

# Landscape vs. Portrait Formats: Assessing Consumer Preferences

Dr. Stanley Wearden, Associate Professor  
School of Journalism and Mass Communication, Kent State University

After nearly two decades of disappointments with electronic publishing ventures, most media executives now seem convinced that humankind is finally on the verge of embracing a new, radically different publishing paradigm – a paradigm that many authorities argue will be based more on the television or computer screen than on the printed page.

There can no longer be any doubt that digital communication technologies are spurring fundamental changes within all publishing businesses. However, the notion that electronic versions of periodicals and books soon will be assimilated into the television form warrants far more scrutiny than it has received.

In our research at Kent's Information Design Laboratory (IDL) in the School of Journalism and Mass Communication, we have found that little consideration has been given to the historic attributes of typographically formatted documents, especially to those attributes that might be incompatible with the display characteristics of TV screens and computer monitors.

Among the most obvious but generally overlooked differences between printed documents and video presentations is the orientation of the display medium. Paper-based documents throughout the world historically have been and continue to be predominantly portrait-oriented – taller than they are wide – whereas television screens and computer monitors are predominantly landscape-oriented – wider than they are tall.

In recent years, this distinction has been blurred by the explosive growth of the World Wide Web and consumer online services. Designers today frequently find themselves at odds over whether electronic editions of publications should adhere to the traditional portrait orientation of printed pages or should conform to the common landscape orientation of television screens and computer monitors.

Our extensive literature review confirmed that the portrait format for printed publications is widely accepted, at least among graphic designers. James Craig and Bruce Barton, who chronicle 30 centuries of graphic design, describe the portrait orientation of documents as dating at least to the Egyptians, whose hieroglyphics were organized in vertical columns read left to right. Interestingly, all but one of the examples in 3,000 years are portrait-oriented. Their sole landscape-oriented design is from the 1980s.

Although Craig and Barton don't explain why humans historically have favored a portrait orientation for documents, Roy Paul Nelson traces this orientation to the golden section of the fine arts. He describes this 2:3 ratio of width to height as the ideal design model.

Aaron Marcus also describes the classical basis for modern page design, but despite this foundation and his calling for displaying the standard letterhead sheet, he assumes a landscape monitor. Marcus' assumption – that document designers must accept the prevailing landscape technology for electronic publishing – appears to have strong support even though some manufacturers also make portrait monitors.

But, in all the material we gathered, we found no research that assessed media consumers' preferences for portrait or landscape screen orientation when reading documents, nor did we find any research on some of the concomitant issues, such as page-based design and scrolling.

For these reasons, the Kent IDL research team, which included associate professor Ann Schierhorn, assistant professor Carl Schierhorn and myself, initiated two studies of display orientations and formats in 1997 and 1998 as part of its ongoing investigations into the human factors and cultural biases associated with the document form.

## The First Experiment

The main goal of our first experiment was straightforward: to see if a cross-section of media consumers would prefer a landscape or a portrait screen orientation for reading periodicals and books displayed by a hypothetical portable electronic document viewer.

Of course, a number of variables could affect a person's preference for a portrait or landscape document orientation. So we also hoped to discover if media consumers' screen-orientation preference would vary:

1. for periodicals (newspapers and magazines) versus books;
2. on the basis of frequency of computer use or the frequency with which they use the World Wide Web or other consumer online services;
3. on the basis of the frequency with which they read magazines, newspapers, books or other documents;
4. on the basis of average weekly television viewing.

Finally, we controlled for gender, age, education, race, occupation and subjects' children's use of computers at home.

Data were gathered from two sources — a field experiment conducted at a major Akron, Ohio, shopping mall in which 201 people were interviewed and a series of four focus group sessions made up of Kent State University students. All participants underwent identical tests administered by graduate assistants to avoid the possible introduction of our own biases.

## Results of the First Experiment

Our analysis of the data verifies that a strong cultural bias in favor of portrait orientation for periodicals does indeed exist regardless of whether the pages are printed on paper or displayed on screens.

When presented with a mock portable document viewer displaying a blank screen that conformed to the standard 8.5-inch x 11-inch page format, 60.2 percent of the participants indicated they would expect newspapers and magazines to appear in a portrait orientation.

While some people changed their opinions when shown devices that displayed simulated portrait and landscape newspaper

pages, the overall percentage that indicated a strong preference for portrait orientation did not change significantly.

In the case of books, the data seemed at first to suggest an opposite preference. When shown the same mock blank-screen device, 57.2 percent of the participants indicated they would expect to read books in a landscape orientation. But when presented with simulated book pages in different formats, it became clear that a majority of those who originally chose the landscape orientation did so because they expected the device to display two facing pages of a book.

Of the four presentation options shown for books, the most popular choice was two columns on a portrait screen, with 71.6 percent of the subjects choosing it first or second. The second-most-popular book choice was two columns on a landscape screen (the facing pages format), with 67.7 percent choosing it first or second. Only 17.4 percent chose the truly horizontal single column on a landscape screen.

