` Set `label` and `year.label` from the original database. Set `leaditem`. For reference from above: “author (#0) “editor (#1), “organization (#2), and “key (#3).

FIX: NOTE: the entry-type functions (and specifically its subroutines like `make.authors`) are going to assume that bibentry contains the right field as calculated by

format the string on the stack based on the GLOBAL (not entry) variable `j` (= `bibentry.type`)

confusion here over terminology. `bibentry` and `leaditem` are the same thing, but it is also the basis for calculating the label. let's call the most important field for each type the PRINCIPAL field. this will be put into the lead position in the `bibentry` and also be massaged into the label. FIX: new idea, start using it leaves a string on the stack based on `TYPE`; the string is the first non-empty relevant field for the type, or an emergency substitution as supplied by `check.q`. FIX: `end.the.q?` would emergency be a 5th type that the `format.principal-field` functions should recognize?

Yes, `check.q` will put full cite-string on as emergency and set `principal-type` accordingly.

FIX: ensure proper warnings if we are not getting something good in `principal-field`.

```

1003 FUNCTION {set.principal-field.principal-type}
1004 {   type$ "book" =                      %%
1005   type$ "inbook" =                     %%
1006   or
1007   { start.a.q
1008     author.q
1009     editor.q
1010     blank.q
1011     key.q
1012     "author, editor, or key for entry type " type$ * check.q      %%
1013   }
1014   { type$ "proceedings" =                %%
1015     { start.a.q
1016       blank.q
1017       editor.q
1018       organization.q

```

```

1019      key.q
1020      "editor, organization, or key for entry type " type$ * check.q    %%
1021  }
1022 { type$ "manual" =                      %%
1023   { start.a.q
1024     author.q
1025     blank.q
1026     organization.q
1027     key.q
1028     "author, organization, or key for entry type " type$ * check.q    %%
1029   }
1030   % for all other entry types
1031   { start.a.q
1032     author.q
1033     blank.q
1034     blank.q
1035     key.q
1036     "author or key for entry type " type$ * check.q      %%
1037   }
1038   if$                      %%
1039   }
1040   if$                      %%
1041   }
1042   if$                      %%
1043 'principal-field :=
1044 j 'principal-type :=
1045 }
1046
1047 % TRUE if we've got \evar{principal-type} of \gvar{organization.ptype} and
1048 % nonempty \field{key} and entry type of \entry{manual} or \entry{proceedings}.
1049 FUNCTION {key.special.p}
1050 {   type$ "manual" =          %%
1051 type$ "proceedings" =        %%
1052   or
1053   principal-type organization.ptype =
1054   and
1055   key empty$ not          %%
1056   and
1057 }
1058
1059 FUNCTION {make.leaditem}
1060 { key.special.p
1061   % is \field{key} all-caps?
1062   { key duplicate$ "u" change.case$ =
1063     % if so, key is assumed to be an acronym FIX; should I warn what we're doing?
1064     { key "(" * organization * ")" *
1065     }
1066     % if not, key is assumed to be an initial prefix (abbreviation) of organization
1067     % for use only in the label
1068     { organization
1069     }
1070   if$          %%
1071   }
1072 { principal-field

```

```

1073 principal-type author.ptype =
1074 principal-type editor.ptype =
1075     or
1076 { format.names.lastfirst
1077 }
1078 % organization, key, or emergency ptype
1079 'skip$           %%
1080     if$           %%
1081 }
1082     if$           %%
1083 }
1084
1085 FUNCTION {make.label.from.principal-field}
1086 { principal-field
1087     principal-type author.ptype =
1088     principal-type editor.ptype =
1089     or
1090     { format.names.for.label
1091 }
1092     % organization, key, or emergency
1093     'skip$           %%
1094     if$           %%
1095 }
1096
1097 FUNCTION {make.label}
1098 { key.special.p
1099     { key
1100 }
1101     { make.label.from.principal-field
1102 }
1103     if$           %%
1104 }

```

`format.names.for.sort \stack<list of names><list of names suitable for sorting>`

FIX: add dox here about how bibtex sorts, and the spaces strategy.

- 1 between tokens
of a name part
(word-by-word
method; only af-
ter first-name's
initials in letter-
by-letter)
- 2 between name-
parts in a name
(but consider
'von' and 'last'
one name-part)
- 3 between names
in a name list
- 4 between other
sort levels, such
as names and
years

We don't bother to `format.sortify.clip`, just do

that once before assignment to the sort.key.

Chicago Manual specifies all names should be given in the bibliography. FIX ref. So the *Chicago Manual* doesn't tell us how to handle the conventional "and others" that might be in the database. We handle it by proceeding on the assumption that "and others" always means the total names are more than 3, so we want to alphabetize these entries after all those with 1, 2, or 3 names. We do this by turning "and others" into a pseudo-name that will sort later than any real name (i.e., we insert a lot of z's).

The commented-out format is doing word-by-word alphabetization as defined §17.97 with the exception of hyphens. `purify$` turns hyphens into spaces, so hyphens are word boundaries, unlike slashes and apostrophes, which are suppressed. The *Chicago Manual* says hyphens should be suppressed like slashes and apostrophes, so we need to remove them with `format.dehyphen` before we `purify$`.

The *Chicago Manual* prefers letter-by-letter alphabetization, which is what the active code below does. We suppress spaces between tokens of a name part. We need to remove hyphens as explained above.

