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Part 1: SBF Analysis of Dreamweaver MX 2004

This analysis considers Macromedia’s Dreamweaver MX 2004 product from the structural, functional, and behavioral (SBF) viewpoint. Included is a detailed description of the tool, the work it supports, and the context in which it is used.

Product Design Capabilities

Dreamweaver is a professional authoring tool for building and managing a variety of Web content. The product is available standalone or as part of a suite called Studio MX 2004. The Studio package includes other products that round out the Web designer’s toolbox: Flash, Fireworks, and Freehand.

The end product Dreamweaver produces is a Web design consisting of one or more pages. Web design may be roughly segmented into two stages: content/layout design and implementation. Dreamweaver is very useful for both stages but is especially well suited for the second stage, which involves translating the design concept into working code. Because of this, Dreamweaver may in some cases be classified as a “production” tool. This is true in one sense, but Dreamweaver is very definitely a design tool in terms of the way it enables exploration and testing of design concepts as well as the coding and structure setup that supports the design.

Dreamweaver emphasizes structural representation of the product it produces, but it also provides analysis of its behavior (that is, of how well it meets its design objective). Representation of the design structure is best provided by the program’s “design mode,” in which the design appears in an editable form that mimics how the design will be rendered in a browser. A separate “preview mode” shows the product in its final environment by launching the selected page in a designated browser.

Web pages designed in Dreamweaver can contain a variety of high-level organizational structures, including tables, forms, and frames. These elements then organize text, images, and other content or media, including audio and video. Content can be assigned specific, editable, and repeatable properties like font, style, color, and alignment. Behaviors, like links and rollover images, are directly associated with specific text or images. Template designs and code snippets for more complex behaviors are also included with Dreamweaver; snippets in particular can be assigned to page elements using an included snippets resource library.

Dreamweaver supports a variety of methods for these tasks as well as a variety of coding environments for HTML, XHTML, XML, and PHP, among others. This analysis concentrates on the tool’s support for XHTML, which is its primary and richest working environment.
High-level Function Support

Dreamweaver’s broad toolset supports the entire range of the Web design and production tasks, from conceptualizing the initial design to testing and uploading the site to a Web server. At a high level, therefore, the functions supported by Dreamweaver are editing, testing, and publishing.

Editing and Edit Support Functions

Editing is the fundamental Dreamweaver function. In a sense, Dreamweaver is a sophisticated text editor with a complement of supporting elements that build on this basic function. The tool has three high-level document editing or viewing options: code, design, and split.

- Code view displays the source content, using color to differentiate code elements. The code may be XHTML, PHP, or any of the other supported formats, and the user can directly create or edit the content. In code view, the resulting design is not visible unless the user periodically changes the view setting or loads the page into a browser.

- Design view provides a visual, WYSIWYG rendering of the code, if applicable. WYSIWYG is appropriate for XHTML and other code that directly generates browser content. A built-in browser-like window provides a reasonably accurate rendering of the design, and the design is directly editable: the designer can add or reposition text, images, tables, forms, and other HTML elements in drag-and-drop fashion.

- The split view combines both code and design views by splitting the display area into code and design windows (see Figure 1).

In Code view, Dreamweaver supports code editing through what it calls “code hints.” When certain characters are entered, like the first letters of a tag or an attribute, a list appears with available options for completing the entry. These functional elements help to insert or edit code, and also show the available attributes for a tag, the available parameters for a function, or the available methods for an object. Color coding provides an additional layer of information for source code editing and helps to more clearly separate elements like HTML tags, tag attributes, and textual content.

Many Dreamweaver edit support functions are organized through a system of sidebar-style panes that can be used to create, edit, inventory, and select many design elements. A similar set of panes appears below the code and edit windows; these are primarily used as “inspectors” for selected elements of code and assets such as images. The most common of these is the Properties pane, which shows properties for the selected element.

If an image is selected, for example, the properties pane shows image name, size, and other relevant details. For text, the pane shows format, font, style, and related properties. This is especially helpful for design view editing mode, as it reveals object properties that are otherwise not revealed unless the source code is examined. The Properties pane is helpful even if the code is displayed, however, because it conveniently organizes all information related to that element of the design. The pane also shows common options that can be specified for the image, including border, alignment, and link properties.
Figure 1: The main Dreamweaver workspace, with split code/design window layout to the right, and element panes to the left. The element panes expanded here are Design (for CSS and Layers) and Files (for files and assets). The properties pane below the design view area shows the properties of the selected design element, in this case, the image of a closed cell phone. The collapsed Results pane (below the Properties pane) can be expanded to show code and site testing options and results.
Testing Functions

After a design direction is established and one or more pages have been created, the next step is to check page links and page rendering in target browsers. Dreamweaver supports these tasks through a number of built-in site reporting and checking functions.

