

Universal Design and the Palm Beach Ballot

By Lisa A. Goldstein, Edward Steinfeld, Aaron Steinfeld

December 21, 2000

Amidst the confusion surrounding the presidential election in the U.S., one thing is clear: the source of the problem. The ballot -- poorly designed and difficult to understand -- underscores the value of universal design.

Universal design is a concept that, in theory, makes life easier for everyone, not just people with disabilities.

And what is it, exactly? Simply put: the design of environments, products and systems that make things easier for everyone to use and that do not discriminate against any group. It is an approach to designing products, buildings and communication systems that is gaining interest among design professionals and the public at large. Seven Principles of Universal Design have been developed by a group of experts: Equitable Use, Flexible Use, Simple and Intuitive Use, Perceptible Information, Tolerance for Error, Low Force of Effort and Size and Space for Approach and Use.

The ballots used in Palm Beach clearly didn't follow these universal design principles. The design had large type to help older voters. However, it had two characteristics that violate two of the aforementioned tenets of universal design: Simple and Intuitive and Tolerance for Error.

To be most usable to a wide variety of individuals, a design should 1) not require a lot of conscious thinking, instructions or experience to use properly and 2) help alert users to a mistake and allow them to correct it without disastrous consequences.

Why isn't the Palm Beach ballot simple and intuitive to use? There are three reasons well understood by researchers in the field of human factors that help shed some light on this question.

First, the layout of the ballot was unusual because it does not follow the conceptual model commonly used to associate two rows of related information. Typically, rows of information would be organized into two columns, one for the candidate's name and one with a check-off box for that candidate -- a practice, in fact, reflected by Florida state election law. However, in this case, the designers of the form wanted to have one punch out column for two rows of candidates. This is a very different model that, to be effective, requires a graphic design that would focus attention on the unusual arrangement. But this was not done adequately.

Second, there is a design concept for relating actions to consequences called "natural mappings." A common example is the mapping of controls to burners on a stove. When the organization of controls is different than the layout of the burners it is difficult to

determine which control activates which burner. Organizing the controls in the same pattern as the burners is much easier to use.

In the Palm Beach ballot, the mapping of names to holes was not a natural mapping. The first name on the list (Bush) was matched to the first hole, but the second name (Gore) was matched to the third hole. Because Bush was at the top, it was easy to determine which hole should be used for him, while for Gore and Buchanan, it was much more difficult. In fact, it is not far fetched to interpret the Gore line as having two or three optional holes. This interpretation is reinforced by the fact that the lines separating each of the parties bracketed more than one hole.

Third, the lines at the top of the ballot on each side were offset. This is probably an attempt to reinforce the fact that the candidates on the left corresponded to alternating holes. However, we generally expect borders like these to line up. If they don't, how do we interpret it? Although there are arrows to indicate which hole to punch, the lack of a natural mapping and the offset lines are confusing. It is easy to assume that the holes were mistakenly offset. Viewing the ballot from an angle, unlike the straight-on view shown in the press, would lead to additional difficulty in lining up the arrows with the guide holes. Older voters would be more hesitant to lean over the ballot for a better viewing angle in fear of losing their balance.

Returning to the second principle of universal design that was all but ignored -- tolerance for error -- the obvious question is why didn't the ballot allow a voter to correct an error? Once voters punched out the hole, they had no recourse. Even if they did discover their errors, they could do nothing to fix them, short of asking for a new ballot. Whether or not they had the knowledge or opportunity to do so is unknown. Most likely, those that did make an error and discover it punched out a second hole, but this effectively disqualified their vote. In fact, this may be what happened for a large portion of the estimated 19,000 double-punched ballots. Of course, voters must be aware that they made an error before taking any action at all. The guide holes mask the ballot in a way that prevents easy detection of errors. The punch card method also lacks feedback to the voters for help spotting mistakes. Pen and lever based voting methods provide clearer visual identification of the choices made. With a computer based process one could summarize the result of a voting session and have the voter confirm it before registering the ballot.

In the total scope of things, this poor design for correction and feedback is the worst aspect of the ballot's design. These flaws were then exacerbated by the fact that a time limit of five minutes was imposed on Palm Beach voters. Although they were evidently told that they could ask for help, it is unlikely that many voters would admit that they had a problem during the course of voting. Such an admission in front of a room full of people would be embarrassing, not to mention the fact that it could result in a violation of the privacy expected in the voting booth. Moreover, there's no guarantee that volunteers available for assistance at polling places would provide assistance with such problems. The odds are they would be too busy to provide assistance to every confused voter.

Two voters quoted by ABC.com illustrate the design problems described above. One of them said “By Gore there were two holes ... I had to figure out which one. I asked one of the ladies for help and she didn’t know. When I left I figured out I voted wrong.” Another voter complained, “I don’t know if I voted wrong ... Republicans had only one hole, Gore-Lieberman had two. I think I did right, but it was very confusing.”

It is no accident that the poor ballot design caused such a problem in Florida. The U.S. Census reported that in 1998, 18.3 percent of the population in Florida was 65 or over compared to 12.7 percent in the total U.S. population. Older people have a more difficult time adjusting to new conceptual models as well as making decisions in short time frames. Because of conditions associated with the aging process, they are more likely to have limitations of vision and cognitive deficits that affect overall performance enough to make them more sensitive to poor design.

The angry reaction of many senior citizens to the ballot design is an extremely interesting development. For many years, people have been advocating universal design and predicting that the aging Boomer generation will eventually bring with it a greater demand for it. Too often, older people blame themselves for difficulties they experience using the environment and everyday products. However, this should not be the case. If designed correctly, products and the environment can be used by almost everyone without assistance from others. These angry senior citizens are only asserting their right to design that does not discriminate.

The ballot snafu is particularly useful as a lesson on the influence of design on our lives. A ballot’s poor design could actually determine who becomes president of the country. Even something apparently as simple as a ballot’s layout cannot be taken lightly.

Although younger people also had problems using this ballot, the older population will, in all probability, encounter them far more frequently. As the baby boomer generation ages, we can expect many more examples of universally bad design to reach the public’s attention. Many of these examples are already well known to the experts: seat belts, voicemail menus, income tax forms, toilets, and VCRs. An aging society requires environments, products, and systems that are more usable and friendly for all of us.

Perhaps the lesson of the ballot will raise the consciousness of politicians to the point that universal design becomes a political issue. Which party will pick up the torch first? A hunch is that it will be whoever loses this election.

Authors:

Edward Steinfeld, D.Arch is the Director of the Rehabilitation Engineering Research Center on Universal Design at Buffalo and a Professor of Architecture at SUNY Buffalo. Aaron Steinfeld, Ph.D. is a Post-Doctoral Researcher at California PATH at UC Berkeley. Lisa A. Goldstein is an Associate Editor at CanDo.com and is part of the

Steinfeld family as spouse of the second author. (note: Aaron Steinfeld is now a Research Scientist at the Robotics Institute, Carnegie Mellon University and Lisa A. Goldstein, is a free lance writer in Pittsburgh, PA.)

This article was published on CANDO.COM in December of 2000.

Further Information

<http://www.ap.buffalo.edu/~rercud>