NOTE: We could therefore change our delimiters all down by one, since single space delimiters are no longer used, but I think there is no harm in starting with a 2-space delimiter, and this lets us change back and forth easily.

FIX: §17.100 names with initials in place of given names should precede those names which are spelled out. "J. Robert" before "James N." and "K. T." before "Keven S.". This is not consistent with the letter-by-letter method (it is with word-by-word). So, we want to insert a space after first-name tokens of length 1. How do we do that!?

FIX: do we need special handling for names with Saint, Mac, Mc, and M' §17.107–109?

```
1105
1106 % FIX: NOTE: \builtin{empty} returns TRUE if string contains no non-whitespace chars
1107 % FIX: other whitespace to check for?
1108
1109 % pop string, push its length not counting special chars as one char
1110 FUNCTION {length}
1111 { 'u :=
1112 % u "taking length of" debugval
1113 #0 'len :=
1114 % WHILE
1115 { u "" = not }
1116 { len #1 + 'len :=
1117     u #2 global.max$ substring$ 'u :=
1118 }
1119 while$      %%
1120 len
1121 % len int.to.str$ "      length is" debugval      %%
1122 }
1123
1124
1125 % FIX: a special+ char begins with a |{\|} and continues through the next |}|.
1126 % \BibTeX{}'s "special character" is the same but only at brace level~0.
1127 % When we're stepping through a string, and we don't keep track of the brace
1128 % level, then those functions that recognize special chars are not going to
1129 % know the brace level, they will see every special+ char as a special char.
1130
```

```

1131 % pop string, push its first char counting special chars as one char
1132 % treat braces normally unless they are the start of a special char
1133 %
1134 % don't use \function{and} here for efficiency
1135 FUNCTION {head}
1136 { 'w :=
1137   w #1 #1 substring$      %%
1138   duplicate$ "{" =      %%
1139   { w #2 #1 substring$ "\\" =      %%
1140     { pop$      %%
1141       w #1 text.prefix$      %%
1142     }
1143     'skip$    %%
1144     if$      %%
1145   }
1146   'skip$    %%
1147   if$      %%
1148 }
1149
1150 % FIX: using 'and' and 'or' requires calculation of both where nested branches
1151 % would not; see where this will help.
1152
1153 % pop string, push string without its first char, counting special chars as one char
1154 FUNCTION {behead}
1155 { 'u :=
1156 % u "beheading before" debugval
1157   u
1158   u head length #1 +
1159   global.max$      %%
1160   substring$      %%
1161 % duplicate$ "beheading after" debugval    %%
1162 }
1163
1164 FUNCTION {behead.t}
1165 { t behead 't :=
1166 }
1167
1168 FUNCTION {format.dehyphen}
1169 { 't :=
1170 % t "dehyphen before" debugval
1171   ""
1172   % WHILE
1173   { t "" = not }
1174   { t head
1175     duplicate$ hyphen =
1176     { pop$      %%
1177     }
1178     { *
1179     }
1180     if$      %%
1181     behead.t
1182   }
1183   while$      %%
1184 % duplicate$ "dehyphen after" debugval    %%

```

```

1185 }
1186
1187 % \builtin{text.length}: replace string on stack with its length, special chars count
1188 % as 1 char, don't count braces.
1189
1190 % \builtin{text.prefix}: like \builtin{substring} but count special chars as 1 char, don't
1191 % count braces, and supply a missing closing brace for a special-char. also,
1192 % have to always start at \'#1.
1193
1194 % FIX: does \manual intend to skip over en-dash and em-dash? these could occur
1195 % in titles. For the moment I will remove them too, but not in special chars.
1196 % look at \function{format.n.dashify} to be able to distinguish hyphens from
1197 % the dashes.
1198
1199 FUNCTION {format.dehyphen.dewhitespace}
1200 { 't :=
1201 % t "dehyphen.dewhitespace before" debugval
1202   ""
1203   % WHILE
1204   { t "" = not }
1205   { t head
1206     duplicate$                      %%
1207     duplicate$ hyphen =             %%
1208     swap$ empty$
1209   or
1210   { pop$                         %%
1211   }
1212   { *
1213   }
1214   if$                           %%
1215   behead.t
1216   }
1217   while$                         %%
1218 %  duplicate$ "dehyphen.dewhitespace after" debugval      %%
1219 }
1220
1221 FUNCTION {format.names.for.sort}
1222 { 's :=
1223   #1 'nameptr :=
1224   s num.names$ 'numnames :=          %%
1225   numnames 'namesleft :=
1226   % WHILE
1227   { namesleft #0 > }
1228   {
1229     % NOTE: order or name-parts ought to follow that used for leaditem
1230     % word-by-word alphabetization:
1231 %     s nameptr "{vv{ } }{ll{ }}{ jj{ }}{ ff{ }}" format.name$      %%
1232     % letter-by-letter alphabetization, no attention to initials:
1233 %     s nameptr "{vv{} }{ll{} }{ jj{} }{ ff{} }" format.name$        %%
1234     % letter-by-letter alphabetization, with first initials exception:
1235     s nameptr "{vv{} }{ll{} }{ jj{} }" format.name$                %%
1236
1237
1238

