

Hell is other browsers - *Sartre*

# Mobile browsers

Peter-Paul Koch (ppk)

<http://quirksmode.org>

<http://twitter.com/ppk>

Yahoo! London, 24 June 2009

# Desktop browsers

Desktop browsers are getting boring.

They all follow the standards;  
even juicy IE bugs are becoming  
scarce.

Fortunately ...

# Mobile ~~Desktop~~ browsers

Mobile browsers come to the rescue.

They are MUCH more interesting.

Many devices, many browsers, many incomprehensible bugs.

Good times are here again.



# Mobile browsers

Today's session will help you make some sense of the situation.

Thanks to Vodafone's generous support I'm able to deliver a preliminary report on the State of the Mobile Browsers.



	(9.5) HTC Touch Diamond	(8.65) SE P1i	(8.00) Motorola V3xx	Nokia E71	Nokia E66	Nokia E71	Samsung i560	Nokia 5800	iPhone	Android G1	Android G2	Bolt (E71)	Iris (HTC)	Ozone (E71)	Samsung F700	Sony Ericsson C510	Blackberry 9500
show page contents																	
focus	focus	untestable	no	yes	focus	no	focus	yes	no	focus	yes	no	incomplete	no			

hover pseudo-class really only makes sense when a mouse cursor is present, as it is on S60v3.

### focus

The :focus styles are applied when the user focuses on the element by touching it, and removed when the user focuses on another element. Touch

is supported by: Vodafone WM, Opera 8.65 SE, S60v3 WebKit, Iris (only while touching the screen), Ozone.

Opera/SE: links only, hover only

Something happens on Skyfire, but it's not even close to correct.

yes	static	yes	static	yes	static	yes
-----	--------	-----	--------	-----	--------	-----

### last-child

The browser does not update the styles when elements are added dynamically.

The first time you add a paragraph at the start, WebKit/NokE66 gives the next paragraph (i.e. the previous first-child) the :last-child styles in addition to the :first-child ones.

Opera/SEK770i can't do dynamic test because of link focusing problems.

S60 WebKit has a last-child bug that may impact first-child.

yes	almost minimal	no	yes	buggy	no	yes	buggy	yes	no
-----	----------------	----	-----	-------	----	-----	-------	-----	----

VF M) ia 66	(9.5) HTC Touch Diamond	(8.65) SE P1i	(8.00) Motorola V3xx	Nokia E71	Nokia E66	Nokia E71	Samsung i560	Nokia 5800	iPhone	Android G1	Android G2	Bolt (E71)	Iris (HTC)	Ozone (E71)	Samsung F700	Sony Ericsson C510	Blackberry 9500
s	focus	untest able	no	yes	focus			no	focus	yes	no	incom plete	no				

hover pseudo-class really only makes sense when a mouse cursor is present, as it is on S60v3.

**us**

The :hover styles are applied when the user focuses on the element by touching it, and removed when the user focuses on another element. Touch

ve supported by: Vodafone WM, Opera 8.65 SE, S60v3 WebKit, Iris (only while touching the screen), Ozone.

NF/SE: links only, hover only

Something happens in Skyfire, but it's not even close to correct.

<http://quirksmode.org/m>

yes	static	yes	static	yes	static	yes
-----	--------	-----	--------	-----	--------	-----

**ic**

The browser does not update the styles when elements are added dynamically.

The first time you add a paragraph at the start, WebKit/NokE66 gives the next paragraph (i.e. the previous first-child) the :last-child styles in addition to the :first-child ones.

NF/SEK770i can't do dynamic test because of link focusing problems.

S60 WebKit has a last-child bug that may impact first-child.

yes	almost minimal	no	yes	buggy	no	yes	buggy	yes	no
-----	----------------	----	-----	-------	----	-----	-------	-----	----

# Mobile browsers

- Android WebKit
- Opera Mobile
- NetFront
- Safari
- Opera Mini
- Blackberry
- S60 WebKit
- IE Mobile
- Iris
- Bolt
- Skyfire
- Obigo
- OpenWeb
- Nokia S40
- Palm Blazer
- Fennec
- Teashark
- Ozone

You may groan now.

# Mobile browsers

- Android WebKit
- Opera Mobile
- NetFront
- Safari
- Opera Mini
- Blackberry
- S60 WebKit
- IE Mobile
- Iris
- Bolt
- Skyfire
- Obigo
- OpenWeb
- Nokia S40
- Palm Blazer
- Fennec
- Teashark
- Ozone

# Mobile browsers

- Android WebKit
- Opera Mobile
- NetFront
- Safari
- Opera Mini
- Blackberry
- S60 WebKit
- IE Mobile

- Iris
- Bolt
- Skyfire
- Obigo
- OpenWeb
- Nokia S40
- Palm Blazer
- Fennec
- Teashark
- Ozone

There is no “WebKit Mobile”

# There is no “WebKit mobile”

Compatibility of :enabled, :disabled, and :checked

S60v3 WebKit			S60v5 WebKit	Default WebKits			Non-default WebKits		
Nokia E66	Nokia E71	Samsung i560	Nokia 5800	iPhone	Android G1	Android G2	Bolt (E71)	Iris (HTC)	Ozone (E71)
no			almost	yes	not :checked		yes	almost	yes

# Mobile browsers

- Android WebKit
- Opera Mobile
- NetFront
- Safari
- Opera Mini
- Blackberry
- S60 WebKit
- IE Mobile
- Iris
- Bolt
- Skyfire
- Obigo
- OpenWeb
- Nokia S40
- Palm Blazer
- Fennec
- Teashark
- Ozone

# Default browsers

- Android WebKit
- Opera Mobile
- NetFront
- Safari
- Opera Mini
- Blackberry
- S60 WebKit
- IE Mobile
- Iris
- Bolt
- Skyfire
- Obigo
- OpenWeb
- Nokia S40
- Palm Blazer
- Fennec
- Teashark
- Ozone



# Modern default browsers

- Android WebKit
- Opera Mobile
- NetFront
- Safari
- Opera Mini
- Blackberry
- S60 WebKit
- IE Mobile
- Iris
- Bolt
- Skyfire
- ~~- Obigo~~
- ~~- OpenWeb~~
- ~~- Nokia S40~~
- ~~- Palm Blazer~~
- Fennec
- Teashark
- Ozone

Still quite a lot.

