Introduction to the Box Model

The *box model* forms the cornerstone of the CSS visual formatting system. It is a critical concept for understanding how style sheets work. This section provides only a basic introduction to the box model. The specifics of applying styles and laying out pages using the box model are provided in Chapters 19 and 21.

According to the box model, every element, whether block or inline, generates a rectangular box around itself called an *element box* (although block and inline boxes are handled somewhat differently). Properties such as borders, margins, and backgrounds (among others) can be applied to an element's box. Boxes can also be used to position elements and lay out the page. Figure 16-3 shows the resulting boxes for this small sample of markup.

```
<body>
<h1>Headline</h1>
<p>This is a paragraph of text. <em>Lorem ipsum</em> dolor sit amet,
consecteteur adipiscing elit. Praesent tellus ante, laoreet in, ultrices at,
vehicula ut, leo. <strong>Vivamus velit.</strong> Nullam massa odio,
condimentum ut, porttitor in, suscipit eu, risus.</p>
<ul>
   <li>This is a list of list items</li>
   <li>And another item</li>
   <li>And another item</li>
</ul>
</body>
```

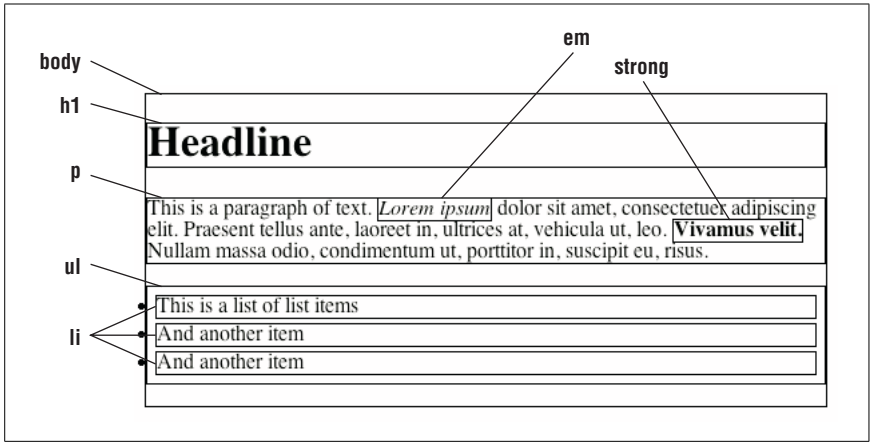

Figure 16-3. XHTML elements and their resulting boxes

Element boxes are made up of four main components. At the core of the box is the element's content. The content is surrounded by some amount of padding, then the border, which is surrounded by the margin, as shown in Figure 16-4.

There are a few fundamental characteristics of the box model worth pointing out:

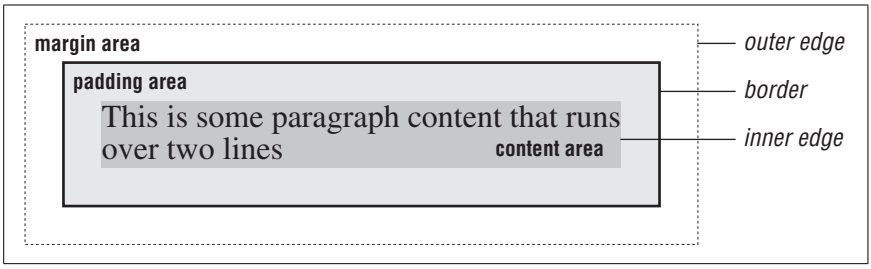

Figure 16-4. Structure of an element box

- Padding, borders, and margins are optional. If you set their values to zero, they are effectively removed from the box.
- The padding area is the space between the edge of the content area and the border (if there is one). Any background color or image applied to the element will extend into the padding area.
- Borders are generated by style properties that specify their style (such as solid or dashed), width, and color. When a border has gaps, the background color or image shows through those gaps. In other words, backgrounds extend behind the border to its outer edge.
- Margins are always transparent, which means that the background color or pattern of the parent element will show through. The boundary of the margin (the element's outer edge) is not visible, but is a calculated amount.
- The width of an element applies to the width of the content area only. This means that when you specify that an element should be 200 pixels wide, the actual contents will display 200 pixels wide, and the cumulative widths of the padding, border, and margins will be added to that amount. (Internet Explorer 5 for Windows is notorious for implementing the width of the box incorrectly. See Chapter 25 for details.)
- The top, right, bottom, and left sides of an element box may be styled independently of one another. For example, you can add a border to only the bottom of an element, or to only the left and right sides.

This should get you started visualizing your document according to the CSS model, but it's only the beginning. To put these ideas into practical use, see the box properties and positioning discussions in Chapters 19, 21, and 24.