```

```

1239 % Each first-name token of the form of an initial ("L.") will be followed by a
1240 % space but other spaces will be removed.
1241
1242 % Algorithm: step through looking for space, which terminates name tokens,
1243 % adding non-spaces to an accumulator on the stack as we go.
1244 % When we find a space, look at the accumulator (a whole name token).
1245 % If it's length is 2 and 2d char is a period, we've got an initial, so
1246 % add the space to the accumulator. If not, throw away the space
1247 % and step on looking for another name.
1248
1249 % FIX: would it be simpler to replace periods with spaces?
1250 %      would a period ever appear in a first-name when not an initial?
1251 %      Rev.? Col.? These should be alphabetized as spelled out, prob.
1252 %      but need to check \manual
1253
1254 %      duplicate$ "beginning of initials funniness; last-part is" debugval %%
1255
1256 s nameptr "{fff{ } }" format.name$ 't :=      %%
1257 % t is "F1 F2 F3 ... FN " or empty
1258
1259 %      t "initial t" debugval
1260
1261 t empty$      %%
1262 'skip$      %%
1263 { delimiter.name-part *
1264     ""          % accumulator
1265     % WHILE
1266     { t "" = not }
1267     { t head
1268 %         duplicate$ "stepping. t is [" t * "] and head is" * debugval %%
1269         duplicate$ empty$
1270         % last char will always be a space
1271         % accumulator contains whole name token
1272         { pop$      %% throw space away for now; top of stack is now accumulator
1273             duplicate$ "found a space; accumulator is" debugval %%
1274             duplicate$ %%
1275             duplicate$ text.length$ #2 =      %    2 chars long
1276             swap$ behead head period =      %%    2d char is period
1277             and
1278             % name token in accumulator is an initial, so add a space to it
1279             { space *
1280                 duplicate$ "found an initial" debugval %%
1281             }
1282             % name token in accumulator is not an initial
1283             'skip$      %%
1284             iff$      %%
1285             % in either case, concatenate the accumulator the name on the
1286             % stack and initialize it again
1287             duplicate$ "adding to name" debugval %%
1288             * ""
1289         }
1290         % accumulator contains partial name token
1291         % add t's head (not a space) to accumulator
1292     { *

```

```

1293         }
1294         if$      %%
1295         behead.t
1296         }
1297         while$      %%
1298         % we always end up with an empty string on the stack
1299         pop$      %%
1300         duplicate$ "formatted first-name is" debugval %%
1301         s nameptr "{ff}{vv}{ll}{jj}" format.name$ "it came from" debugval %%
1302     }
1303     if$      %%
1304     duplicate$ "end of initials funniness; stack has" debugval %%$
1305
1306     format.dehyphen
1307     't :=
1308     % t now contains one name of a namelist
1309     nameptr #1 =
1310     { t
1311     }
1312     { delimiter.name *
1313     nameptr numnames =
1314     t "others" =
1315     and
1316     { "zzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzz"
1317     }
1318     { t *
1319     }
1320     if$      %%
1321   }
1322   if$      %%
1323   nameptr #1 + 'nameptr :=  

1324   namesleft #1 - 'namesleft :=  

1325   }
1326   while$      %%
1327 }
```

FIX: should be able to share code with `make.leaditem.with.tags`

We don't bother to `format.sortify.clip`, just do that once before assignment to the '`sort.key$`'.

```

1328 FUNCTION {make.principal-field.for.sort} % FIX: note: leaditem must already be set
1329 {  principal-type author.ptype =
1330   principal-type editor.ptype =
1331   or
1332   { principal-field format.names.for.sort
1333   }
1334   { principal-type emergency.ptype =
1335     { principal-field
1336     }
1337     % organization.ptype, key.ptype, including both key.special cases
1338     % leaditem is the same as principal-field except in the key.special
1339     % cases, when we do want the leaditem not the principal-field
1340 { leaditem
1341   % letter-by-letter alphabetization:
1342     format.dehyphen.dewhitespace
```

```

1343      }
1344      if$      %%
1345    }
1346  if$      %%
1347 }

```

4.14 Begin and end entries

`begin.entry` Begin an entry.

```

1348 FUNCTION {begin.entry}
1349 { output.begin
1350   output.bibitem
1351 }

```

`finish.entry` Conclude an entry. `\stackstringnull`

```

1352 FUNCTION {finish.entry}
1353 { add.period$           %%
1354   output.end
1355   newline$               %%
1356   make.annotation write$ %%
1357 }

```

4.15 Entry types

4.15.1 Article

`article` An article from a journal or magazine. Required: “author,” “title,” “journal,” “year.” Optional: “volume,” “number,” “pages,” “month,” “note.” Title quoted.

FIX: this is not true any more. hmm, which warnings to give? Warnings given for no “pages; no “volume or “number; and “number but no “volume. It’s a drag, but the latter warning should remain there. The reason is that this bibstyle will produce a very misleading entry if you mistakenly omit the volume and give a number for a journal.

FIX: this is the old def of article, following output of title through end of crossref conditional.

```

      volume field.or.null
%   \end{macrocode}
% One item (the volume) is on the stack now. Each of the four cases in the
% following conditionals should leave a second item on the stack.
%   \begin{macrocode}
      number empty$           %%
      { volume empty$           %%
        { "empty volume and number in " cite$ * warning$
          ""
        }
      { colon
      }
      if$           %%
      }
      { volume empty$           %%
        { "number but no volume in " cite$ * warning$
      }
%   \end{macrocode}