# Thin clients

- Android WebKit
- Opera Mobile
- NetFront
- Safari
- Opera Mini
- Blackberry
- S60 WebKit
- IE Mobile
- Iris
- Bolt
- Skyfire
- Obigo
- OpenWeb
- Nokia S40
- Palm Blazer
- Fennec
- Teashark
- Ozone

# Opera Mini

Opera Mini is a thin client, meant for decent web browsing on older phones.

The HTML, CSS, and JavaScript is interpreted by a special Opera server, which sends the result on to a thin client.

# Opera Mini

Opera Mini does not allow any client-side interactivity.

Every time an event takes place the server is re-queried and the page refreshed.

# Mobile browsers overview

Top level:

Android WebKit, Safari, Opera Mobile

Mid level:

S60 WebKit, Blackberry, Opera Mini

Bottom level:

NetFront, IE Mobile (old)

# Operating systems

- Symbian S60 (Nokia, Samsung)
- Windows Mobile (Samsung, HTC)
- Blackberry (RIM)
- Android (HTC, Samsung, etc.)
- iPhone (Apple)
- Symbian UIQ (Sony Ericsson)
- BREW (Motorola, LG)
- webOS (Palm)
- etc. etc. etc.

# Operating systems

- Symbian S60 (Nokia, Samsung)
- Windows Mobile (Samsung, HTC)
- Blackberry (RIM)
- Android (HTC, Samsung, etc.)
- iPhone (Apple)
- Symbian UIQ (Sony Ericsson)
- BREW (Motorola, LG)
- webOS (Palm)
- etc. etc. etc.

# Operating systems

- Symbian S60 (Nokia, Samsung)
- Windows Mobile (Samsung, HTC)
- Blackberry (RIM)
- Symbian UIQ (Sony Ericsson)

JME (Java Mobile Edition)

“Write once, run anywhere.”



# Operating systems

- Symbian S60 (Nokia, Samsung)
- Windows Mobile (Samsung, HTC)
- Blackberry (RIM)
- Symbian UIQ (Sony Ericsson)

JME (Java Mobile Edition)

~~“Write once, run anywhere.”~~

“Write several times, run somewhere”  
(Still, easier than starting from scratch.)

# Example

As a test, I looked at the homepage of my [QuirksMode.org](http://QuirksMode.org) in several mobile browsers on several platforms.

The results are ... interesting.

# Example

Three variations:

- 1) Entire page shown, zoomed out  
(tiny fonts)
- 2) Upper left corner of page shown  
(normal size)
- 3) Positioning disregarded; site  
squeezed into small screen





# QuirksMode - for all your browser quirks

quirksmode.org/ [Refresh] [Google]

Compatibility QuirksBlog About

HELL IS OTHER BROWSERS + Safari

[quirksmode] ppi

QuirksMode.org is the primary source for browser compatibility information on the Internet. It is maintained by Peter-Paul Koch, [quirksmode@quirksmode.org](mailto:quirksmode@quirksmode.org), and [quirksmode@quirksmode.org](mailto:quirksmode@quirksmode.org), in Amsterdam, the Netherlands.

QuirksMode.org is the home of the [QuirksMode Tables](#), where you'll find hyper-accurate data of the major browsers' CSS and JavaScript capabilities, as well as their adherence to the W3C standards.

Book [quirksmode.org](#) contains all information a beginning JavaScript needs.

Compatibility This site contains the [QuirksMode Tables](#).

Blog [QuirksBlog](#) [QuirksMode](#) [Site](#)

Freebase This is [QuirksMode](#) [QuirksMode](#) [quirksmode.org](#) [quirksmode.org](#). You can help me in the [development](#) [process](#).

© 2004-2011 Peter-Paul Koch

Safari iPhone 2.2

Zooms out and shows entire page.

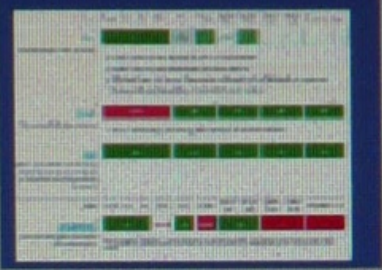




HELL IS OTHER BROW

[quirks]smod

Compatibility  
QuirksBlog  
About



QuirksMode.org is the prime source for browser compatibility information on the Internet. It is maintained by Peter Paul Koch, freelance front-end consultant, agent, and trainer in Amsterdam, the Netherlands.

QuirksMode.org is the home of the official Compatibility Tables, where you'll find hyper-linked assessments of the major browsers' CSS and JavaScript capabilities, as well as their adherence to the W3C standards.

Book  
ppic on  
JavaScript,  
contains all  
information a  
beginning  
JavaScripter  
needs.

Browser  
Compatibility  
Tables

QuirksBlog  
All new front-end  
Dev

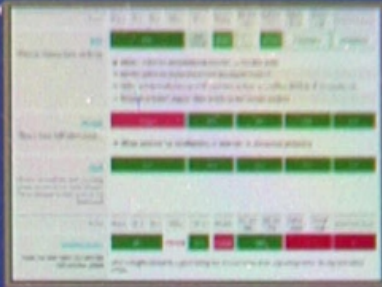
Freelance  
I'm a freelance  
front-end  
consultant, agent,  
and trainer. You  
can hire me or  
the freelancers I  
represent.

