The Philosophy of MacTeX contra The Philosophy of TeXShop

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1 WWDC 2000

In May of 2000, I went to the Apple Developer Conference. At this conference, developers were supposed to receive the Release Version of OS X. In his keynote address, Steve Jobs announced that the new release was renamed OSX Public Beta and the price was reduced from $130 to $15. After the keynote, a more knowledgable friend translated for me: "OS X has been delayed by a year."

Apple held a software raffle during this conference, the only time I've heard of them doing so. Every developer got something, but it soon transpired that there were only two copies of Adobe Illustrator and Photoshop, and everybody else got a schlocky piece of software on a CD, shrinkwrapped against a piece of cardboard. The documentation was on a stamp-sized folded paper between the CD and the cardboard which had to be unfolded like the documentation for a Timex watch.

Back home, I discovered that the software did something mildly interesting. If you inserted a CD in the computer, it could rip the various tracks to mp3 files. It could play these mp3 files on the Mac, and it could write new CD's with your personal selection of mp3's from various CDs. And if you had an mp3 player, you could play those mp3's about town.

All the developers I talked to complained of the schlock and not one of them said to me "maybe Apple is trying to tell us something." Then came the iPod, and iTunes, and the iTunes store, and the disruption of the music business.

So ... I was looking at this talk I promised to give, and there isn't much of interest here. Then I thought of Apple's playbook and decided to give each of you a free piece of software. Here it is. Unfortunately, I don't have an iTunes store back home, even in the planning stage, and I only have a Mac.

2 The Global PrefPane and the LocalTeX Pane

MacTeX installs a copy of TeX Live owned by root in `/usr/local/texlive`. It also installs a small data structure invented by Gerben Wierda and Jérôme Laurens describing the distribution in `/Library/TeX`. These choices were somewhat controversial and I once gave a TUG talk about them. Now I'm happy.

Each year's distribution is in a folder named by date in `/usr/local/texlive`, so for instance TeX Live 2014 is in `/usr/local/texlive/2014`. This makes it possible to keep old distributions around, in case a new distribution breaks a crucial class file. We install a Preference Pane, shown below, for Apple's System Preferences, allowing users to switch between distributions. A switch changes all GUI apps to use the new distribution and also changes the command line so command line programs use it.

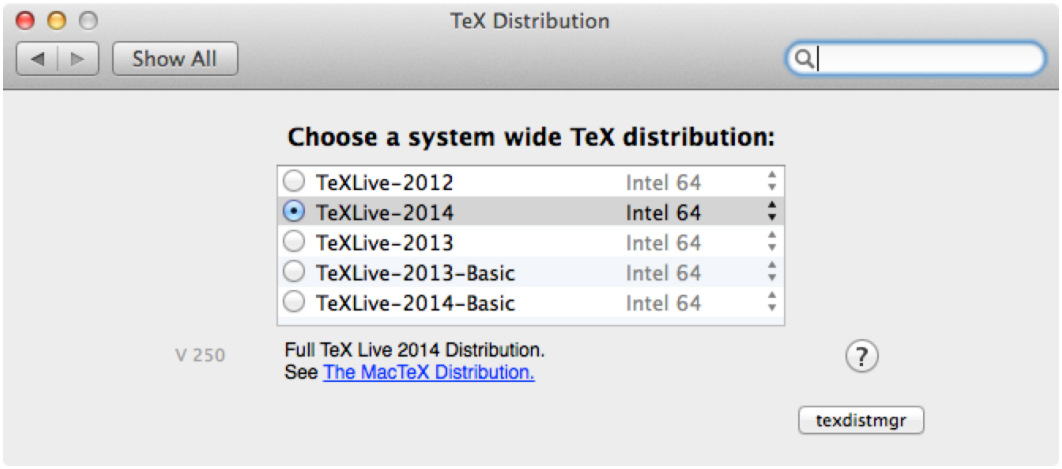

Figure 1: Global PrefPane

The PrefPane we install selects one distribution for all users and requires root access. I'm going to argue that we should have created a Local PrefPane instead, so each user could choose their own default TeX distribution and make this selection without root access. That's how *programs* work on the Macintosh. Programs live in `/Applications` where they are accessed by all users of a given machine. But each user has their own Preference settings for these applications, stored in `~/Library/Preferences`. One user's default font might be Times Roman, while another's might be Helvetica Neue.

The LocalTeX PrefPane, shown below, is such a Pane.