```

```

% FIX when a journal has no volume but a number, there should be a comma after
% the journal, a space and then "no. n:ppp". But we have already said
% "space output" after the journal name, no doubt. So we have to make this
% decision earlier.
%   \begin{macrocode}
      "\unskip, no." tie * number * colon *
    }
    { "(" number * ")" * tie.or.space.connect
%   \end{macrocode}
% FIX: I don't think this is handling the case without pages right -- there
% will be a colon with nothing following. I could save either colon or
% colon+space in a variable, and slap it on before the pages if there are pages
% and leave it off if there are no pages. Hmm, no: see \manaul 15.215
% for how to handle missing pages. Not easy.
%
% Now there's just one item (the volume) on the stack, so leave the following
% as the second item.
%   \begin{macrocode}
      colon space *
    }
    if$ *
  }
  if$ *
  make.pages "pages" check.empty *
  space output
  month parenthesize space output

```

A crossref from an article says "See this, pages xxx." See *Chicago Manual* 16:107 for this peculiar bit about the spacing after the colon.

```

1358 FUNCTION {article}
1359 { begin.entry
1360   make.leaditem.with.tags space output
1361   new.block
1362   make.year.nomonth "year" check.empty space output
1363   new.block
1364   make.title.inquotes "title" check.empty space output
1365   new.block
1366   crossref empty$                               %%
1367   { journal italicize "journal" check.empty space output
1368     series empty$                                %%
1369     'skip$                                     %%
1370   { "AChicago can not yet handle nonempty series! in " cite$ * warning$
1371   }
1372   if$                                         %%
1373   volume empty$ number empty$ month empty$ pages empty$ and and and
1374   { "empty volume, number, month, and pages in " cite$ * warning$
1375   }
1376   'skip$                                     %%
1377   if$                                         %%

```

FIX: take this out when we finish `make.vol.series`.

```

1378   { "empty volume, number, month, and pages in " cite$ * warning$
1379   }
1380   if$                                         %%
1381   volume empty$ number empty$ month empty$ pages empty$ and and and
1382   { "empty volume, number, month, and pages in " cite$ * warning$
1383   }
1384   'skip$                                     %%
1385   if$                                         %%

```

See definition of `make.vol.series.num.month.pages` for why we set `u` in that function.

```

1378      make.vol.series.num.month.pages u output
1379  }

```

Unusual case where you are probably citing one journal issue and numerous articles within it, so you have one entry for the issue itself, and others referring to it. Perhaps there are other cases, but I think what's right here is to give the crossref and only the pages.

```

1380  { "In " make.crossref * space output
1381      make.pages "pages" check.empty comma output
1382  }
1383  if$                                %%
1384  new.block
1385  note space output
1386  finish.entry
1387 }

```

4.15.2 Book

```

book
1388 FUNCTION {book}
1389 { begin.entry
1390  make.leaditem.with.tags comma output
1391  new.block
1392  make.year.or.oyear.month "year" check.empty comma output
1393  new.block
1394  make.title.ital "title" check.empty comma output
1395  new.block
1396  make.edition comma output
1397  new.block
1398  crossref empty$                      %%
1399  { volume empty$                      %%
1400      { output.series.number
1401      }
1402      { output.volume.series
1403      }
1404  if$                                 %%
1405  editor empty$ author empty$ or
1406  'skip$                               %%
1407  { new.block
1408      make.editors.secondary comma output
1409  }
1410  if$                                 %%
1411  new.block
1412  make.translators comma output
1413  new.block
1414  make.illustrators comma output
1415  new.block
1416  oyear empty$                      %%
1417  { address comma output
1418      publisher "publisher" check.empty colon output
1419  }
1420  { oaddress comma output
1421      opublisher "opublisher" check.empty colon output
1422      new.block

```

```

1423      "Reprint" comma output
1424      address field.or.null comma output
1425      publisher "publisher" check.empty
1426      address empty$                                %%
1427          { comma
1428          }
1429          { colon
1430          }
1431      if$                                         %%
1432      output
1433      year "year" check.empty comma output
1434  }
1435  if$                                         %%
1436  }
1437  { volume empty$                                %%
1438      { "In "
1439      }
1440      { "Volume" volume tie.or.space.connect
1441          " of " *
1442      }
1443      if$                                         %%
1444      make.crossref * comma output
1445  }
1446  if$                                         %%
1447  new.block
1448  yearcomp empty$                                %%
1449  'skip$                                         %%
1450  { "Composed in " yearcomp *
1451      comma output
1452      new.block
1453  }
1454  if$                                         %%

```

The ‘‘fyear must be nonempty to get any information about the first-published edition,

The ‘‘fpublisher, ‘‘faddress, and ‘‘flanguage can be empty in any combination. They are all ignored if ‘‘fyear is empty, except for possibly ‘‘flanguage, which will be given with the translator if ‘‘translator is nonempty.

```

1455  fyear empty$
1456  'skip$
1457  { "First published "
1458      translator empty$ flanguage empty$ not and
1459      { "in " * flanguage * space *
1460      }
1461      'skip$ 
1462  if$ 

```

If ‘‘ftitle is empty, there will be a harmless? extra space. FIX: surely i can fix that...

```

1463  make.as.ftitle.ital * space output
1464  faddress empty$ fpublisher empty$ not and
1465      { "by "
1466      }
1467      { "in "
1468      }

```

```

1469 if$ %$
1470 space output
1471 faddress space output
1472 fpublisher
1473 faddress empty$ %$
1474 { space
1475 }
1476 { colon
1477 }
1478 if$ %$
1479 output
1480 fyear
1481 faddress empty$ fpublisher empty$ and
1482 { space
1483 }
1484 { comma
1485 }
1486 if$ output %$
1487 new.block
1488 }
1489 if$ %$
1490 note comma output
1491 finish.entry
1492 }

