Brian W. Kernighan

An Introduction

Daniel M. Berry

Why I am Introducing BWK

I wanted to introduce Brian because I am one of the few people on Earth that is still using his Device-Indpendent Typesetter Run-Off (*ditroff*) program.

I use *ditroff* for almost all of my typesetting.

Even these slides were done by *ditroff*; I *ditroff* to *PostScript* and then *distill* that *PostScript* to *pdf* so that I can use the slide-show features of *acroread* to display them now.

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Also, compare the first paragraph of Brian's abstract done with *ditroff*, Microsoft's *word*, and TEX.

ditroff Version

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word Version

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TEX Version

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In the MS *word* version, notice the hockey player's mouth effect and the two beady eye balls staring at you from the word "specific".

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Notice how much nicer the *ditroff* and TEX versions are.

Admittedly *TEX*, with its multipass, optimizing placement algorithm, does a nicer job of spacing and line breaking than *ditroff*.

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However, *ditroff*'s simple one-pass greedy placement algorithm makes it much easier to control the placement of footnotes and floating figures.

You are guaranteed that if there is enough room for a footnote on the current page, it will be placed there, …

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The latter problem is known to happen also with MS *word*.

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ditroff now formats a 100-page document faster than MS *word* updates the page you are looking at!

More about BWK

I note that in our Distinguished Lecturer Series, we have had Alfred **A**ho, and today we have Brian **K**ernighan. You could say that we have had both the front end and the back end of ***awk***. ☺

Our visitor's login is *bwk*, just one letter up from *awk*! ☺

Local Roots

Brian is a local boy, born in Toronto, teenager in Milton, educated at UT, with relatives in Cambridge, Mississauga, and even at UW!

As Brian says, “waterloo is friends and family.”

A Promise

I promised not to do the standard boring introduction, reading from his biography.

You can read it yourself on the flyer announcing this lecture or at his website.

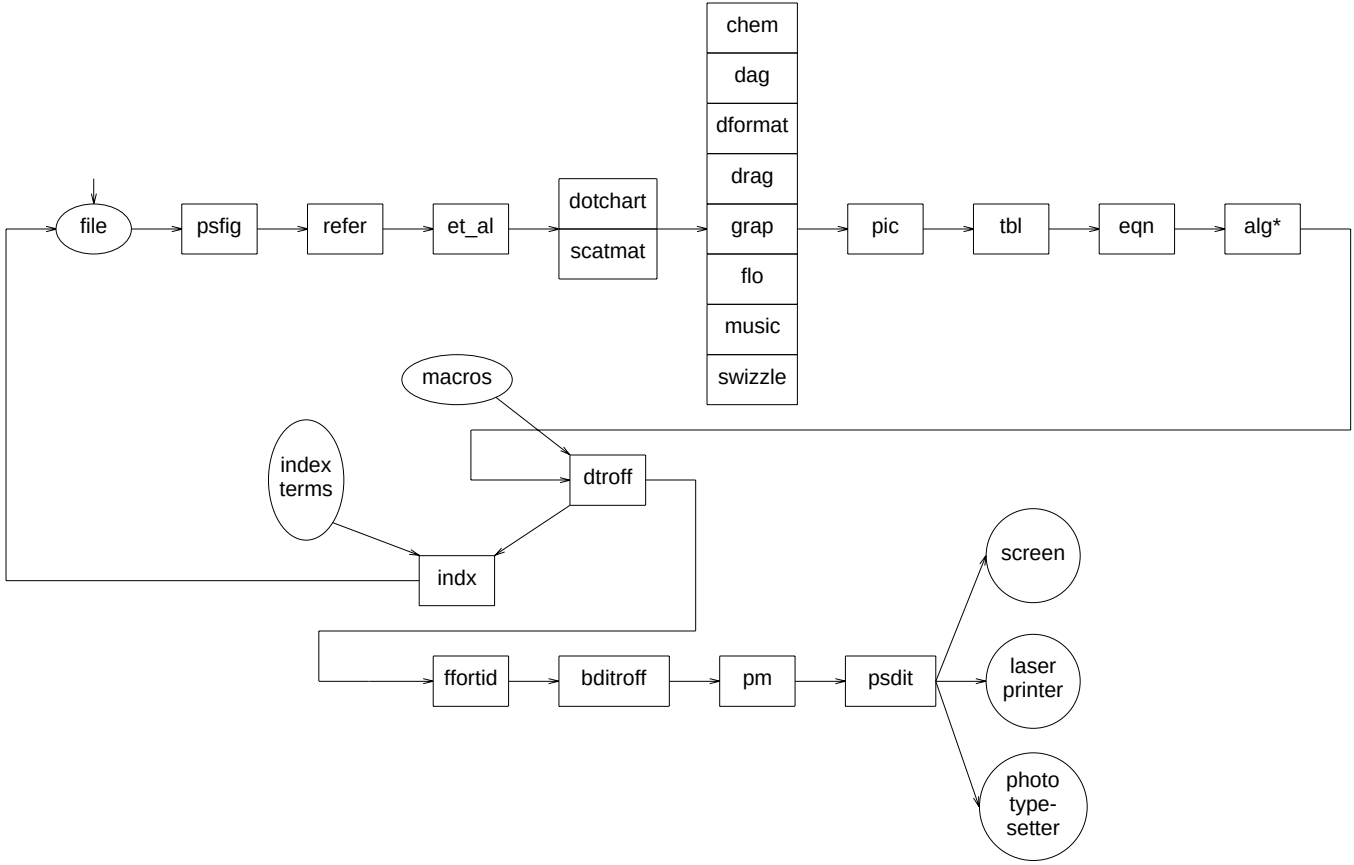
I will talk, as I always do when I am introducing someone, about the lessons I have learned from the speaker's work!