A variety of reports are helpful for locating, troubleshooting, and testing content. Site report functions check for errors in the code that builds the pages and can be used to examine the current (open) document, the entire current local site, select files in the current site, or the files related to another site. In particular, site reports check for:

- combinable nested font tags
- accessibility support issues
- missing alt text for images
- redundant nested tags
- removable empty tags
- untitled documents

A Link Checker can examine the current file or all site files for broken links (links to files not found on the local disk), report all external links (links to pages outside the site), and list all orphaned files (files to which no existing files refer). A separate validation checker examines XHTML and XML code for syntax errors.

Once testing is completed and errors have been corrected, the next step is to check the site against the target browsers for which it is intended. This could be done by carefully checking the site through each target browser, manually and individually checking each link and function to ensure it works as expected. While the obvious things are easy to check, however, many compatibility issues are the result of less easily identifiable causes. Dreamweaver’s built-in cross-browser validation simplifies this step by automatically checking the source code for compatibility with multiple browsers. Dreamweaver reports errors as one of the following classes:

- An error indicates code that may cause a serious visible problem in a particular browser, such as causing parts of a page to disappear. (In some cases, code with an unknown effect is also marked as an error.)
- A warning indicates a piece of code that won’t be displayed correctly in a particular browser, but that won’t cause any serious display problems.
- An informational message indicates code that isn’t supported in a particular browser, but that has no visible effect; for example, the img tag’s galleryimg attribute isn’t supported in some browsers, but those browsers ignore that attribute, so it has no visible effect.

The errors are reported in the program’s Results pane. They may then be saved to a file or rendered in HTML and viewed in a browser window.

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1 A “site” is a specific Dreamweaver construct that defines the hierarchy of files and folders that comprise a given Web site design. In Dreamweaver, sites are defined with a site definition wizard and managed through options in the program’s “site” menu.
2 Results list reproduced from the “Using Dreamweaver” help file.
Publishing Functions

The final function set supports publishing a site to a remote folder, a destination to which files are typically copied for testing, collaboration, production, or deployment. Dreamweaver includes a number of file transfer protocols, including passive FTP and secure FTP (SFTP) for this purpose.

Files can be automatically sent to the remote folder as they are updated, or the user can manually choose to send one or more files at the same time. A separate synchronization function automatically detects and sends files that need to be transferred.

Second-level Functions

Dreamweaver has a very large number of second level functions, or elements that are needed to create or edit structures (or structure systems) in order to work with them. Two such second-level functions are the “insert table and “insert image” functions.

Most second-level functions can be coded by hand (as in a plain text editor), but there are particular advantages afforded by a using WYSIWYG editor like Dreamweaver. One particularly important advantage is the immediate verification it provides of correct element identification and location, that is, that the right image was selected, and that it is properly placed within the design.

Insert Table

Originally intended for organizing simple tabular data, HTML tables have long been used to create relatively complex layout structures for Web sites. Tables can be nested, they can be set to a fixed size, configured to expand to all or a percentage of the browser page width, and they can contain text, images, and variety of other elements.

As shown in Figure 2, Dreamweaver’s Insert Table dialog provides the basic table definition attributes: rows, columns, overall table width, and related formatting options. If the table is for tabular data, the top and/or left row/column can be configured as headers.

Accessibility options can be specified to add elements that are especially helpful to Web users with disabilities. The “Summary” field, for example, is especially useful to those using screen reading devices; screen readers read the summary text to site visitors who use them, but the text is not displayed in the browser window and therefore does not affect other visitors.

![Figure 2: Dreamweaver’s insert table dialog.](image-url)
Once the table is created, Dreamweaver places it at the current insertion point within the open document. With a table selected by highlighting the source code or selecting the table in design view, table attributes are easily changed through the Insert menu’s Modify Table command.

Direct modifications can also be made via the Properties pane. In the table context, shown in Figure 3, the Properties pane provides a way to inspect and/or adjust table settings.