```

4.15.3 Inbook

inbook *Chicago Manual* doesn't seem to recognize parts of a book without their own titles. We make up our own version, moving the chapter and page information from the end of the ‘‘booktitle’’ to the beginning.

```

1493 FUNCTION {inbook}
1494 { begin.entry
1495   make.leaditem.with.tags comma output
1496   new.block
1497   make.year.or.oyear.month "year" check.empty comma output
1498   new.block

```

We store an extra copy of `make.chapter.of` in the variable `u` here, so that we know whether to put pages or not after the ‘‘title sentence (with editors, and so on).’’

```

1499 crossref empty$ %$
1500 { make.chapter.of
1501   duplicate$ 'u := %$
1502   duplicate$ empty$ %$
1503   { pop$ %$
1504     pages empty$ %$
1505     { "empty chapter, type, and pages in " cite$ * warning$
1506       "In "
1507     }
1508     { "Pages " make.pages * " in " *
1509     }
1510   if$ %$
1511   }
1512   'skip$ %$

```

```

1513      if$          %%
1514      comma output
1515      make.title.ital "title" check.empty space output
1516      make.bookauthors.secondary comma output
1517      make.editors.secondary comma output
1518      volume empty$          %%
1519          { output.series.number
1520          }
1521          { output.volume.series
1522          }
1523      if$          %%
1524      make.edition comma output

```

Here we branch again on the contents of `make.chapter.of`. If it is not empty, then we go ahead and `make.pages`. If it is empty we don't, because this means that if " pages were given, they have already been put earlier.

```

1525      u empty$          %%
1526          'skip$          %%
1527          { make.pages comma output
1528          }
1529      if$          %%
1530      new.block
1531      make.translators comma output
1532      new.block
1533      make.illustrators comma output
1534      new.block
1535      oyear empty$          %%
1536          { address comma output
1537              publisher "publisher" check.empty colon output
1538          }
1539          { oaddress comma output
1540              opublisher "opublisher" check.empty colon output
1541              new.block
1542                  "Reprint" comma output
1543                  address field.or.null comma output
1544                  publisher "publisher" check.empty
1545                  address empty$          %%
1546                      { comma
1547                      }
1548                      { colon
1549                      }
1550      if$          %%
1551          output
1552          year "year" check.empty comma output
1553      }
1554      if$          %%
1555      }
1556      % crossref not empty
1557      { "In " make.crossref * comma output
1558          make.chapter comma output
1559          make.pages comma output
1560          chapter empty$ pages empty$ and
1561              { "empty chapter and pages in " cite$ * warning$
1562              }

```

```

1563      'skip$          %%
1564      if$              %%
1565    }
1566    if$          %%
1567  new.block
1568  note comma output
1569  finish.entry
1570 }

```

4.15.4 Incollection

incollection

```

1571 FUNCTION {incollection}
1572 { begin.entry
1573   make.leaditem.with.tags comma output
1574   new.block
1575   make.year.or.oyear.month "year" check.empty space output
1576   new.block
1577 % FIX: use \field{type} to say what kind of title this is? e.g., play, poem,
1578 % chapter, story?
1579   make.title.inquotes "title" check.empty space output
1580   new.block
1581   crossref empty$          %%
1582   { make.chapter.of duplicate$ empty$
1583     { pop$          %%
1584       "In "
1585     }
1586     'skip$          %%
1587     if$              %%
1588     space output
1589     make.booktitle.ital "booktitle" check.empty space output
1590     make.bookauthors.secondary comma output
1591     make.editors.secondary comma output
1592     volume empty$          %%
1593     { output.series.number
1594     }
1595     { output.volume.series
1596     }
1597     if$              %%
1598     make.edition comma output
1599 % FIX: do I need this? I don't for copleston:cusa
1600 %     make.year.or.oyear.month "year" check.empty comma output
1601     make.pages comma output
1602     chapter empty$ type empty$ and pages empty$ and           %%
1603     { "empty chapter, type, and pages in " cite$ * warning$ }
1604     }
1605     'skip$          %%
1606     if$              %%
1607     new.block
1608     make.translators space output
1609     new.block
1610     make.illustrators space output
1611     new.block
1612     oyear empty$          %%

```

```

1613     { address space output
1614         publisher "publisher" check.empty colon output
1615     }
1616     { oaddress space output
1617         opublisher "opublisher" check.empty colon output
1618         new.block
1619         "Reprint" comma output
1620         address comma output
1621         publisher "publisher" check.empty
1622         address empty$           %%
1623             { comma
1624             }
1625             { colon
1626             }
1627             if$           %%
1628             output
1629             year comma output
1630         }
1631         if$           %%
1632     }
1633     % crossref not empty
1634     { new.block
1635         "In " make.crossref * space output
1636         make.chapter comma output
1637         make.pages comma output
1638         chapter empty$ pages empty$ and
1639             { "empty chapter and pages in " cite$ * warning$
1640             }
1641             'skip$           %%
1642             if$           %%
1643         }
1644         if$           %%
1645         new.block
1646         note space output
1647         finish.entry
1648 }

```

4.15.5 Majorthesis

format.thesis Theses are all set in the same way, with a different type name. An entry with entry type ‘thesis’ ought to have a nonempty “” type. The other four alias entry types **phdthesis** simply supply an explicit value for “” type, which are overridden by a nonempty **mastersthesis** “” type.