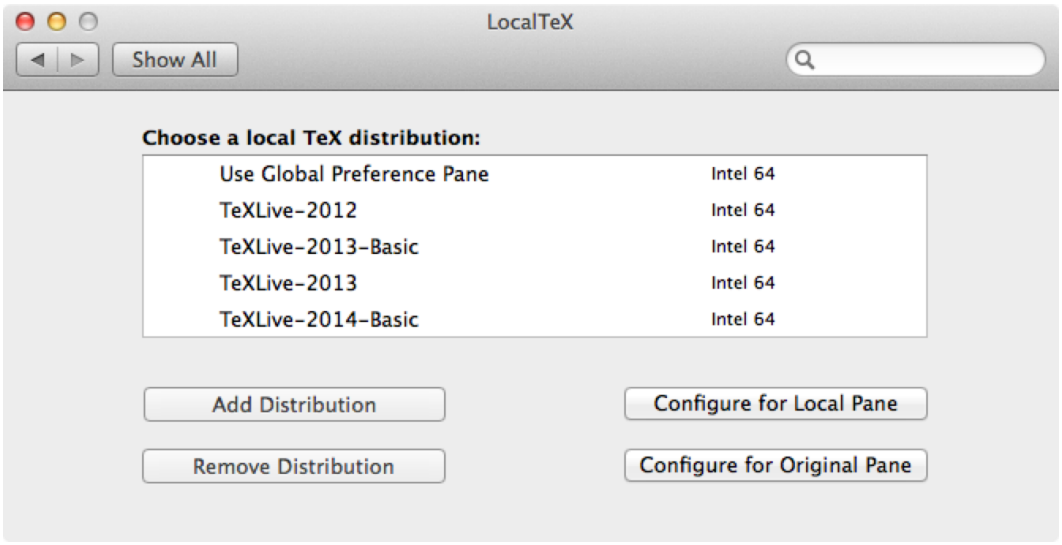

Figure 2: Local Pref Pane

It is installed globally for all users, but it makes independent choices for each user and does not require a password. This Pane does not change any link created by the Global Pref Pane or any element of the TeXDist structure, so it can be used together with the Global Pane, or when the Global Pane is completely missing.

The first item in the distribution list is always "Use Global Preference Pane." Selecting this item activates the Global Pane for the current user. The next items are distributions with TeXDist data structures, so an individual user can select a different default than the one chosen by the Global Pane.

Scrolling down in the list of distributions in the Pane, we see that the LocalTeX pane can also define and select distributions on external disks, or distributions installed in a

user's home directory. Although MacTeX cannot install TeX in such locations, the TeX Live install script from TUG has this ability.

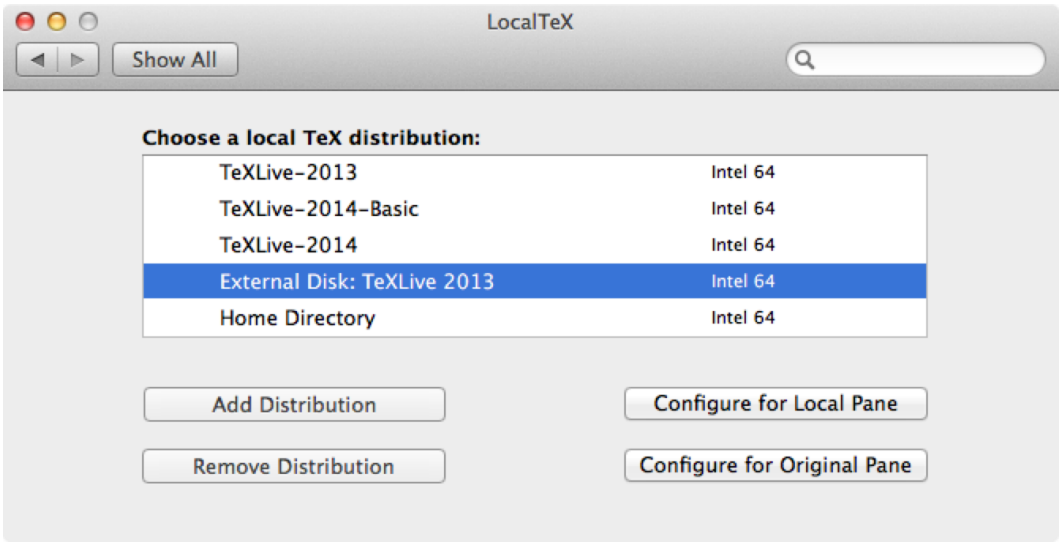

Figure 3: Local Pref Pane

Students may find this ability useful when they use a University owned machine and don't have root access. They can easily install TeX Live on a thumb drive, carry it with them, and have access to TeX in all locations.

The LocalTeX pane only shows distributions that are currently available. So if a thumb drive is removed, its distribution is no longer listed in the pane. Inserting the drive causes LocalTeX to list it again.

The "Add Distribution" button is used to inform the LocalTeX pane of TeX distributions without a TeXDist structure. It brings up a panel shown on the next page. The "Name" field can be any desired name, since it will only appear in the LocalTeX pane. The "Path to Distribution" and "Path to Binaries" fields can be filled in by dragging appropriate locations to the dialog.