![Properties pane](image)

**Figure 3:** With a table selected, the Properties pane can be used to inspect and edit table properties.

Table options listed in the Properties panel are as follows:

- **Table Id** is an internal ID or name for the table.
- **Rows** and **Cols** are the number of rows and columns in the table.
- **W** and **H** are the width and height of the table in pixels, or as a percentage of the browser window’s width.
- **CellPad** is the number of pixels between a cell’s content and the cell boundaries.
- **CellSpace** is the number of pixels between adjacent table cells.
- **Align** determines where the table appears relative to other elements in the same paragraph such as text or images.
- **Border** specifies the width, in pixels, of the table’s borders.
- **Clear Column Widths** and **Clear Row Heights** are buttons that delete all explicitly specified row height or column width values from the table.
- **Convert Table Widths to Pixels** and **Convert Table Heights to Pixels** buttons set the width or height of each column in the table to its current width in pixels (also sets the width of the whole table to its current width in pixels).
- **Convert Table Widths to Percent** and **Convert Table Heights to Percent** buttons set the width or height of each column in the table to its current width expressed as a percentage of the Document window’s width (also sets the width of the whole table to its current width as a percentage of the Document window’s width).
- **Bg Color** is the table’s background color.
- **Brdr Color** is the color for the table’s borders, if used.
- **Bg Image** is the table’s background image. The image can be selected with a file browser option by clicking on the yellow folder icon to the right of the text box.

### Insert Image

Images can be inserted into a Dreamweaver document via the Insert menu, by clicking the tool bar’s image icon, or by entering `<img>` and `</img>` image tags into the source HTML file. The

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3 Adapted from the Using Dreamweaver help file.
first two methods display a standard file browsing dialog that allows the user to select the file from a folder on the local disk. When an image is selected in this way, Dreamweaver automatically detects image size, inserts any needed path information, and sets other defaults that can be edited later in the image properties pane. If the image is inserted via HTML tags, many of these image attributes have to be entered manually as image tag extensions. For any of these methods, the selected image is displayed at the document’s current insertion point in the document.

![Properties pane](image)

Figure 4: With an image selected in an HTML document, the Properties pane shows detailed information about the image: size, source, link (if any), alternate text, etc.

These options are available in Dreamweaver for any selected image (an image is selected by clicking on it in Design mode, or by selecting the code that specifies the image in Code view mode). Image options available in the Properties pane are listed below.⁴

- **W and H** are the width and height of the image, in pixels. Dreamweaver automatically updates these text boxes with the image’s original dimensions when an image is inserted in a page. The image size can be specified in the following units: pc (picas), pt (points), in (inches), mm (millimeters), cm (centimeters), and combinations, such as 2in+5mm; Dreamweaver converts the values to pixels in the HTML source code.

- **Src** specifies the source file for the image. To load a different image, the user can click on the folder icon or type the path into the text box.

- **Link** specifies a hyperlink for the image. The target-like “Point-to-File” icon can be used to point to a file in the Site panel, or the file can be selected by clicking on the folder icon to browse to the image file.

- **Align** aligns an image and text on the same line. Settings include baseline, top, middle, bottom, left, and right.

- **Alt** specifies alternative text that appears in place of the image for text-only browsers or for browsers that have been set to download images manually. For visually impaired users who use speech synthesizers with text-only browsers, the text is spoken out loud. In some browsers, this text also appears when the pointer is over the image.

- **Map Name** and the **Hotspot tools** support the creation of a client-side image map.

- **V Space and H Space** add space, in pixels, along the sides of the image. V Space adds space along the top and bottom of an image; H Space adds space along the left and right.

- The **Target** list box specifies the frame or window in which the linked page should load (if the image is linked to a file). The linked file can appear the same browser window or launch a new window without closing the existing window.

- **Low Src** specifies an image that should load before the main image. Many designers use a 2-bit (black and white) version of the main image because it loads quickly and gives visitors an idea of what they’re waiting to see.

- **Border** is the width, in pixels, of the image border. The default is no border.

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⁴ Adapted from the Using Dreamweaver help file.
- **Edit** starts the image editor specified in External Editors preferences and opens the selected image. The external editor may be Photoshop, Fireworks, or any other image editing program. Built-in image editing functions include:
  - **Optimize** opens the Optimization dialog box.
  - **Crop** lets the user trim the size of an image, removing unwanted areas from the selected image.
  - **Resample** resamples a resized image, improving its picture quality at its new size and shape.
  - **Brightness and Contrast** lets you adjust the brightness and contrast settings of an image.
  - **Sharpen** adjusts the sharpness of an image.
- **Reset Size** resets the W and H values to the original size of the image.