majorthesis FIX The “” type field should be hooked into a variable and done with the **minorthesis** *babel* package: \majorthesisname and so on.

```

1649 FUNCTION {format.thesis}
1650 { 'v :=
1651   begin.entry
1652   make.leaditem.with.tags comma output
1653   new.block
1654   make.year.month "year" check.empty space output
1655   new.block
1656   make.title.inquotes "title" check.empty space output

```

```

1657 new.block
1658 v "type" check.empty space output
1659 school "school" check.empty comma output
1660 address comma output
1661 new.block
1662 note space output
1663 finish.entry
1664 }
1665 FUNCTION {thesis}
1666 { type field.or.null format.thesis
1667 }
1668 FUNCTION{mastersthesis}
1669 { type empty$           %%
1670   { "Master's thesis"
1671   }
1672   { type
1673   }
1674   if$                   %%
1675   format.thesis
1676 }
1677 FUNCTION {minorthesis}
1678 { mastersthesis
1679 }
1680 FUNCTION {phdthesis}
1681 { type empty$           %%
1682   { "Ph.D.-diss."
1683   }
1684   { type
1685   }
1686   if$                   %%
1687   format.thesis
1688 }
1689 FUNCTION {majorthesis}
1690 { phdthesis
1691 }

```

4.15.6 Manual

- manual** Technical documentation. Required: “title (italicized). Optional: “author or “organization or “key, “address, “edition, “month, “year, “note. Logic: **leaditem** is first nonempty field of “author, “organization, and “key. Subsequent nonempty fields in that list are ignored. Special case: when **principal-field** is “organization and “key is nonempty, use “key for the label instead of “organization.

```

1692 FUNCTION {manual}
1693 { begin.entry
1694   make.leaditem.with.tags space output
1695   new.block
1696   make.year.month space output
1697   new.block
1698   make.title.ital "title" check.empty comma output
1699   new.block
1700   make.edition comma output

```

```

1701 new.block
1702 address space output
1703 organization colon output
1704 new.block
1705 note space output
1706 finish.entry
1707 }

```

4.15.7 Booklet

booklet A work that is printed and bound, but without a named publisher or sponsoring institution. Required: “title. Optional: “author, “howpublished, “address, “month, “year, “note. Title is quoted. “key used if “author is empty.

```

1708 FUNCTION {booklet}
1709 { begin.entry
1710   make.leaditem.with.tags comma output
1711   new.block
1712   make.year.month space output
1713   new.block
1714   make.title.inquotes "title" check.empty comma output
1715   new.block
1716   howpublished space output
1717   address comma output
1718   new.block
1719   note space output
1720   finish.entry
1721 }

```

4.15.8 Inproceedings

inproceedings An article in a conference proceedings. Required: “author, “title, “booktitle, “year. Optional: “editor, “volume or “number, “series, “pages, “address, “month, “organization, “publisher, “note. “key used where “author empty. Title quoted.

```

1722 FUNCTION {inproceedings}
1723 { begin.entry
1724   make.leaditem.with.tags comma output
1725   new.block
1726   make.year.month "year" check.empty space output
1727   new.block
1728   make.title.inquotes "title" check.empty space output
1729   new.block
1730   crossref empty$          %%
1731   { make.editors.secondary space output
1732     make.booktitle.ital "booktitle" check.empty comma output
1733     volume empty$          %%
1734     { output.series.number
1735     }
1736     { output.volume.series
1737     }
1738     if$                  %%
1739     make.edition comma output
1740   new.block

```

```

1741     organization space output
1742     address comma output
1743     publisher colon output
1744     make.pages comma output
1745 }
1746 { "In " make.crossref * space output
1747     make.chapter comma output
1748     make.pages comma output
1749     chapter empty$ pages empty$ and
1750         { "empty chapter and pages in " cite$ * warning$
1751             }
1752             'skip$           %%
1753             if$           %%
1754             }
1755             if$           %%
1756             new.block
1757             note space output
1758             finish.entry
1759 }
1760 FUNCTION {conference}
1761 { inproceedings
1762 }
```

4.15.9 Proceedings

`proceedings` The proceedings of a conference. Required: “title,” “year.” Optional: “editor,” “volume or “number,” “series,” “address,” “month,” “organization,” “publisher,” “note.” If “editor empty,” use “organization” for `leaditem`. For label, like type `manual`, use nonempty “key” for the label instead of “organization.” Title italicized.

```

1763 FUNCTION {proceedings}
1764 { begin.entry
1765     make.leaditem.with.tags space output
1766     new.block
1767     make.year.month "year" check.empty space output
1768     new.block
1769     make.title.ital "title" check.empty comma output
1770     new.block
1771     make.edition comma output
1772     new.block
1773     volume empty$           %%
1774         { output.series.number
1775             }
1776         { output.volume.series
1777             }
1778     if$           %%
1779     new.block
1780     organization space output
1781     address comma output
1782     publisher colon output
1783     new.block
1784     note comma output
1785     finish.entry
```

1786 }

4.15.10 Misc

Required: *none*. The rest are optional. ‘‘leaditem’’ author or ‘‘key’’ if empty. ‘‘year’’ with ‘‘month’’. Then ‘‘title’’, quoted. Then ‘‘howpublished’’. Then ‘‘note’’.

```
1787 FUNCTION {misc}
1788 { begin.entry
1789   make.leaditem.with.tags comma output
1790   new.block
1791   make.year.month space output
1792   new.block
1793   title space output
1794   new.block
1795   howpublished comma output
1796   new.block
1797   note space output
1798   finish.entry
1799 }
```

