Observations on Using the Dvorak Keyboard Layout

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1 Introduction

Since I tend to make a lot of noise about this kind of thing, many people are aware (many through my thread on debian-user[1] in July/August 2002) that I use the Dvorak keyboard layout. I've since been asked a lot about its benefits and disadvantages, why I use it, and what I think of it. Instead of answering all these emails individually, I'm putting up this little document/webpage that will hopefully answer some questions.

2 Disclaimer

I switched to the Dvorak layout in August of 2002, and have at the time of this writing been using it ever since (fifteen months or so). These are just my opinions and observations resulting from that usage. I'm not responsible for the health of your wrists, or any time you may lose, or frustration endure, in the pursuit of the holy grail of comfortable typing / keyboard snobbishness. Use at your own risk; your mileage may vary.

3 What is the Dvorak layout?

Presumably, if you're reading this, you know what you're looking for. A quick explanation follows, though.

(As far as I know, all this is true.)

3.1 History

The original keyboard layout — that which we now call 'QWERTY' after the first six letters on the upper row — was developed for use on the typewriter. I'm

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[1] http://lists.debian.org/debian-user/2002/debian-user-200207/msg05307.html

young enough that I never had to use one of those horrid devices for anything but amusement, but old enough that my mom used to have one lying around the house from when she did her dissertation(!) that I played with a bit.

As anyone who's used a typewriter knows, if you strike two keys that are next to each other in rapid succession, they keys will very likely jam up, and you have to un-stick them manually, getting ink from the ribbon all over your fingers.

The QWERTY layout, therefore, was (allegedly, at least) designed to keep this from happening by putting frequent key combinations as far away from each other as possible.

Sometime in the early 20th century (I think), Dr. August Dvorak (yes, a cousin of the composer, or at least distant relative) developed his own layout. Instead of focusing on keys jamming up, his layout focuses on typing efficiency.

3.2 Layout

A little diagram follows:

```
1 2 3 4 5 6 7 8 9 0 [ ]
1 2 3 4 5 6 7 8 9 0 - =

' , . P Y F G C R L / = \
q w e r t y u i o p [ ] \

 A O E U I D H T N S -
 a s d f g h j k l ; '

  ; Q J K X B M W V Z
  z x c v b n m , . /
```

Letters of the Dvorak layout are in caps; QWERTY is in lower-case beneath.

3.3 Rationale

The idea behind this all was, as mentioned, to maximize typing efficiency. The home row consists of some of the most frequent letters in English — all the vowels, plus frequent consonants. Other regular letters are not far off — the 'c' and 'r' right above the middle fingers of the right hand, for example; the 'm' just below the index finger of the right hand (incidentally, the 'a' and the 'm' did not switch places between QWERTY and Dvorak).

Frequent key combinations are also apparent in the Dvorak layout. 'Sch', for example, is easily typed with an inward, drumming-like motion of the right hand. Common diphthongs, such as 'ou' or 'ai', always go out-to-in, like the natural drumming motion of the fingers.

4 Pronunciation

Since this dude was American, and not Czech like his musical relative, his name is said "*DVOR-ack*" — first syllable as in "*carniVORE*,", but with a 'd' in front. There's no *zh* sound in there (voiced palatal fricative, if you must know) like there is with the composer. Don't get them mixed up; I often do, especially if I'm typing too much and not playing enough music.

5 Ergonomic benefits / myths

The main reason for switching to the Dvorak layout for many people is to take advantage of its much-trumpeted ergonomic benefits. I myself switched to Dvorak for just that reason, but I'm not the best person to speak to its truth.

Why? Because when I switched, I was in lots of pain. Could barely type at all. I therefore needed to be able to type again as fast as possible, by any means possible — and so, at the same time I switched keyboard layouts, I purchased an ergonomic keyboard. I've since used Dvorak on flat keyboards, of course[2], but I can't tell you how much of my wrist pain was directly connected to the keyboard layout, and how much of it was fixed by the ergonomic.