After inserting an image, its location can be changed in a number of ways. The “align” attribute, which determines how the image is positioned relative to surrounding text, can be adjusted manually in the HTML code or in the Properties pane. In Design view, the image can be relocated using drag-and-drop or cut-and-paste operations.

**Design Structure Representation**

All Dreamweaver design structure representation appears in the program’s Design view pane. The structure representation described in this section supports work with tables; similar structural representations are available for images, image maps, and other page elements.

**Table Structure Representation**

Dreamweaver has a variety of Design view representation modes for tables: standard, expanded, and layout.

![Figure 5: The Design view representation of a table without a border setting.](image)

The standard mode represents the table as it will appear in an HTML browser. Figure 5 shows the design view of a document that contains a three column by three row table. This table’s border is set to zero, so that a border – and the table structure – will not be visible when the page is rendered in a browser. To allow the user to work with the table, Dreamweaver represents the table structure with the Design view-only borders shown in the figure.
Expanded mode, shown in Figure 6, temporarily adds cell padding and spacing to all tables in a document and increases the tables’ borders. This facilitates direct selection and editing of table elements by allowing the user to more precisely place the selection pointer or insertion point. Handles (black squares on the table’s outline) indicate where the table be resized by clicking and dragging with the pointer.

![Figure 6](image.png)

**Figure 6:** A comparison of standard table mode (left) versus expanded table mode (right). Expanded table mode gives more room for editing the content of table cells.

In Layout mode, shown in Figure 7, the widths of layout tables and cells appear at the top or bottom of a table when selected or when the insertion point is within the table.

![Figure 7](image.png)

**Figure 7:** A comparison of Layout view for an unselected table (top) and a selected table (bottom). The selected table shows information about the table dimensions and includes menus (marked by arrows) for access to formatting. Handles, in the form of small green squares, indicate points at which the table can be dynamically resized.

Elements within the selected table indicate additional representational information about the table. The arrows at the tops of the table rows, for example, lead to menus for quick access to common formatting options. These and other representational indicators are described in the following list:

- Two numbers at the top of a table or column indicate that the visual width as it appears in Design view does not match the width specified in the HTML code. (This can happen when a table is resized by dragging its lower right corner or by adding content to a cell that is larger than the cell’s set width.)
- The absence of a width value indicates that the table or column does not have a specified width in the HTML code. For example, a column’s width is set to 200 pixels, then content is added that stretches the width to 250 pixels, two numbers appear at the top of

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5 Content adapted from Dreamweaver’s help file.
that column: 200 (the width specified in the code) and (250) in parentheses (the visual width of the column as it’s rendered on the screen).

- A wavy line appears for columns that are set to autostretch.
- Double bars appear on table columns that contain spacer images.

**Behavioral Feedback Examples**

Dreamweaver provides varying degrees of behavioral feedback. The most basic feedback is a page size and load time indicator that appears within the status bar of all edit windows. The page size accounts for all content (text and images) to be displayed by the selected page. The page load time is calculated according to the connection speed setting in the program’s Preferences pane. The default setting 28.8 Kilobits per second.

![Figure 8](image)

**Figure 8**: The page size and loading time indicator appears at the bottom right corner of all edit (code and/or design) windows.

A variety of visual aids (most of which are available only in Design view) help designers to create and approximately predict the appearance of pages in browsers. These include document window snapping, which sizes the window to a specific dimension. The current size selection appears to the left of the overall page size and loading time information. Figure 9 shows the drop-down list of size display options. The window size shown reflects the inside dimensions of the browser window, without borders; the monitor size is listed in parentheses. For example, a size selection of "536 x 196 (640 x 480, Default)" is appropriate if site visitors are likely to be using a browser with default configurations on a 640 x 480 monitor.
Other behavioral elements include rules and grids which serve as visual guides for drawing, positioning, and resizing documents within Design view. Rulers appear along the top and left of the document area, and increments can be marked in pixels, inches, or centimeters.