# Blackberry Storm

Zooms out and shows entire page (with minor bugs)



QuirksBlog  
About



QuirksMode .org is the prime source for browser compatibility information on the Internet. It is maintained by Peter-Paul Koch, freelance front-end consultant, agent, and trainer in Amsterdam, the Netherlands.

QuirksMode .org is the home of the Browser Compatibility Tables, where you'll find paper-free assessments of the major browsers' CSS and JavaScript capabilities, as well as their adherence to the W3C standards.

Book  
ppk on JavaScript contains all information a beginning JavaScripter needs.

Compatibility  
This site contains the Browser Compatibility Tables.

Blogs  
QuirksBlog,  
Elsewhere on the 'Net

Freelance  
I'm a freelance front-end consultant, agent, and trainer. You can hire me or the freelancers I represent.

Opera 9.5  
HTC Touch  
Diamond  
(Win Mob)

Zooms out and  
shows entire  
page

# Zoom

If the browser shows the entire site, it usually gives you a zooming option, too.

Let's take a look at a few.

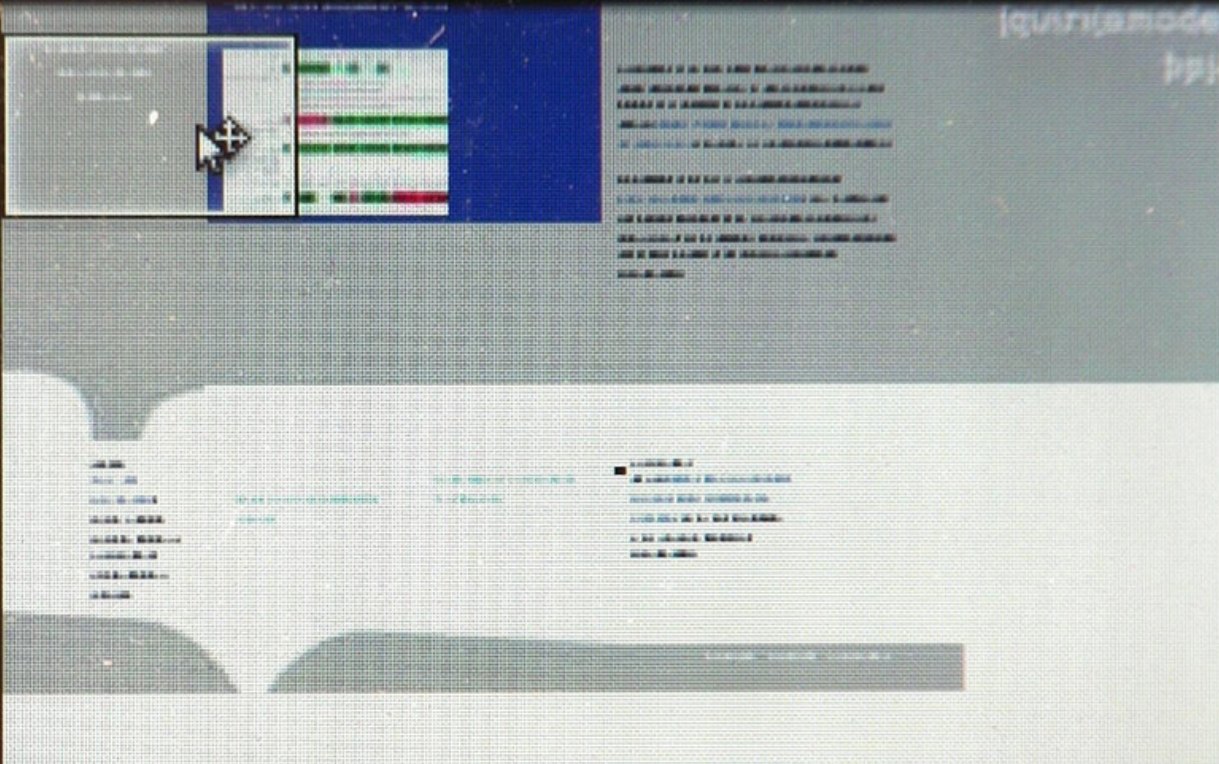




NOKIA

E7

QuirksMode - for all your browser ...



Menu

Zoom

Back

Opera Mini  
Nokia E71

Initial: show  
entire site.

Notice the  
zoom window  
top left.

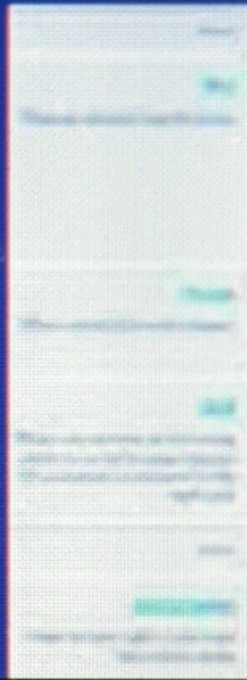




NOKIA

QuirksMode - for all your browser ...