So even though a majority initially indicated a preference for landscape orientation, they still demonstrated a strong cultural bias favoring individual book pages that are portrait-oriented.

None of the standard variables — education, gender, race and age — statistically affected preferences in any of our tests.

However, it was evident from the tests and interviews that the expectations of those who spend more time watching television than reading periodicals and those who use consumer online services have been influenced to some extent by their viewing of electronic images and pages formatted to match the conventional 4:3 aspect ratio of television screens and computer monitors.

Many in this category volunteered in the first stage of the testing process that if the display device were electronic, they thought it probably would have to be landscape-oriented because that is the way their television and personal computer displays are oriented.

But our cross tabulation of participants' orientation preference with their estimated time spent connected to consumer online services yielded some rather unexpected results.

It revealed that the greater preference for landscape orientation actually came from those who spent only a moderate amount of time online at home or at work. Those participants who

spent the most and the least time online indicated the greater preference for portrait-oriented electronic periodicals.

This raises a critical question about the future digital form of periodicals and books: Will continued viewing of landscape-oriented pages on electronic displays radically alter the historic cultural bias with regard to the orientation of documents? Or will the historic cultural bias be strong enough to reassert itself through a new generation of portable electronic displays optimized for reading portrait-oriented pages?

Further insights are likely to be gained from a more elaborate and extensive follow-up study we are now conducting, but the definitive answer to this question clearly must wait until portable electronic displays suitable for reading formatted, text-based documents have been tested in the consumer marketplace.

## The Second Experiment

For our second experiment, two graduate assistants created a complete portrait-oriented, page-based electronic version of the student newspaper, *The Daily Kent Stater*. The basic design and navigational system closely adhered to the tablet newspaper model created by Roger Fidler when he was a Freedom Forum Media Studies Fellow at Columbia University.

Our objective was to test people's display preferences in three formats: 1) a page-based design viewed on a portrait monitor; 2) a typical scrolling Web site viewed on a standard landscape monitor; 3) a printed newspaper in a traditional broadsheet format.

A year-old edition of *The Daily Kent Stater* printed edition and its Web counterpart, *The Digital Stater*, were used for this experiment. All three versions contained essentially the same stories.

Nearly 200 students from a wide variety of majors spent about 15 minutes with each of the three versions. After each, we gave the students a questionnaire, asking them to rate what they had seen in six categories: 1) navigability, 2) information utility (did they find useful information easily), 3) design (how it looked), 4) physical format (screen orientation, need for scrolling, page-based design), 5) wait time (how long it took to go from page to page), and 6) overall preference.

This experiment was again administered by graduate assistants to avoid the possible introduction of our own biases.

## Results of Second Experiment

Results of the second experiment can best be understood by looking at the table at the end of this discussion. The table shows the mean scores for 26 questions on preferences for a portrait, page-based design vs. a typical Web design vs. a traditional newspaper. Students answered each question on a scale of 1 to 10, where 10 indicated strong agreement and 1 indicated strong disagreement, so a higher mean score indicates that students agreed more strongly with a statement pertaining to one design than with the same statement as it pertained to another design. The questions are grouped into the six categories mentioned above. On nearly every question, the portrait, page-based design was considered preferable to the other two categories.

## Conclusion

The most important overall finding from the second experiment is the clear preference among our research subjects for portrait-oriented, page-based designs that avoid the need for scrolling. In the newspaper-format tests conducted in the first experiment, the results also tended to equate with a clear preference for portrait-oriented displays. In the book test, the portrait-oriented screen was the most popular choice, followed by a preference for a landscape-oriented screen with two facing (portrait-oriented) pages displayed at one time.

These findings suggest, at minimum, that manufacturers of portable document viewers and other handheld, pen-based displays should make it possible to rotate their screens, vertically for newspapers and magazines and horizontally for at least some book readers who prefer the conventional side-by-side facing pages.

This apparent preference for a portrait orientation may be deeply rooted in publishing convention. Although being a regular reader did not predict a portrait preference, it may be that the portrait text orientation is so firmly fixed in human experience that even non-readers expect it and prefer it.

While we did not explicitly test preferences for fixed-location desktop computer screens, both studies also suggest that por-

trait monitors would be popular with consumers. Now that large-screen desktop displays capable of displaying two facing letter-sized pages are becoming more affordable and popular, Web-site designers may wish to take this portrait preference into consideration when designing pages. There also is strong evidence here that readers do not want to scroll when they read documents from a screen. Thus Web-site designers might want to consider a page-based design that avoids the need for scrolling.

We see this study as a very preliminary step into a totally untapped research area. Document and screen orientations seem to have emerged by default, with little or no evidence or consideration of user preferences. We hope to see further research emerge in this area.