My wrists are totally better now, since switching both layouts and keyboards. I'm pretty sure that the entire benefit came from the keyboard itself (I use one of those curvy, split ones — the plain old Microsoft Natural[3]), and not from the Dvorak layout.

Don't get me wrong — I *love* that my fingers move less on the Dvorak layout, and it feels much more "natural" than QWERTY ever did. I'm just not sure that translates directly to decrease of wrist pain, or finger pain, or whatever kind of pain you're having.

Who knows — maybe someone will do a study some day, and discover that Dvorak users were able to type for 10 years longer than QWERTY users, that they ate more brown rice and granola, tended to be vegetarians with left-leaning politics, and made the world a better place. I'm just not sure of any correlation, that's all.

6 Speed benefits / myths

The other reason I've heard for switching to Dvorak is a speed increase. Supposedly, the layout is conducive to typing really fast — all that finger-drumming;

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[2] but I've never used the QWERTY layout on an ergonomic keyboard. Actually, I did once, and it pissed me off no end that the 'b' was on the wrong side of the keyboard from what I thought it should be. Guess I'd just learned that one key wrong all those years ago! Ironically, the Dvorak layout has the 'b' shifted only one key to the right, placing it where I thought it should have been all these years!

[3] No, I don't want to give those bastards my money any more than you do, but I figure I put enough of a dent in their profits by using Linux and helping others to do so, and if they enable me to type again, I guess I have no choice. Plus, it's the best deal on the market — $40 for a plain, ergonomic keyboard. If you can beat that, let me know!

alternating sides of the keyboard between frequent consonants and vowels; &c.

Frankly, I don't believe a word of it. I typed 85-90 words per minute on QWERTY; I type the same on Dvorak after a year or so of use.[4]

But many people I've talked to say it worked for them. Why is this?
I have a theory about this.

1. People who type a lot — and by a lot, I mean the upper echelon of typers — are likely to be geeks. Geeks as a whole type way more than the population at large, who use computers for sporadic email and word processing, but do not code up pages upon pages of TeX documents about obscure keyboard layouts just for the hell of it.

2. Geeks, therefore, are more likely to develop wrist problems than other people.

3. Being resourceful like that, geeks will look for a tech-y solution, and will find rumors of Dvorak.

4. Those intrepid enough to try the switch will be forced to learn to type (a) with the correct fingers, and (b) without looking at the keys.

5. Now, geeks are also the type to never have learned to "touch-type" in the first place. Given a manual, the geeks will take it as a challenge, and disregard it for as long as possible, trying to figure out how to work their new toys by themselves. This is why they break so much shit, and also why they end up knowing how to fix it all. Many geeks I know taught themselves to type by putting their fingers somewhere on the keyboard and moving them as little as possible to get the job done, but without much thought as to correct position, wrist angle, &c. (this is probably why so many of them developed tendonitis or carpal tunnel in the first place!). I can't tell you how many three- or four-fingered geek typists I know.

6. In learning Dvorak, as mentioned above, these same geeks will have to learn to touch-type, unless they intend to relabel not only their keyboard, but the keyboards of everybody on whose computer they'll ever need to type. So, this will be the first time in their lives said geeks will ever learn to type both (a) with the correct fingers, and (b) without looking at the keys.

7. It is precisely that touch-typing which brings about speed.

I learned to touch-type QWERTY when I was six years old with Mavis Beacon Teaches Typing. Because of that, I learned to type really fast from the outset, so I could do all my friends' typing assignments for them in school and then play QBasic Gorillas with them all class period long.

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[4]I think I regained tolerable speed within a month, and full speed within four or five

Touch-typing was not new for me when I got to Dvorak, so my speed did not increase. It did not decrease, either, but it led me to believe the speed thing is a myth.

7 Dvorak in vim / your favorite editor

One of my greatest fears in the switch to Dvorak was remapping my fine-tuned muscle memory for keybindings. And indeed, there was some of that. However, modifying some of those keybindings proved invaluable.