4.15.11 Techreport

techreport A report published by a school or other institution, usually numbered within a series. Required: ‘‘author’’, ‘‘title’’, ‘‘institution’’, ‘‘year’’. Optional: ‘‘type’’, ‘‘number’’, ‘‘address’’, ‘‘month’’, ‘‘note’’. ‘‘key’’ used when ‘‘author’’ empty.

```
1800 FUNCTION {techreport}
1801 { begin.entry
1802   make.leaditem.with.tags comma output
1803   new.block
1804   make.year.month "year" check.empty comma output
1805   new.block
1806   make.title.inquotes "title" check.empty comma output
1807   new.block
1808   make.number.tr comma output
1809   institution "institution" check.empty comma output
1810   address comma output
1811   new.block
1812   note comma output
1813   finish.entry
1814 }
```

4.15.12 Unpublished

unpublished A document having an author and title, but not formally published. Required: ‘‘author’’, ‘‘title’’, ‘‘note’’. Optional: ‘‘month’’, ‘‘year’’. Uses ‘‘key’’ for no ‘‘author’’.

```
1815 FUNCTION {unpublished}
1816 { begin.entry
1817   make.leaditem.with.tags comma output
1818   new.block
1819   make.year.month space output
1820   new.block
1821   make.title.inquotes "title" check.empty space output
1822   new.block
```

```

1823 note "note" check.empty space output
1824 finish.entry
1825 }

```

4.15.13 Default

`default.type` I think BIBTEX is hardwired to look for this name.

```

1826 FUNCTION {default.type}
1827 { misc }

```

4.16 Sorting

```

chop.word \stack<string> <num> <string><string>

% stack: S n T
%
% if S = substr(1,n,T)
%   then substr(n+1, max, T)
%   else S
%
% if T begins with S, then chop it off the beginning of T.
%

```

I guess we don't bother calculating the length for efficiency's sake.

```

1828 FUNCTION {chop.word}
1829 { 't :=
1830   'len :=
1831   t #1 len substring$ =           %%
1832   { t len #1 + global.max$ substring$
1833   }
1834   { t
1835   }
1836   if$           %%
1837 }

```

`make.title.for.sort` We don't bother to `format.sortify.clip`, just do that once before assignment to the `sort.key`.

```

1838 FUNCTION {make.title.for.sort}
1839 { title field.or.null
1840   't :=
1841   "A " #2
1842   "An " #3
1843   "The " #4 t chop.word
1844   chop.word
1845   chop.word
1846 % letter-by-letter alphabetization:
1847   format.dehyphen.dewhitespace
1848 }

```

`presort` Set `label`, `year.label`, `leaditem`. Set '`sort.key$`' to `leaditem + year.label + title` suitably massaged.

Note that `year.label.tag` is not set yet; it will be set in stages in `forward.pass.add.bcds` and `reverse.pass.add.as`.

```

1849 FUNCTION {presort}
1850 { set.principal-field.principal-type
1851
1852 % "principals set for " cite$ * debugmsg      %%
1853   make.leaditem
1854   'leaditem :=
1855
1856 % "leaditem set for " cite$ * debugmsg      %%
1857   make.label
1858   'label :=
1859
1860 % "label set for " cite$ * debugmsg      %%
1861   oyear empty$                         %%
1862   { year
1863   }
1864   { oyear
1865   }
1866   if$                                %%
1867 % FIX: substring or text.prefix?  if purify removes special chars then no diff.
1868   field.or.null purify$ #-1 #4 substring$
1869   'year.label :=
1870 }
1871
1872 FUNCTION {sortkey<-label+year+principal+title}
1873 { label
1874   delimiter.sub-sortkey *
1875   year.label *
1876   delimiter.sub-sortkey *
1877   make.principal-field.for.sort *
1878   delimiter.sub-sortkey *
1879   make.title.for.sort *
1880   format.sortify.clip
1881   'sort.key$ :=                      %%
1882 }
1883
1884 FUNCTION {sortkey<-principal+year+year-tag}
1885 { make.principal-field.for.sort
1886   delimiter.sub-sortkey *
1887   year.label *
1888 % FIX if year.label is ever going to be a variable length, need some padding here?
1889   year.label.tag *
1890   format.sortify.clip
1891   'sort.key$ :=                      %%
1892 }
1893
1894 FUNCTION {presort.&.sortkey<-label+year+principal+title}
1895 { presort
1896 % "presort done for " cite$ * debugmsg      %%
1897   sortkey<-label+year+principal+title
1898 % "sortkey set to label+year+principal+title for " cite$ * debugmsg      %%
1899 }

initialize.sorting-gvars
1900 FUNCTION {initialize.sorting-gvars}

```

```

1901 { unidentified 'last.leaditem :=
1902   unidentified 'last.label.and.year :=
1903   "" 'following.year.label.tag :=
1904   #0 'last.year.tag.num :=
1905 }

```

5 Disambiguating citations and sorting the bibliography

The initial calculation of citations can result in ambiguous labels for some entries. Two kinds of ambiguities can result:

same principal These are disambiguated by adding a unique lowercase letter to the end of the citations for each entry in the ambiguous set: (Smith 1980a) and (Smith 1980b); (Smith et al. 1970a), (Smith et al. 1970b). The order of the letters corresponds to the order of their appearance in the bibliography (see below).

different principal Different principals can have been (initially) given the same label in two cases: (1) the principals include 4 or more names and the initial names share a surname, and (2) the principals include the same number $n < 4$ of names and both the initial names and each of the subsequent names when present share a surname. In each case, the entries must also have the same year+tag, that is, the same year *including* any lowercase letters that might have been added. In both cases, ambiguous labels are disambiguated by adding first initials to those names which differ in the first name: (P. Smith 1980), (M. Smith 1980); (Green, Z. Black, and Meyer 1980), (Green, B. Black, and Meyer 1980); (Benson, Brown, Gray, White, B. Black, and Griscom 1900), (Benson, H. Brown, Gray, White, Z. Black, and Griscom 1900). When even first initials aren't enough to disambiguate, full names are used: (John D. Smith 1990), (John Q. Smith 1990); etc.