I sort of promised also to be short.. Oh well.. ☺

Lessons Learned from BWK

What did I learn from Brian?

To explain them, let's look at a *pic*-generated diagram of the architecture and dataflow of the entire *ditroff* system. (*pic* is another of Brian's programs that I still use!)


file
psfig
refer
et_al
dotchart
scatmat
chem
dag
dformat
drag
grap
flo
music
swizzle
pic
tbl
eqn
alg*
macros
index terms
dtroff
indx
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bditroff
pm
psdit
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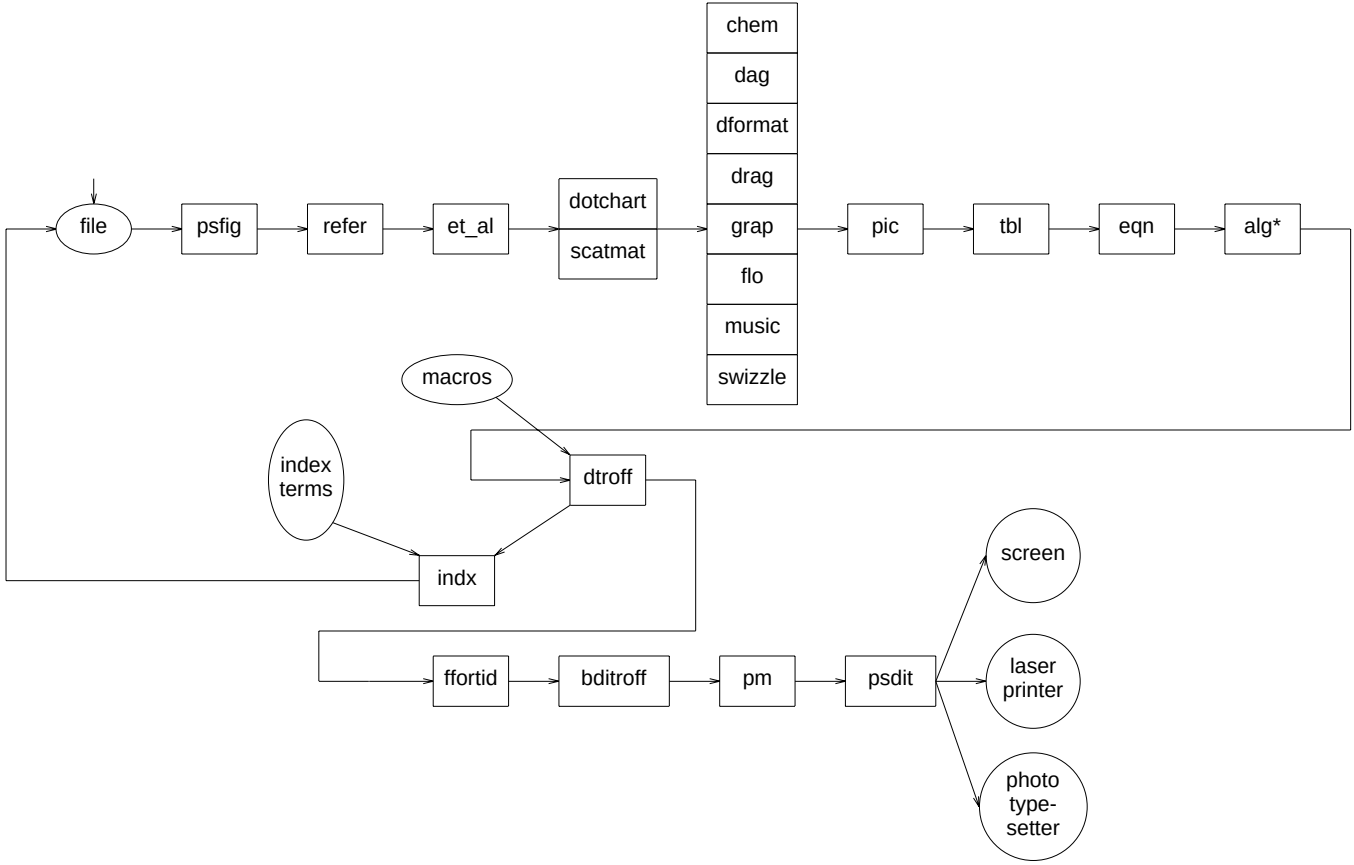
The first and third really separate the concerns; each kind of document element, e.g., tables or formulae, has its own little language and processor, which can be modified independently of all others, including the main module *ditroff*.