Compatibility  
QuirksBlog  
About



Menu

04:56

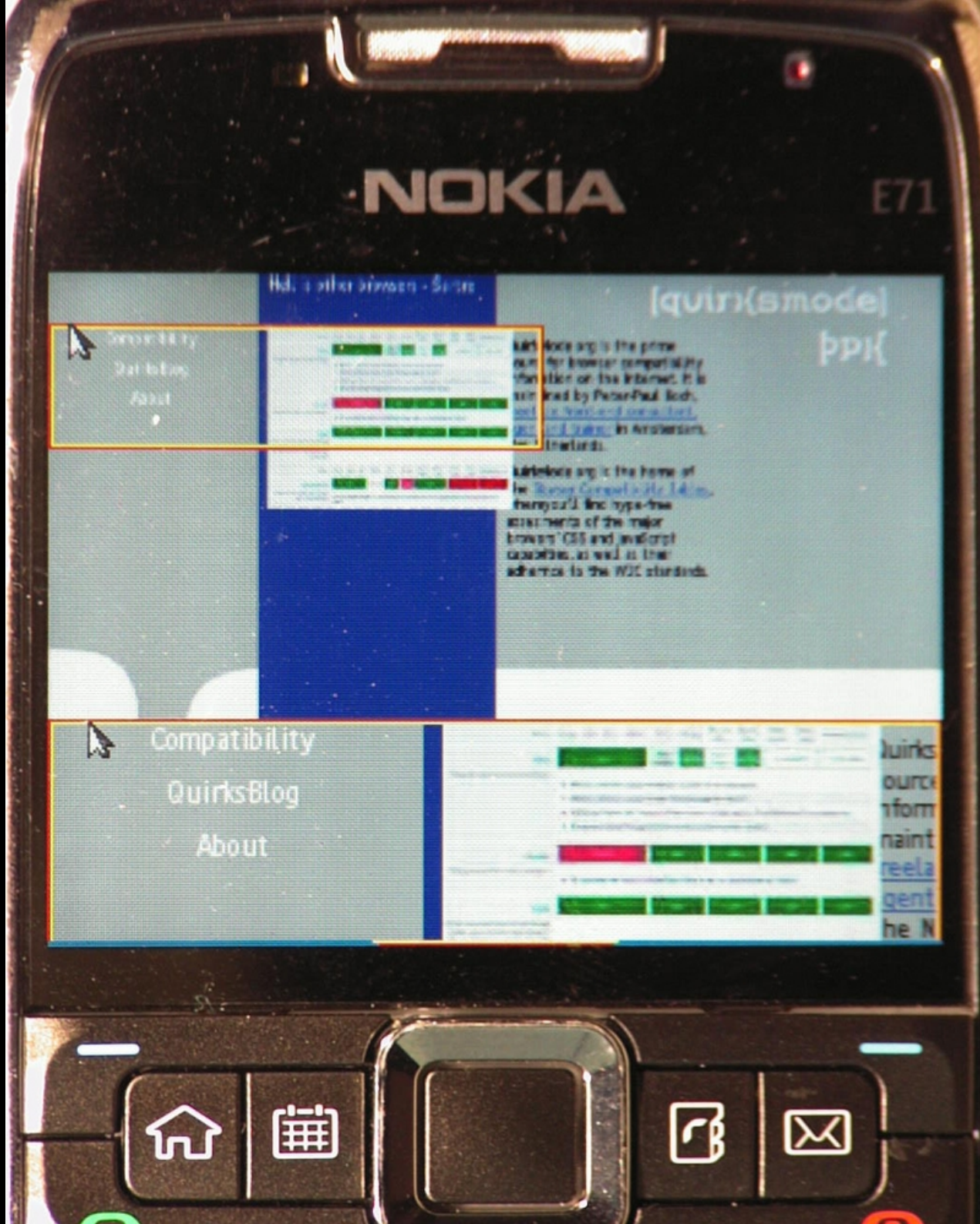
⌕/B



Opera Mini  
Nokia E71

Clicking on  
Zoom zooms  
in to the  
requested  
area.





Bolt  
Nokia E71

Bolt has an  
unusual  
zoom  
interface.