This data will only be accepted if the binary location is not empty, and contains a binary with at least one of the following names: tex, latex, pdftex, pdflatex, luatex, lualatex, xetex, xelatex.

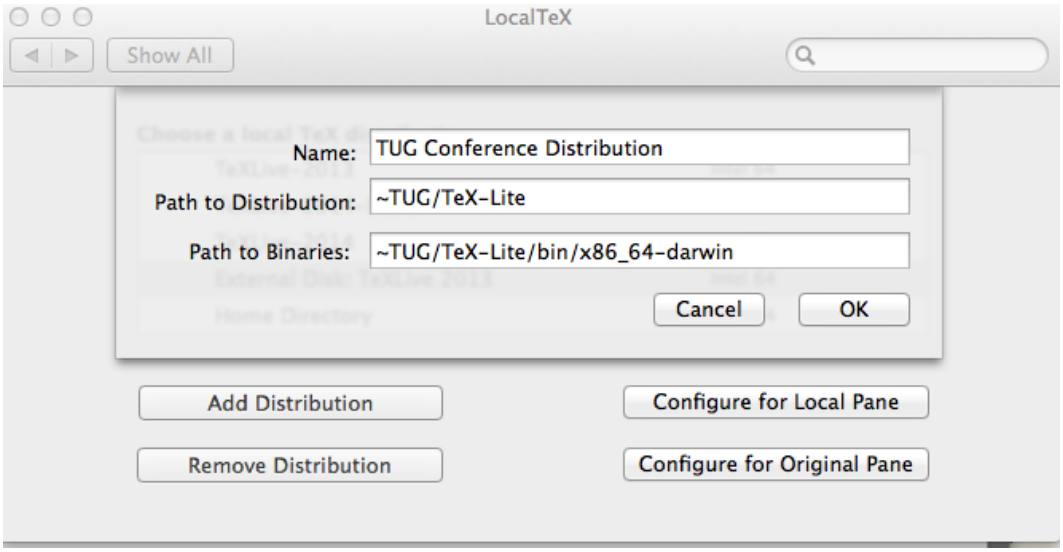

Figure 4: Local Pref Pane

The "Remove Distribution" button produces a list of extra distributions which can be removed one-by-one from those listed by the panel. Only distributions without a TeXDist data structure can be removed.

3 Installing and Configuring the LocalTeX Pane

Installing the LocalTeX pane is very easy. Find and double click LocalTeXInstall.pkg and install in the standard manner. This step requires root access and does two things. It installs LocalTeX in `/Library/PreferencePanes`, where it is accessible by all users. And it adds a file named "TeX" to `/etc/paths.d` causing the $PATH for all shells to end with `~/Library/TeX/LocalTeX/texbin:/usr/texbin`. Both actions are easily reversible.

A user without root access could instead double click the LocalTeX.prefPane file. This brings up a dialog offering to install the Pane for all users or for only one user. Choose "only one user" and the Pane is installed for the current user without requiring a password.

After the Pane is installed, push the button "Configure for Local Pane" on the right. This reconfigures TeXShop, TeX Live Utility, and BibDesk to use the new Pane.

Done. You are ready to go.

To return to the Global Pane, push "Configure for Original Pane" to configure TeXShop, TeX Live Utility, and BibDesk for the original pane. Done.

4 How Does the Pane Work?

The LocalTeX pane creates three symbolic links in `~/Local/TeX/LocalTeX`:

- texbin → binary directory of default distribution
- texroot → folder containing the default distribution
- texdist → texdist structure for the default distribution, if such a structure exists

GUI applications should then be configured to look for TeX binaries in `~/Library/TeX/LocalTeX/texbin` rather than in `/usr/texbin`, the corresponding link for the Global pane. This is done automatically by the "Configure for LocalPane" button for TeXShop, TeX Live Utility, and BibDesk. LaTeXiT has a rather baroque preference system which doesn't permit setting its presences using the "defaults" command line tool, but they can be reset by hand, as can be the corresponding preference settings for other third party applications. Many of these applications require a full path, so instead of writing `~/Library/TeX/LocalTeX/texbin`, I'd write `/Users/koch/Library/TeX/LocalTeX/texbin`.

5 Other Advantages

Wierda and Laurens carefully selected the location for the link `/usr/texbin`, arguing that Apple would probably not change or remove this link. That reasoning turned out to be wrong, and users who upgrade OS X often find that they can no longer typeset even though their TeX distribution remains, because the link has been removed. The location `~/Library` does not present this problem, since it is used by almost all third party applications and wholesale Apple changes would create a nightmare.

Apple's increasing security work caused several Pref Panes to fail with system updates. For most of the year, the Global Pane didn't work on Mavericks. It was fixed just before the release of MacTeX-2014. But the current Global Pane is again broken in Yosemite. The Local Pane is immune to security concerns, and works on Mavericks and Yosemite. It requires Mountain Lion and above, since it uses Apple's newer ARC memory protection scheme.