file
psfig
refer
et_al
dotchart
scatmat
chem
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tbl
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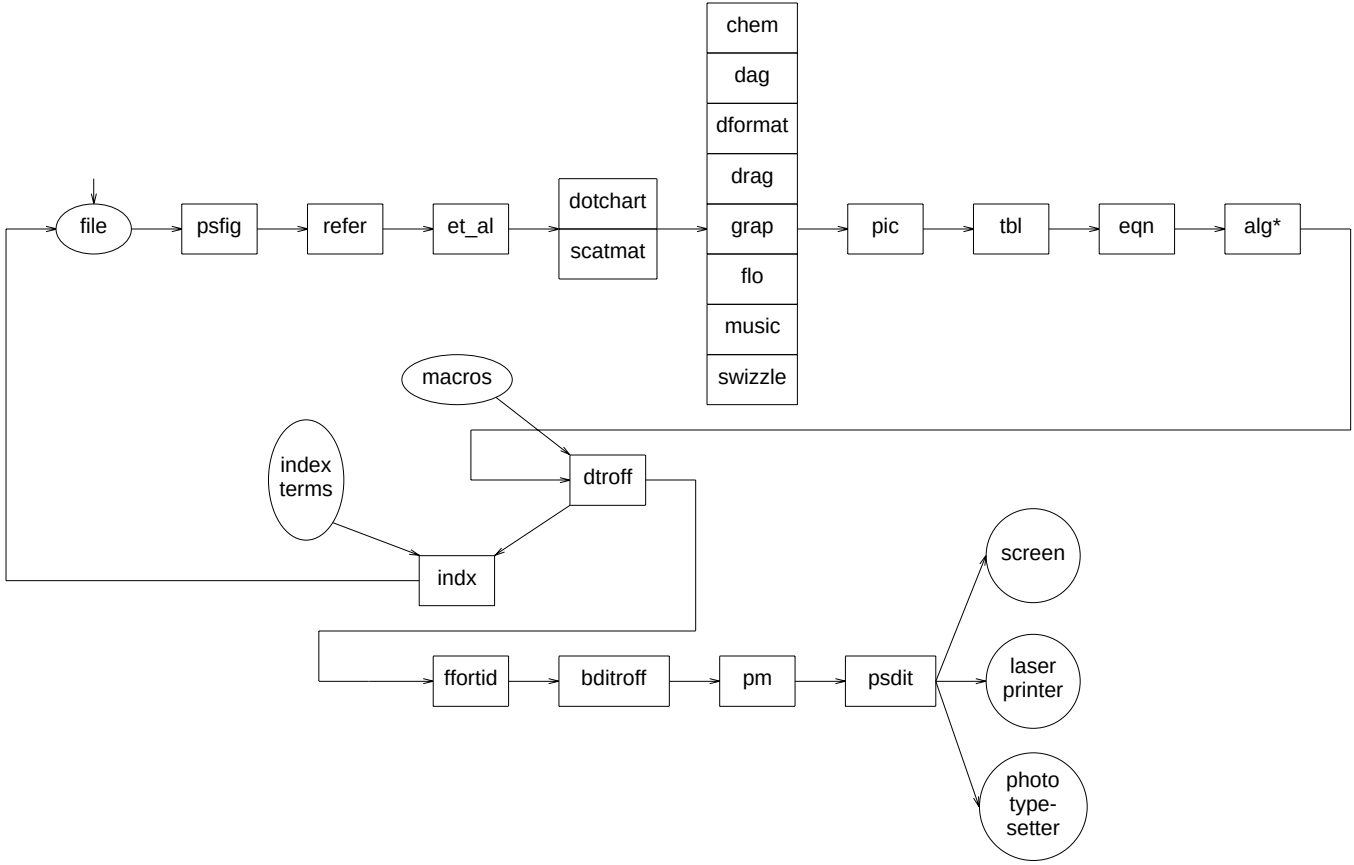
file
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- Flowcharting: Pascal $\rightarrow$ flowchart
- Replacing all but first author in a bibliographical reference by "*et al*"

We were able to do all this *without* modifying the functionality of *any* program in the existing collection.

We did correct a few bugs that were exposed by our use of rarely used features; these corrections were passed on to Brian for distribution to *ditroff* licensees.

Each of the additions is effectively a little language processor that sits in the pipe with other programs.

So I can still do

- graphs
- line drawings
- tables
- formulae

In the midst of a tri-directional, multilingual document with flowcharts, and index, and reduced author lists in the bibliography!

The extreme modularity of the *ditroff* system allowed my group to finish building the bidirectional *ditroff* one year before the TEX group finished building the bidirectional TEX, even though we started one year after they did.

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- with a scripting language, such as *sed*, *awk*, or *perl*, or
- with *C* or *C++*.

Also, I have been known to cheat!

If a processor lacks a feature I need, I arrange for a placeholder to be output by the processor, and I edit the output manually to produce the output that would be there if the feature were available.

I have done this to the output of *refer*, *pic*, and *eqn*.

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Also I made my own visiting card using this software!

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Brian's Code

In the process of doing all what I have described, I happened to read a lot of Brian's code.

His code is the most readable I have ever seen, and this is in spite of his use of short identifiers.

Real works of art!

Conclusion

This is what I have learned from Brian!

Thank you, Brian!

Now, we shall find out if this is what I should have learned from him!

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