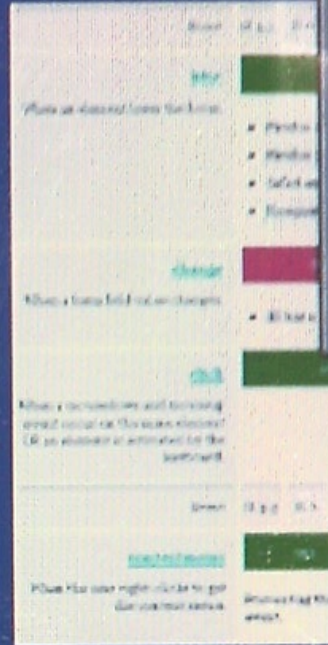


HELL IS OTH

Compatibility

QuirksBlog

About

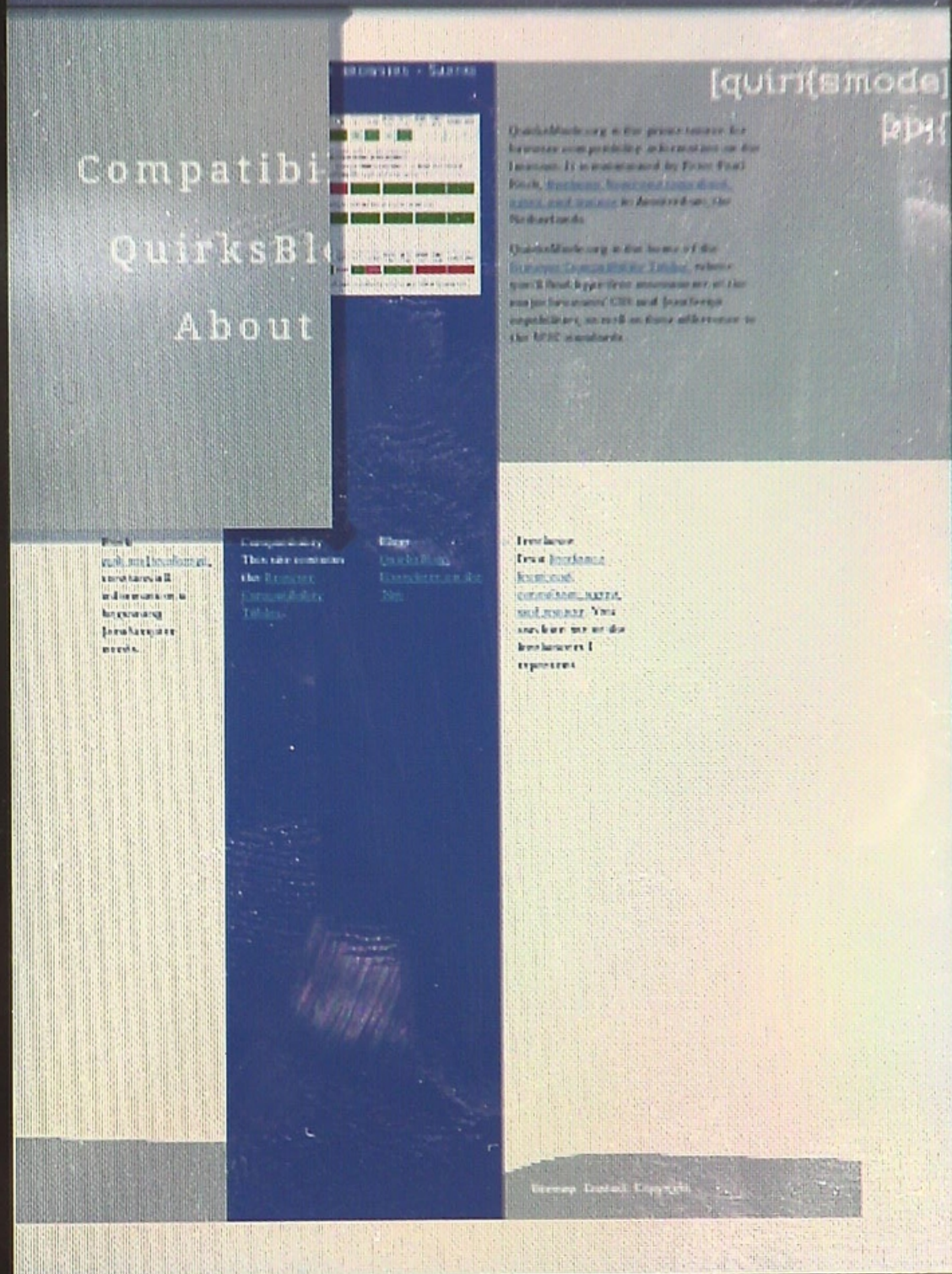


Android  
WebKit G2

Click the  
lower right  
icon...







Android  
WebKit G2

... and drag  
the zoom  
layer.  
Releasing it  
zooms in.

# Zoom

Browsers have some interesting ideas,  
but the final word in zoom interfaces has not yet been spoken.

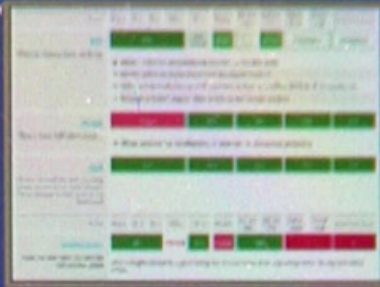
(Especially when Apple continues its patent fascism.)

# Example

Let's continue with our examples.



QuirksBlog  
About



QuirksMode .org is the prime source for browser compatibility information on the Internet. It is maintained by Peter-Paul Koch, freelance front-end consultant, agent, and trainer in Amsterdam, the Netherlands.

QuirksMode .org is the home of the Browser Compatibility Tables, where you'll find paper-free assessments of the major browsers' CSS and JavaScript capabilities, as well as their adherence to the W3C standards.

Book  
ppk on JavaScript contains all information a beginning JavaScripter needs.

Compatibility  
This site contains the Browser Compatibility Tables.

Blogs  
QuirksBlog, Elsewhere on the 'Net

Freelance  
I'm a freelance front-end consultant, agent, and trainer. You can hire me or the freelancers I represent.

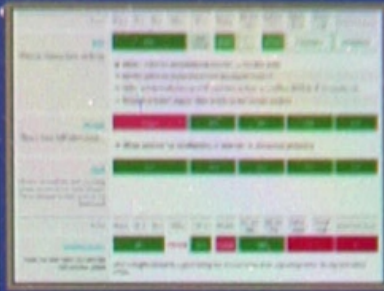
Opera 9.5  
HTC Touch  
Diamond  
(Win Mob)

Zooms out and  
shows entire  
page





QuirksBlog  
About



QuirksMode .org is the prime source for browser compatibility information on the Internet. It is maintained by Peter-Paul Koch, freelance front-end consultant, agent, and trainer in Amsterdam, the Netherlands.

QuirksMode .org is the home of the [Browser Compatibility Tables](#), where you'll find free assessments of the major browsers' CSS and JavaScript capabilities, as well as their adherence to the W3C standards.

[quit]

Opera 9.5  
HTC Touch  
Diamond  
(Win Mob)

But...  
this is  
desktop mode

Zooms out and  
shows entire  
page

Freelance  
I'm a [freelance](#)  
[front-end](#)  
[consultant](#), [agent](#),  
[and trainer](#). You can  
hire me or the  
freelancers I  
represent.







