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📖**Forms of successful ambient displays (note to self)** - Thursday, Oct 30 2003, at 6:13 pm (more **environments**, **interface**, **ambient displays**)

(I was going to write this as a note to myself, but figured I'd put it here while I digest it)

The troubling thing about pinning down the nature of ambient displays is that too many end up being displays that forcibly get your attention when they have pertinent information (like the light on the answering machine or the shaking string denoting high network activity) or they need to be polled specifically, like the '**weather mobile**' or, well, a clock in general.

Really good ambient displays provide their information nondisruptively during the course of the observer's everyday tasks.

Cases in point:

A **kleenex cube** is a poor example of an ambient display because it gives only the binary reading of 'empty' (no tissue sticking up) or 'not empty' (tissue sticking up).

Rolls of toilet paper are good examples of ambient displays because you know how much toilet paper is left, without ever directly polling the object to find out.

The key is that most ambient displays are tightly coupled with the objects they display information about. Successful man-made displays will probably rely on representative state-changes to metaphoric representations of the relevant objects, like fluid in a cylinder indicating how full a hard drive is. The display is even more successful when the user comes across the information over the course of their user's normal activities.

That's all for now...

Wow this page is pretty, I know. I'll make it ugly soon though. Until then, comment away!

comments on post 1874

[Fri 07:58] anonymous now we know where kevin does his best thinking
[Fri 09:36] veji (**www**) I've been thinking a lot about ambient/peripheral displays as well. Regarding whether or not to forcibly get the user's attention when you have something important to tell them, at least one study showed that this is exactly what user's wanted: be invisible until you have something interesting to tell me. These are some notes I wrote a few weeks ago on Microsoft Sideshow:

"Interrupting users might seem like that last thing an ambient display will aim to do. The very definition of an ambient display might bar designers from designing in methods of interrupting the user. However, users using Sideshow expressed an interest in a configurable level of interruption: they wanted Sideshow to interrupt them sometimes and they wanted to be able to configure when it would interrupt them."

For your toilet example: you won't know unless it's too late (gasp!) if several guests have used the bathroom and fail to replace the roll or report it to you. Maybe an ambient display is a combination of giving status and providing a configurable means of interruption, for those potentially embarrassing moments. ;)
[Fri 09:53] sen5es Much of the ambient display discussion seems to focus on the visual - has there been much discussion around sound or the other senses? To continue the bathroom analogy, you know if it is in use (and what for :)) by the sound - shower running, toilet flushing etc. I, at least, and perhaps most people 'tune out' this ambient noise until they want to know - then listen for a split second - does this count as polling? Not sure how or if you would work in the other senses... Just continuing the discussion...
[Fri 09:54] Mike (**www**) (**email**) I don't understand the difference between a clock as an ambient display and a roll of toilet paper as an ambient display. Don't they both simply display state? You still need to look at either of them for them to work.

The only difference that I can see is that the clock is a representation of an abstract concept ("time") whereas the roll of toilet paper is not a representation, but a tangible object whose form conveys information.

I need to go pee now.

[Fri 11:00] Kevin Fox (**www**) (**email**) A few comments on comments... Veji: I wouldn't dispute that interruptive displays aer valuable, but I wouldn't classify them as ambient displays. I wouldn't consider a telephone to be an ambient display, even though it just sits there until someone is trying to reach you.

Mike: The difference is that you can pick up the state of the toilet paper without polling it. If, while leaving the bathroom, you were asked how much toilet paper was left, there's a good chance you could tell someone, even though you never explicitly thought about it while using the toilet paper. On the other hand, you look at a clock only when you want to know what time it is, and are thus actively polling the device to gather its state.

[Sun 09:50] David. (**www**) (**email**) Whoa. Accessing from a different computer today, so I get to see those Google ads you've spared your usual readers. The ads for this entry are *all about* the bathroom fixtures. I guess context-sensitivity only goes so far.

[Sun 22:29] spautz (**www**) What are your thoughts on systems that attract more attention (but don't necessary force it or cause interruptions) when they have pertinent information? Something like coloring the inside roll and maybe the last few sheets of toilet paper red to let a prospective user know about the shortage beforehand? (Would this really count as nondisruptive?)

What about some sort of logarithmic display, where the "state-changes to metaphoric objects" are not constant, but instead only really become present/noticeable at the extremes where users are more likely to need to know about the object's state? Would this be too close to the binary display of the kleenex clube, or could such a thing actually be more useful than either a linear approach or a binary approach for some situations?

(sorry, just an overcurious newbie. =))

[Wed 17:00] anonymous The kleenex tissues here at work have different color tissues when the box is near the end. So we have "plenty of tissue" "running out of tissue" and "no tissue" states

[Sat 01:30] Lilly (**www**) I don't think we use temperature enough as a way of conveying information. Imagine if your keyboard spiked in temperature everytime you got a mail. No annoying envelope in the taskbar left behind to mesmerize and distract me. Damn the FCC's temperature standards.

Okay. So that's kind of a mean idea. :-D

But I'm kind of stuck on the toilet paper as ambient display idea because it isn't clear to me that it's much different from the clock. I only am able to report on how much toilet paper at the granularity level of lots, just a little, or none, since toilet paper rolls come in different initial sizes. And the only reason I can report on just a little or none is because the question is one I have to answer when I use the toilet paper -- will I have any available to me? So in a sense, it's like polling a clock, only that with the clock, there's no secondary by-product of the transaction.

Is part of the issue the structure of the toilet paper cognitive decision tree? 1) Is there any left for me? receive info -->take some / find some / cry and scream 2) take some --> wipe / there is none left for me. receive info --> find some / cry and scream

I actually think that the first one mirrors my thought process.

I think it boils down to the fact that I would probably have no idea how much toilet paper was left unless I needed some, so that makes toilet paper as an ambient display less useful a concept to me.

So then why am I wrong, or what is a real ambient display? Try the **ambient orb**. It's non-interrupting and it conveys information. But I still have a hard time believing that most people could report its color unless they were told to or they "polled it."

Now I'm confused.