I use vim as my editor of choice, and can only offer advice for that, but most of this should carry over to most editors.

Most of the keybindings in vim I just had to relearn. A 'w' still moves forward one word at a time, but now it had moved from my left ring finger on the top row to my right middle finger on the bottom row. This, and things like it, I just had to deal with.

However, a couple choice remappings have saved me hours of headache.

7.1 Home row remappings

Vim uses the QWERTY home row for navigation — `hjkl` go left, down, up, and right, respectively. It would be just too weird to have these in different places on the keyboard. So, again thanks to a great suggestion from Jason Lunz[5], I remapped these four keys to their Dvorak equivalents — `dhtn`.

To do that is a simple matter of a few lines in your ~/.vimrc:

```
noremap d h
noremap h gj
noremap t gk
noremap n l
```

(The 'g's are there in the case that you have a really long line that wraps and uses multiple rows on the screen, 'gk' move the cursor up one screen row and 'k' just moves it up one line, or multiple screen rows. Jason Lunz prefers the former, but a simple 'j' or 'k' would also work here.)

In this way, you can keep your home row cursor movement.

7.2 Domino effect: more key remappings

The problem with remapping these home row keys is that at least two of them had other functionality. We need to replace this.

d The delete key is the trickiest one. I like having it on the home row, and I didn't want to have to re-train for that one, so I remapped it to the same finger on the same hand — what is now 'e'. This does mean you can't

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[5] http://lists.debian.org/debian-user/2002/debian-user-200207/msg05654.html

go to the end of words now, but you can go to the end of Words. The distinction between the two in vim is fine enough that it doesn't bother me, and I've learned to hit 'E' instead of 'e' when I want to move forward by the ends of words.

```
noremap e d
```

"Alternately," says Jason Lunz,[6], "if you're willing to learn a new delete key, you can just replace d with j or k. I didn't want to relearn the muscle memory, and it's nice to have delete on home row because it's so frequently used."

n This used to be the next item in a search. Since the 'l' key is now totally freed up, having been freed of its "go one space right" cursor function, we may as well use it for this.

```
noremap l n
```

8 Dvorak in other languages

This, I unfortunately can't speak much to. I type every now in then in French and German, and it doesn't seem any more unnatural than QWERTY used to in those languages.

9 Dvorak and coding

I've never had a problem with coding in Dvorak, though some have. I think the biggest hurdle is just remapping where all the punctuation is in your brain — but that's part of learning the new layout.

10 Making the switch

So you've read up on it, and you want to give this crazy keyboard layout a try. Mad props to you! And good luck ...

10.1 Key labelling

You do *not* have to get a whole new keyboard to type a different layout — you just have to train yourself to not look at the keys. None of my keys (except 'a' and 'm', the two letters that don't switch between QWERTY and Dvorak) have the right labels on them. It's probably better to do it this way, because then

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[6]ibid.

you won't be dependent on looking when you want to type Dvorak on someone else's computer.

I trained myself not to look at the keys (not that I ever did in QWERTY, but then I had that crutch available if I wanted) by printing out a copy of the Dvorak layout[7] and putting it in front of my monitor, or taping it off the bottom of the screen. When I wanted to type a letter, I located it on the diagram, and then pressed it with the corresponding finger. Really slow going at first — I remember a couple really frustrating days of typing emails at about 10 wpm — but I sped up pretty quickly.

10.2   Switching your keyboard layout

Learning to type in Dvorak, or typing in Dvorak on other peoples' computers once you've switched, is pretty easy. The only platform that makes it really obnoxious is Windows (surprise, surprise).

10.2.1   . . . in Linux

This is just about the easiest, at least for me. Two little common programs will accomplish a keymap switch in Linux: `loadkeys dvorak` (or `loadkeys us` to get back to QWERTY) from a console, and `setxkbmap dvorak / us` from within X.