[quirksmode] pp}

## Hell is other browsers - Sartre

Browser	IE 6.0	IE 7.0	IE 8.0	Firefox	FF 1.5	FF 1.5.0.1	FF 1.5.0.2	FF 1.5.0.3	Opera 9.50	Opera 9.50.1	Android 2.0.1
When an element loses the focus.	Pass	Fail	Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
When a form field is changed.	Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
When a mouseover and mouseup event occur on the same element (if an element is activated by the keyboard).	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
When the user right-clicks to get the context menu.	Pass	Fail	Fail	Pass	Fail	Fail	Fail	Fail	Fail	Fail	Fail

- Firefox 1.5.0.1 doesn't support a variety of circumstances.
- Firefox 1.5.0.2 doesn't support a variety of circumstances.
- IE 6.0 and Opera 9.50 don't support <div> elements as table cells in all circumstances.
- Android 2.0.1 doesn't support these events on the browser window.

- IE 6.0 and Opera 9.50 don't support these events on the browser window.



Opera 9.5  
HTC Touch  
Diamond  
(Win Mob)

Errr ....

# Opera Mobile

- desktop mode
- mobile mode

# Opera Mobile

- desktop mode
- mobile mode

Sites are shown exactly as on a desktop computer.

# Opera Mobile

- desktop mode
- mobile mode

Sites are squeezed until they fit the display; and several CSS declarations don't work. (such as float, position, width)

More tests necessary.



font-weight: 700

font-style: italic

According to JavaScript the `fontStyle`  
of the previous line is italic

text-decoration: underline

TEXT-TRANSFORM : UPPERCASE

FONT-VARIANT : SMALL-CAPS

color: blue

letter-spacing: 0.3em

word-spacing: 1em word-spacing:  
1em

font-size: 1500%



Opera 9.5  
HTC Touch  
Diamond  
(Win Mob)  
desktop  
mode



## Basic font CSS - mobile

I want to be sure mobile browsers support this CSS because I often use it in my test cases.

**font-weight: 700**

*font-style: italic*

According to JavaScript the fontStyle of the previous line is italic

text-decoration: underline

TEXT-TRANSFORM: UPPERCASE

font-variant: small-caps

color: blue

letter-spacing: 0.3em

word-spacing: 1em word-spacing: 1em

font-size: 150%



Opera 9.5  
HTC Touch  
Diamond  
(Win Mob)  
mobile  
mode





# Opera Mobile

Opera says desktop mode is the default mode; users have to explicitly set mobile mode.

I believe them, but they may be wrong.

# Opera Mobile

Changing random settings just because you can is popular in the mobile world.

It expresses power over other parts of the mobile value chain.

So I expect some hardware vendor or carrier to switch the mode.

# Example

Let's continue with our examples.

[quir]{smode}  
pp]{

## Hell is other browsers - Sartre

Browser	IE 6.0	IE 7.0	IE 8.0	Firefox	FF 1.5	FF 1.5.0.1	FF 1.5.0.2	FF 1.5.0.3	Opera 9.50	Opera 9.50	Opera 9.50	Opera 9.50	Opera 9.50	Opera 9.50	Opera 9.50
When an element forces the focus.	Pass	Fail	Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
When a form field is changed.	Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
When a mouseover and mouseup event occur on the same element (if an element is activated by the keyboard).	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
When the user right-clicks to get the context menu.	Pass	Fail	Fail	Fail	Fail	Fail	Fail	Fail	Fail	Fail	Fail	Fail	Fail	Fail	Fail

- Firefox 1.5.0.1 doesn't support a variety of circumstances.
- Firefox 1.5.0.2 doesn't support a variety of circumstances.
- IE 6.0 and Opera 9.50 don't support `onmouseover` or `onmouseup` in all circumstances.
- Konqueror doesn't support these events on the browser window.

- IE 6.0 and Opera 9.50 don't support `onmouseover` and `onmouseup`.



Opera 9.5  
HTC Touch  
Diamond  
(Win Mob)

Errr ....





# PPK

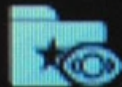
## Hell is other browsers - Sartre

Browser	IE 6.0	IE 7.0	IE 8.0	Firefox	Opera	Safari	Android	BlackBerry	Windows Phone
<b>IE 6.0</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>IE 7.0</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>IE 8.0</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>Firefox</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>Opera</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>Safari</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>Android</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>BlackBerry</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>Windows Phone</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%

### Compatibility

NetFront  
Samsung  
F700

Errr ....



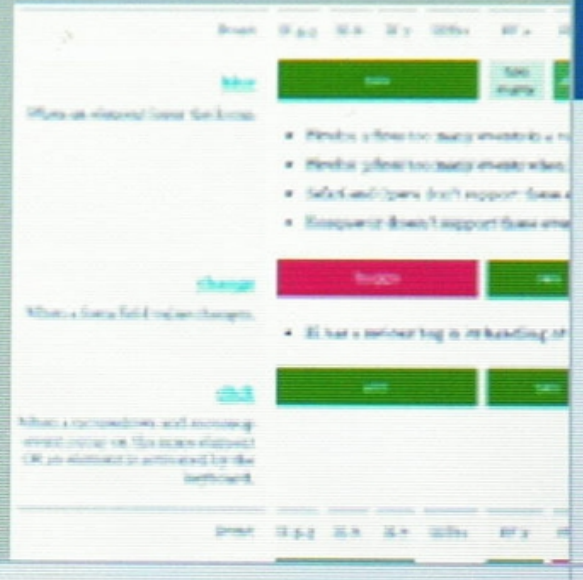




# Compatibility

QuirksBlog

About



More

- More a flow too busy instead a r
- More a flow too busy instead a r
- Self-wid/pen don't support base
- Equipment doesn't support base and