FIX: current behavior disambiguates all ambiguous citations by means of the lowercase letter. “A, B, C, and D 1999” together with “A, B, C, and E 1999” are going to resolve to “A et al 1999a” and 1999b. This nicely avoids disambiguation, but not what the Manual specifies.

FIX: current behavior is going to disambiguate citations that are ambiguous because authors share last but differ in first names by means of the lowercase letter: “Aa 1999” and “Ab 1999” become “Aa 1999a” and “Ab 1999b” (where ‘A’ stands for last name, and the ‘a’ right after it is the unmentioned first name). The Manual, however, specifies (16.3) disambiguating by using first initials in the label, such as “M. Brown 1999”.

add.bcds: work on getting the right `year.label.tag`. Compare current entry’s `label` plus `year.label` to the last entry’s, which is stored in the global string variable `last.label.and.year`. If they are the same, increment global integer variable `last.year.tag.num` and set `year.label.tag` to the n th lowercase letter, where n is `last.year.tag.num`. If they are not the same, set `last.label.and.year` to the current `label` plus `year.label`, set `year.label.tag` to empty string, and set `last.year.tag.num` to 0.

After add.bcds pass, year.label.tag will be blank for all first entries of an ambiguous series, and “b,” “c,” etc. for second entries, third entries, and so on. The “a”’s will be added in the right places by the reverse.pass.add.as function.

Handle duplicate leaditems. Compare current entry’s leaditem with the last entry’s, which is stored in the global string variable last.leaditem. When they are the same, wrap the current entry’s leaditem in \SCduplicate.

```

1906 FUNCTION {forward.pass.wrap.dupe.leaditems}
1907 { leaditem
1908   duplicate$ last.leaditem =           %%
1909   % we add the brace pair at the end because this forces add.period$ to add a %%
1910   % period after it. FIX: if we ever want \SCdup to actually print its
1911   % argument, we must get it to print its argument minus any final period.
1912   { "\SCduplicate{" swap$ * "{}" * 'leaditem :=           %%
1913   }
1914   { 'last.leaditem :=
1915   }
1916   if$           %%
1917 }

1918 FUNCTION {forward.pass.add.bcds}
1919 { label year.label * format.clip
1920   duplicate$ last.label.and.year =           %%
1921   % same as previous entry
1922   { pop$           %%
1923     last.year.tag.num #1 + 'last.year.tag.num :=
1924     last.year.tag.num int.to.chr$ 'year.label.tag :=           %%
1925   }
1926   % different from previous entry
1927   { "a" chr.to.int$ 'last.year.tag.num :=           %%
1928     "" 'year.label.tag :=
1929     'last.label.and.year :=
1930   }
1931   if$           %%
1932 }

1933 % FIX: use a minimum of entry-variables to hold 'last' things.
1934 % FIX: change 'last' to 'prev' where appropriate. what about vars that might
1935 % be used going forward and back? always use 'prev'?
1936

```

reverse.pass.add.as Pass through the entries in reverse order. Set current year.label.tag to “a” on entries that precede ones with “b”’s. Set following.year.label.tag to the current year.label.tag.

```

1937 FUNCTION {reverse.pass.add.as}
1938 { following.year.label.tag "b" =
1939   { "a" 'year.label.tag :=
1940   }
1941   'skip$           %%
1942   if$           %%
1943   year.label.tag 'following.year.label.tag :=
1944 }

```

begin.bib These two functions are called to begin and end the entire bibliography.

```

end.bib 1945 FUNCTION {begin.bib}
1946 { preamble$ empty$
```

```

1947      'skip$          %%
1948      { preamble$ write$ newline$          %%
1949      }
1950      if$          %%
1951      "\begin{thebibliography}{}" write$ newline$      %%
1952  }
1953 FUNCTION {end.bib}
1954 { newline$          %%
1955      "\end{thebibliography}" write$ newline$      %%
1956  }

```

5.1 Actions

This is the main subroutine which calls all the others.

```

1957 READ
1958
1959 EXECUTE {init.scalars}
1960
1961 ITERATE {presort.&.sortkey<-label+year+principal+title}
1962 SORT
1963
1964 EXECUTE {initialize.sorting-gvars}
1965
1966 % add in "b"'s etc.
1967 ITERATE {forward.pass.add.bcds}
1968 % add in "a"'s
1969 REVERSE {reverse.pass.add.as}
1970
1971 ITERATE{sortkey<-principal+year+year-tag}
1972 SORT
1973
1974 EXECUTE {initialize.sorting-gvars}
1975 ITERATE {forward.pass.wrap.dupe.leaditems}
1976
1977
1978 EXECUTE {begin.bib}
1979 ITERATE {call.type$}          %%
1980 EXECUTE {end.bib}

```

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