The Humble Electric Toothbrush

Description

The electric toothbrush - while many of us use them, they remain a gadget with a simple purpose. We don't need it to do fancy things, just turn on and help brush our teeth.

The example I am critiquing is my own Braun toothbrush that I have had for many years now. A simple design, really - two green buttons, one large and one small, turn the unit on and off, respectfully. The brush head can be simply pulled off and a new one snapped on when necessary. And that is really all that is on the unit itself, save a cylindrical indentation in the bottom (for placing on the charging base).

The charging base is also very simple - no buttons, no lights, just plug it in and set the toothbrush unit on it. The unit charges by induction, and there are no exposed contacts or anything that physically connects the unit to the base. The unit only fits on the base one way, thanks to a notch in that cylindrical indentation. Simple, right?

Design

Simple is the name of the game when you are designing something with a basic, humble purpose, that just has to work when a tired student wakes up and needs to run to class. Most people just need it to work - no fancy buttons, no built-in MP3 player, no satellite TV...you get the idea.

Affordances - Given that it is about the same size and shape (albeit a little thicker) than a normal toothbrush, and has a cylindrical design, it feels natural to pick it up and hold it in your hand. And the bigger green button just screams, "Push Me!", so it isn't difficult to figure out how to turn it on. That the little green button turns it off is a bit harder to determine, but if pressing the big button doesn't successfully turn it off, the little one is a great second bet.

The notch in the base (as well as the Braun logo on the front of the toothbrush) makes it simple to figure out how to put it back on the base. It will only fit one way, with the two notches lining up.

Visibility - The main "on" button is hard to miss, either with your eyes or when holding the toothbrush. It is very prominent, and right at the level of your fingers when you go to brush. However, the design fails to make a few things visible to the user, namely charging status or the battery level. There are no lights or indicators of any kind on the unit. The current battery level is not displayed anywhere, and it might be useful to a user wanting to take it on a short trip without lugging along the charging base. Also when put on the base, it might be charging, it might not. Who knows. (However I have discovered that the toothbrush will turn off if it begins charging and was never manually switched off. But this is more about feedback than visibility.)

Feedback - Since it is a vibrating apparatus, the feedback of 'on' or 'off' is easily determined by feeling if the unit is vibrating or not. It doesn't really need an on/off light because of this (although no feedback at all could mean it's dead or malfunctioning too, and without a battery indicator that is difficult to discern). And, as mentioned before, there is a bit of feedback when the unit shuts off automatically if it begins charging.

Papanek would inevitably ask simple questions like, "Does it work?". Indeed, it does. It does what the user expects it to, and without having to learn how to figure it out. Of course use could be debated in its usefulness, since many studies have argued that electric toothbrushes don't really do a better job than regular toothbrushes (see results of a study here). But that is more about need, as most who buy an electric toothbrush will do
so thanks to superficial needs imposed by ad agencies or toothbrush commercials. As Papanek mentions in his book, most people "depend on the hands, brains, and imaginations of experts" (p. 34, Design for the Real World). If the dental experts tell us we need an electric toothbrush, we would be silly not to go out and buy one.

Redesign

As mentioned earlier, this toothbrush does accomplish what it sets out to do, and does so in a simple, dare I say, elegant way. Two buttons on the whole unit, no lights, and no wrong way to set it on the charger. However, the design could use some tweaks:

- A tiny light on the toothbrush or charging base would be very helpful to tell the user when it is charging. I could unplug the unit from the wall right now, and it would look no different than it does when it is plugged in.

- An indicator, perhaps using E-ink or a small LCD, to indicate battery charge on the toothbrush unit. Who knows if I have enough juice for my morning brush?

- A somewhat more visible way to make sure you're putting the unit on the charger correctly. Even a small colored line on both the unit and charger that you have to line up would be nice, though then you might try to hard to line it up perfectly. Perhaps doing away with the notch altogether and enabling the toothbrush to be charged regardless of the direction it is facing on the charger would be a better idea.

- Instead of two buttons, a switch or perhaps buttons that push out when another is pressed (kind of like the old-timey light switches pictured to the right) would be better suited for on-off. This way, it would be visually apparent that only one state (on or off) is possible at a time, and the button that is pushed out is the only available option (or in the case of a switch, it can only be in one place at one time).

All images are originals, except the light switch which is from: http://seventenclark.com/archives/209