Change

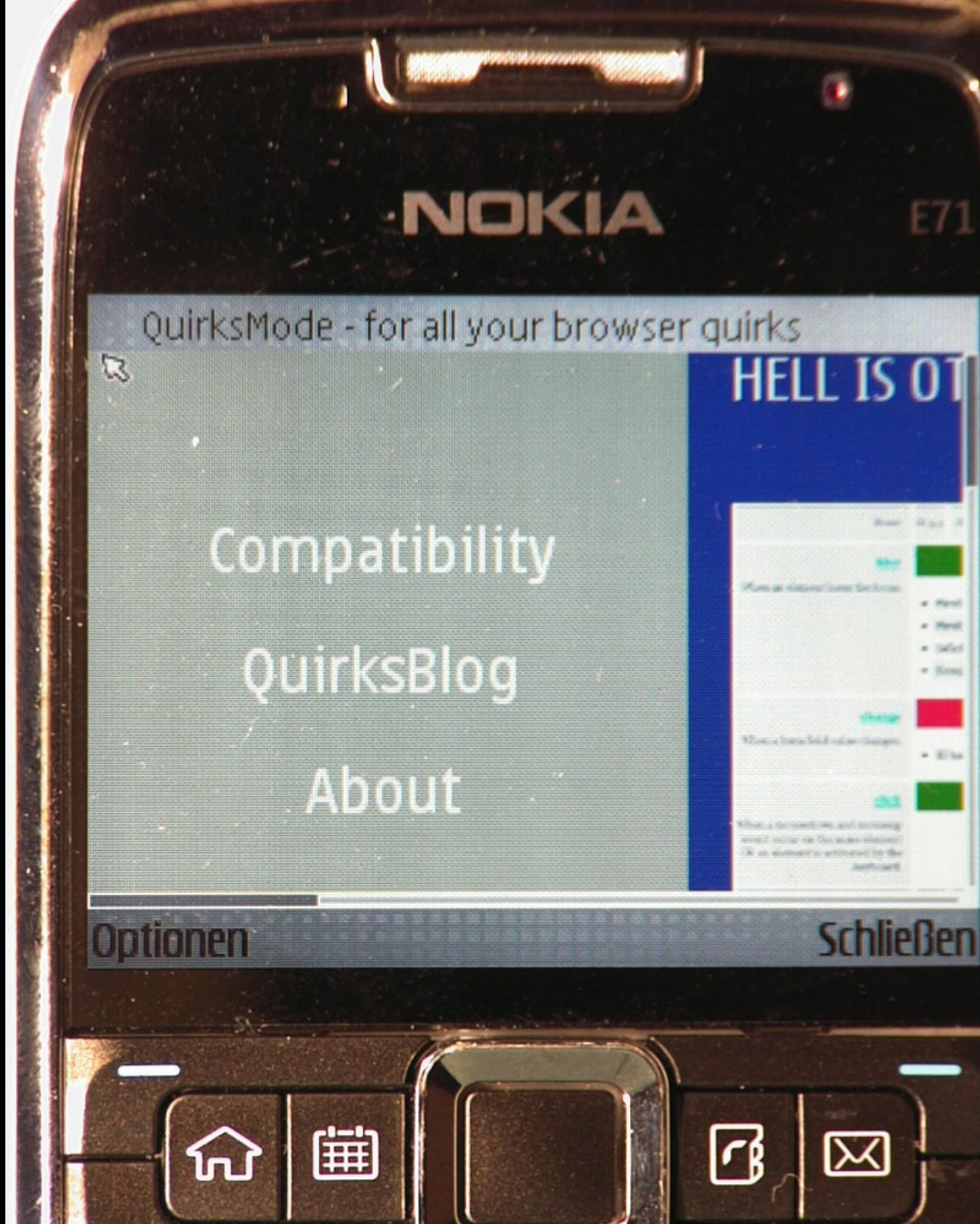
- It has a similar log in or handling of

Add



NetFront Samsung F700  
horizontal





S60v3

WebKit

Nokia E71

Shows upper  
left corner of  
site.



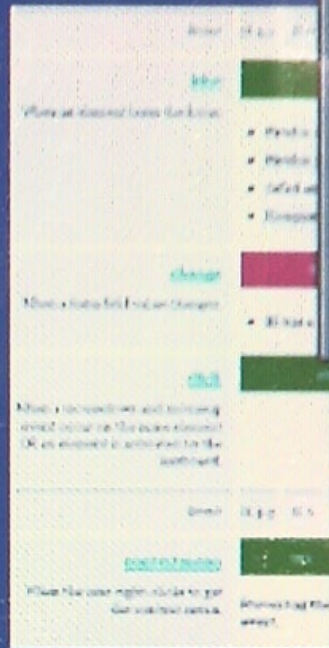


HELL IS OTH

Compatibility

QuirksBlog

About



Android  
WebKit G2

Shows upper  
left corner of  
site.

# Back

On most browsers, going back to the previous page is done by pressing the correct button.

(BTW: Windows Mobile browsers usually go to the top of the previous page, and not to the point where you were.)