The best, and most reliable, behavioral view of the design is provided outside of Dreamweaver. It requires viewing the pages or site in the target browser(s) to ensure particular layouts are rendered as designed in each environment. Dreamweaver facilitates this type of external page viewing by setting up keyboard shortcuts (and toolbar icons) to automatically load the selected page in specific, locally available browsers. “Primary” and “secondary” browsers can be defined for this function via the program’s Preferences dialog.
Part 2: Beyond SBF

Code vs. Design

The Dreamweaver Code and Design states provide access to specific functions in one mode that not available in the other. These modes have been mentioned above in order to describe specific structural, behavioral, or functional aspects of Dreamweaver, but thorough description of the modes falls outside the bounds of a standard SBF analysis. This section presents a detailed overview of Dreamweaver editing modes and the manner in which they support design objectives.

As previously mentioned, Dreamweaver can present a Web page design in one of three modes: code view, design view, and split code/design view. Each has specific advantages, and Dreamweaver users can easily and repeatedly switch between modes as needed.

Code view provides a flexible working environment for any Web designer or developer comfortable with working in HTML. Color coding, code hints (an auto-complete function), and a comprehensive, built-in HTML reference tool provide a very efficient and effective code editing environment.

Design view offers a view of the design much as it would be rendered in a browser window. This mode allows the user to work visually, by manipulating page elements directly, without having to see or edit the source code that generates the design. In fact, a designer could conceivably work in only this mode without ever seeing the underlying HTML code. Many menu options and pane-based controls provide access to needed properties and functions; most design elements, including images, audio files, and other media, can be dragged directly from an asset panel to the appropriate destination on the page under design, or from one page location to another.

For example, an image can easily be moved simply by selecting and dragging it to the new location. Dreamweaver automatically adjusts the source HTML code to accommodate the image in its new location. In Code view, the image has to be moved by selecting all associated code and dragging it to a new location. This can be harder to do for users who are not very familiar with working directly in HTML, but even experienced coders may find greater convenience in moving page elements in Design rather than Code view.

By default, Design view shows the structure that forms the page layout. Pages whose content is organized in a table structure are easiest to work with when the supporting structure is visible. These and other visual design aids form a kind of overlay for the design, though the aids are more than simple overlays since they also serve as edit points for the design.

The Split view combines both Code and Design views by splitting the document window into two. With both views open, making a change in one mode, like the Code view, immediately affects the Design view. The reverse is also true and important; when a change is made in Design view, checking the resulting in the Code view window is helpful to ensure the code is properly formatted.

The Split Code/Design view in a way offers both states, or at least their representations at once. Only one mode, or window, is the active edit window, but switching between the views is a matter of clicking in one window area or the other, or of using a keyboard shortcut to toggle
between the two. The screen ratio of Code to Design view easily adjusts to suit individual
designers and specific tasks.

Design mode, or the combination code/design view, is very useful. Even Web designers who
consider themselves HTML “purists” find the direct visualization of a design very helpful.
Defining tables, nesting tables, and positioning and other layout components is more cumbersome
and error-prone in code-only mode.

On the other hand, the design view isn’t perfect, and Dreamweaver sometimes creates convoluted
code to support a visually created design. This code can be inefficient, and it can also create
cross-browser compatibility issues. The complications are often unnecessarily extended as the
design is modified in the visual mode. Fortunately, Dreamweaver includes a “clean up HTML”
option that can clear up common problems like empty tags, redundant nested tags, and other
common HTML coding errors. The ability to easily switch between design and code views, or to
see both at once, is especially helpful for fixing problems.

**Content from Other Design Tools**

Another area that falls outside the SBF analysis umbrella is Dreamweaver’s support for media
and content created in other tools. Content created in other Macromedia products is naturally the
most easily imported, but images and content from other applications is also easily incorporated.

Media elements can be inserted via the Dreamweaver Insert menu, from the Assets panel, or by
coding the specific HTML to incorporate it. The Insert menu has options for incorporating an
Image, Image Objects, and other Media. The Image command loads a standard browser-viewable
image into the selected Web document. The Image Object command can place an image
placeholder or support more sophisticated image operations, including image rollover definitions,
navigation (menu) bars, and Fireworks-created HTML code. The Media command can be used to
include Flash graphics, buttons, or text, Shockwave content, applets, and references to other
media content.

This latest version of Dreamweaver can also incorporate content from Microsoft Word and Excel.
Those these are not design tools, documents created in these programs often need to be included
in Web pages. Dreamweaver reads Word and Excel documents directly and coverts their content
into similarly formatted HTML.
References

Macromedia Studio MX: Exploring Macromedia Studio MX.


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