# Tech Info Library

## System 7: Modifying the Keyboard Layout Switching Command

```
Revised:        1/23/95
Security:       Everyone


System 7: Modifying the Keyboard Layout Switching Command


=====================================================================


Article Created: 21 February 1992
Article Reviewed/Updated: 23 January 1995


TOPIC -------------------------------------------------------------


Background
----------
Under System 7.x, I can switch keyboard layouts by pressing the Command, Option,
and Space Bar keys. This feature is probably not well known in the U.S., where
normally only one keyboard layout is installed. However, in most European
countries you may have at least two keyboard layouts installed.

In Norway we have three: two different Norwegian (only one key is different) and
the U.S. keyboard layout. The ability to change keyboard layouts in environments
with employees from different countries is appreciated. And with the Keyboard
menu (between the Help menu and the Application menu) enabled with a little help
from ResEdit, it's very easy to find the keyboard layout in use.


Problem
-------
Many heavy users in the graphics business have upgraded to System 7.x, or bought
Macintosh Quadra systems. The keyboard layout switch shortcut causes problems in
some common graphics applications such as Adobe PhotoShop, Adobe Illustrator,
and Quark XPress.

Adobe PhotoShop and Adobe Illustrator use the Command, Option, and Space Bar
sequence to zoom the picture in, while Quark XPress uses this sequence to get a
special space character called em-space (used a lot among professional
typographers).

We've found a workaround with PhotoShop and Illustrator. If we press the space
key before the Command and Option keys, the keyboard layout won't change. The
Quark XPress problem is more difficult, since the Command, Option, and Space Bar
sequence displays a special character, rather than executing a command.

Do you have any solutions for this?
```

DISCUSSION --------------------------------------------------------

*NOTE*: System 7.5 comes pre-installed with many keyboard layouts. Also, if
        a System 7.5 Easy Install is performed, all the European keyboard
        layouts are installed as a default. The user can limit the keyboard
        layout installation to only the U.S. keyboard layout if a Custom
        Install is performed. For more information about workarounds and
        alternatives to using ResEdit see the following article:
        "System 7.5: Command-Option-Spacebar Application Conflict (10/94)"

WARNING: The following instructions refer to using ResEdit to alter your
         system software. Apple Computer, Inc., is not liable for any
         damage done to your software through the use of ResEdit to alter
         the software. The User Assistance Center phone representatives
         (at 800-SOS-APPL) do not provide technical support for ResEdit.
         It is supported by APDA. For contact information on APDA, search
         the Tech Info Library under "APDA".

The entries in the 'KSWP' system resource (ID = 0) control the switching of
the keyboard layouts. Actually, the entries in the 'KSWP' resource control
more than that. Inside Macintosh Volume VI fully documents this resource
on pages 14-43 to 14-44, and pages 14-98 to 14-99.

The standard U.S. 'KSWP' resource looks like this:

  FFFF 3101 FFFC 3109
  FFFE 4601 0000 4201
  0000 0000

Each long word entry controls a separate function. The first two bytes
(integer) form the verb that the KeyScript procedure will act upon. The
third byte is the virtual key code for the key that you must press, and the
fourth byte is the modifier state that must exist when you press the key.

Table 14-3 on page 14-44 of Inside Macintosh Volume VI outlines the verbs
for the KeyScript procedure.

You can find most of the virtual key codes on pages 191 and 192 of Inside
Macintosh Volume V, or by using ResEdit on the 'KCHR' resource in the
System file.

Note on modifier state: Option key down is equal to 8; Shift key down is
equal to 2; and Command key down is equal to 1. If you press multiple
modifier keys at the same time, their values are added together for the
modifier state entry.

The second entry in the standard U.S. 'KSWP' resource (FFFC 3109) is the
one that causes the problems you describe. The first two bytes, $FFFC or
-4, form the verb "smKeyNextKybd" which means "Switch to next keyboard in
active script." The third byte, $31, is the virtual key code for space.
The fourth byte is Command key down (1) plus the Option key down (8) which
equals $09.

There are three ways to solve the problem. The first method is rather limiting and not very flexible. The second is the most straightforward, and probably the best. The third is the most flexible, but the most complicated from a user's point of view.

- Delete the entry that causes the problem.
  The 'KSWP' resource would then look like this:

```
  FFFF 3101 FFFE 4601
  0000 4201 0000 0000
```

- Change the virtual key code to something other than $31.
  Changing it to $4C would allow the Command-Option-Enter key sequence to switch keyboard layouts. The 'KSWP' resource would look like this:

```
  FFFF 3101 FFFC 4C09
  FFFE 4601 0000 4201
  0000 0000
```

- Add two new entries to the 'KSWP' resource.
  One would disable switching from the current keyboard (verb "smKeyDisableKybdSwitch") and the other would enable keyboard switching (verb "smKeyEnableKybds"). Command, Option, and Enter disable switching, and Command, Option, and Return enable switching. The 'KSWP' resource would look like this:

```
  FFFF 3101 FFFC 3109
  FFFE 4601 0000 4201
  FFF4 4C09 FFF9 2409
  0000 0000
```

Note: The four bytes of zeroes at the end of the resource are filler and must be present.


Article Change History:
23 Jan 1995 - Added warning about ResEdit not being supported by UAC and
              info about default keyboard layouts in System 7.5.
18 Dec 1992 - Corrected formatting of 'KSWP' resource.
18 Nov 1992 - Reviewed for technical accuracy

Support Information Services

Copyright 1992-1995 Apple Computer, Inc.


Tech Info Library Article Number:9844