As you probably will have a hard time finding all the letters for '`setxkbmap us`' when you're just learning Dvorak, it may help to put a couple of aliases in your `.${SHELL}rc` file:

```
alias aoeu='if [ $DISPLAY ]; then setxkbmap us; else loadkeys us;
fi'
alias asdf='if [ $DISPLAY ]; then setxkbmap dvorak; else loadkeys
dvorak; fi'
```

That way, you can switch back and forth just by hitting the first four keys on the home row.[8]

It's also easy to put the two layouts as menu items in X. In FVWM, it looks like this:

```
+ "dvorak" Exec exec setxkbmap dvorak &
+ "qwerty" Exec exec setxkbmap us &
```

This should immediately apply to everything. The only holdover I've ever seen is gaim, which likes to be restarted before taking the changes into effect. Hm, gtk ... ?

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[7]A good layout diagram is here: http://www.mwbrooks.com/dvorak/layout.html

[8]Thanks to Jason Lunz for this trick! http://lists.debian.org/debian-user/2002/debian-user-200207/msg05319.html

10.2.2 . . . in Mac OS

Mac is great, too. If I weren't in love with Debian, I might break down and buy a sexy little titanium iBook (if only I could type on the flat keyboards!).

Mac OS is great here because when you switch the layout, it immediately applies to all windows of all applications.

To switch, find the "international" control panel (pretty self-intuitive set of menus, similar in most versions of Mac OS), and click on the "input" tab. You probably only have the little US flag one selected (or just the one for whatever layout you use). There are two Dvorak options: plain old Dvorak (whose "flag" is a little black box with a 'DV' in it), and what they call "Dvorak-QWERTY" (a little black box with a 'DQ' in it). They both type Dvorak in all applications, but in the latter, QWERTY keys are used for the control/alt/meta keys. So, if you want to press apple-Q to quit an application, in Dvorak, it would look to an observer like you're pressing apple-X (the 'x' key being in QWERTY where the 'q' is in Dvorak); if you're using Dvorak-QWERTY, you will have to press the key that's labelled Q. It probably has its uses; I don't like it. But at least you have a choice.

When you select an option, a little menu comes into existence up at the top of your screen, displaying the flag of the layout you have selected. You can now switch layout by clicking on this menu and then selecting a different flag.

To make the menu go away again, open the International dialog back up and un-check all but one option.

10.2.3 . . . in Windows 95/98

Windows, of course, is the most obnoxious to switch keyboard layouts on. Wow, who would have ever guessed?? Argh.

This does not mean it's hard, though. It's the same basic procedure — look in your control panel. In Windows 95/98, it's under "keyboard." You have to click over to the "input locales" tab, and look in the "input languages" window of that. Chances are, you have just one, and it says "United States" (meaning QWERTY). Highlight this entry, and click on the "properties" tab. Now, finally, you're presented with options, including Dvorak.

The stupid part about this is you can't just switch between layouts like you can on MacOS or Linux. Windows thinks that if you're typing in a different layout, it must be because you're typing in a different language. So if you want to actually switch back and forth between "input locales" (keyboard layouts), you're going to have to add a second language (I use British English), make its properties be Dvorak, and then just remember which is which. It's really obnoxious.

What's even *more* obnoxious, however, is that you have to switch over to your new input locale for each window you enter. The default will still be QWERTY, and for each new instance of IE your machine pops up without your authorization, you'll have to click over to your Dvorakized locale anew. Ready to switch to Linux yet? :-)

10.2.4 ...in Windows NT / ME / 2000?

I have no idea how to do this, and haven't had to ever, thank God. Drop me a line if you know how and want me to amend this to reflect it.

11 Switching back to QWERTY

This is something I have not yet attempted. I know people who can go back and forth between the two, but I haven't put in the time to relearn QWERTY so I can be bi-keyboard-layout-al. It's really embarrassing when I try to use a QWERTY keyboard these days — I go about 40 or 45 wpm, a little hunt-and-peckish, and have to stare at the keys. I try not to do it.

But, I've heard it can be done ...so more power to you!

12 Useful typing tutors for Linux

1. dvorak7min

2. gtypist