**Experiment 2 – Table 1.** Respondents' mean scores on 26 aptitude measures regarding a newspaper on the World Wide Web versus a newspaper on a mock portable document viewer (PDF) versus a traditional newspaper.

Statement	Web Mean*	PDV Mean	Newspaper Mean
<b>Navigability Items</b>			
It was easy to look through the paper and find articles.	7.28	8.57 <sup>(1)</sup>	7.87 <sup>(2,3)</sup>
It was easy to browse for articles of interest to me.	7.40	8.49 <sup>(1)</sup>	7.48 <sup>(3)</sup>
When the main article referred me to a related article, it was easy to find the related article	7.34	8.19 <sup>(1)</sup>	6.94 <sup>(3)</sup>
It was easy to get from a related article back to the main article.	7.46	8.19 <sup>(1)</sup>	7.48 <sup>(3)</sup>
It was easy to get from one section of the paper to another.	7.73	8.63 <sup>(1)</sup>	8.00 <sup>(3)</sup>
It was difficult to get around the paper.	4.07	2.80 <sup>(1)</sup>	3.60 <sup>(3)</sup>
It was easy to learn how to use this format.	7.90	8.75 <sup>(1)</sup>	9.33 <sup>(2,3)</sup>
<b>Information Utility Items</b>			
It was easy to get the information I wanted from the paper.	7.18	8.06 <sup>(1)</sup>	7.40 <sup>(3)</sup>
Simply skimming or browsing through the paper gave me enough information to feel informed.	6.42	7.28 <sup>(1)</sup>	7.08 <sup>(2)</sup>
The headlines gave me enough information to feel informed.	5.72	6.45 <sup>(1)</sup>	6.01 <sup>(3)</sup>
I felt overwhelmed by the amount of information in the (Web site or PDV or traditional) form of the newspaper.	4.21	3.96	3.96
When I went to a related article, it often was not what I had expected it to be about.	4.14	3.49 <sup>(1)</sup>	3.81
This format allowed me to come across articles I might not ordinarily have looked for.	6.76	7.58 <sup>(1)</sup>	5.96 <sup>(2,3)</sup>
Sometimes I just came across an ad for an interesting product I would not have looked for otherwise.	5.52	6.39 <sup>(1)</sup>	7.03 <sup>(2)</sup>

**Experiment 2 – Table 1, cont'd.** Respondents' mean scores on 26 aptitude measures regarding a newspaper on the World Wide Web versus a newspaper on a mock portable document viewer (PDF) versus a traditional newspaper.

Statement	Web Mean*	PDV Mean	Newspaper Mean
<b>Design Items</b>			
I liked the way this format looked.	6.32	8.25 <sup>(1)</sup>	6.73 <sup>(3)</sup>
I did not like the way pictures looked in this format.	3.93	4.12	3.70
I liked the way headlines looked in this format.	6.58	7.66 <sup>(1)</sup>	7.08 <sup>(2,3)</sup>
I did not like the way graphics looked in this format.	4.10	4.19	3.69 <sup>(3)</sup>
The pictures and other artwork were too small in this format.	4.11	4.37	3.14 <sup>(2,3)</sup>
This format was boring to look at. Everything looked too much the same way throughout.	4.76	3.54 <sup>(1)</sup>	4.92 <sup>(3)</sup>
The text was big enough to read in this format.	7.81	7.27 <sup>(1)</sup>	8.13 <sup>(3)</sup>
I liked the way the advertisements looked.	5.93	6.83 <sup>(1)</sup>	7.03 <sup>(2)</sup>
<b>Physical Format Items</b>			
I liked (having to scroll up and down the screen to read the whole page on the Web site, having the entire page in front of me rather than having to scroll on the mock PDV, having the entire page in front of me rather than having to scroll in the traditional newspaper).	4.40	7.75 <sup>(1)</sup>	7.24 <sup>(2,3)</sup>
I liked reading (on a traditional horizontal computer screen, on the vertical screen better than the horizontal screen, from a newspaper rather than a screen).	5.40	7.77 <sup>(1)</sup>	5.48 <sup>(3)</sup>
<b>Weight Time Item</b>			
It took long to get from one page to another.	4.56	2.85 <sup>(1)</sup>	3.69 <sup>(2,3)</sup>
<b>Overall Preference Item</b>			
If this newspaper format were easily available to me, I would use it frequently.	5.96	7.66 <sup>(1)</sup>	5.80 <sup>(3)</sup>

\*All responses were recorded on a scale from 1 to 10, where 1 represented Strongly Disagree, and 10 represented Strongly Agree.

(1) A t-test showed a statistically significant difference between the web mean and the PDV mean at  $p < .05$

(2) A t-test showed a statistically significant difference between the web mean and the newspaper mean at  $p < .05$

(3) A t-test showed a statistically significant difference between the PDV mean and the newspaper mean at  $p < .05$

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