# Back

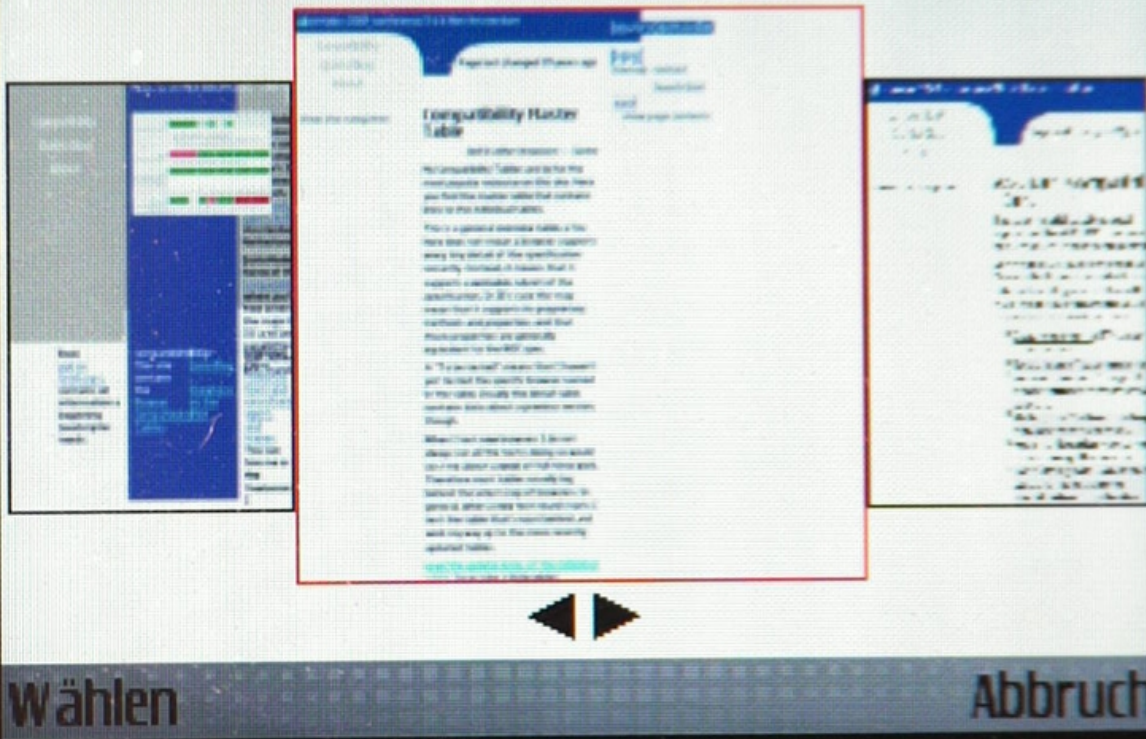
Still, by far the best Back interface is offered by the S60 WebKit. I hope other browsers will copy it.



NOKIA

E71

## Compatibility Master Table



S60v3

WebKit

Nokia E71

Pressing the  
back button  
reveals this  
interface...



NOKIA

E71



# CSS contents and browser compatibility

Compatibility Master Table

CSS - Conte

Table of Content

Select Cancel

Ozone  
Nokia E71

Ozone does something similar, but it needs some more work.

# Browser bugs

Unsurprisingly, all browsers have their share of bugs, especially in CSS.

And please count every WebKit as a separate browser in this regard.



support this CSS because I often use it in my test cases.

**font-weight: 700**

*font-style: italic*

According to JavaScript the `fontStyle` of the previous line is italic

text-decoration: underline

TEXT-TRANSFORM: UPPERCASE

FONT-VARIANT: SMALL-CAPS

color: blue

letter-spacing: 0.3em

word-spacing: 1em    word-spacing:  
1em

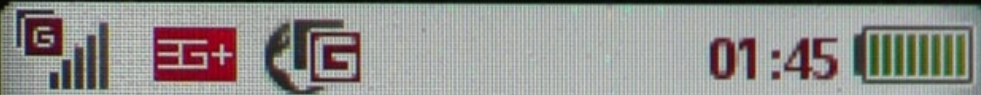
font size: 150%



Android  
WebKit G1

Perfect  
support.





**font-weight: 700**

*font-style: italic*

According to JavaScript the  
fontStyle of the previous line is  
italic

text-decoration: underline

text-transform: uppercase

font-variant: small-caps

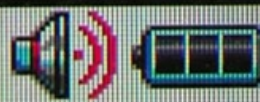
color: blue

Option. **Wählen** Zurück

NetFront  
SE C510

Lacks some  
declarations.





## Basic font CSS - mobile

cases.

font-weight: 700

font-style: italic

According to JavaScript the fontStyle of the previous line is italic

text-decoration: underline

TEXT-TRANSFORM: UPPERCASE

font-variant: small-caps

color: blue

letter-spacing: 0.3em

word-spacing: 1em word-spacing: 1em

font-size: 150%

Options

Back

Opera Mob

8.00

Motorola

V3xx

Locked in  
mobile mode.

Lacks most  
declarations.





# Basic font CSS - mobile

cases.

font-weight: 700

font-style: italic

According to JavaScript the fontStyle of the previous line is italic

text-decoration: underline

TEXT-TRANSFORM: UPPERCASE

font-variant: small-caps

color: blue

letter-spacing: 0.3em

word-spacing: 1em word-spacing: 1em

font-size: 150%

Options

Back

Opera Mob  
8.00

Motorola  
V3xx

Besides, a JavaScript check for fontStyle is incorrect.

# Browser bugs

This problem has implications for testing.

Do NOT use JavaScript to ascertain whether a certain CSS declaration is supported.

The script might misfire.

# Browser bugs

Prize for the weirdest CSS bug goes to the Android G2.

Reference:

<http://quirksmode.org/css/box.html>



# Browser bugs

This is the normal test (Firefox):



Width purple: 300px  
Width blue: 330px

# Browser bugs

G2: the purple box is **WIDER** than the blue one... but only in portrait orientation



(Sorry, no screen shot.)

# Developing for mobile

Rule 1:

Do NOT use emulators.

They cannot be trusted.

# Developing for mobile

Rule 2:

Make sure you have:

- iPhone or Android (or both)
- S60
- Windows Mobile
- (Blackberry)



# Developing for mobile

Rule 3:

Use media queries

```
@media all and (max-width: 300px) {  
  // styles for small screens  
}
```

Opera, minor WebKits: full support  
iPhone, S60v5 WK: static support

Thank you  
for your attention

# Questions?

Ask away.

Or ask me on Twitter

<http://twitter.com/ppk>

or on my site

<http://quirksmode.org>