CHAPTER FOUR - The Normative and Aesthetic
Dimensions of E-Government Architecture: Systematic Analysis

The architecture of e-government is that built environment arising from the confluence of art, science, and the intangible materials used to design and construct government web sites. Admittedly, the information, hypertext markup language (HTML[1]), tags[2], and graphics used for web site construction are decidedly different building materials than the concrete and steel used in physical space. However, the end products are nonetheless similar—a built environment conceived and fashioned by human beings that is employed in the day-to-day activities and rituals of life including the citizen's encounter with his/her government: a new civic space.

The architecture of government buildings and web sites share other key characteristics and differences. This chapter will explore the commonalities and differences between the architecture of government buildings and web sites through the systematic analysis and interpretation of selected state portal and federal government web sites from both the normative and aesthetic perspectives.

The theoretical assumptions and research findings arising from the analyses will be synthesized and examined through the expressive, behavioral, and societal lenses. We now turn to a discussion of those lenses which is followed by the normative and aesthetic analysis of state portals and then move on to the normative and aesthetic analysis of federal web sites.

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[1] Acronym for **H**yper**t**ext **M**arkup **L**anguage. The markup language used for documents on the World Wide Web. HTML is an application of SGML (Standard Generalized Markup Language) that uses tags to mark elements, such as text and graphics, in a document to indicate how Web browsers should display these elements to the user and should respond to user actions such as activation of a link by means of a key press or mouse click.

[2] In both SGML and HTML, a tag is generally a pair of angle brackets that contain one or more letters and numbers. Usually one pair of angle brackets is placed before an element, and another pair is placed after, to indicate where the element begins and ends. For example, in HTML, <I>hello world</I> indicates that the phrase *hello world* should be italicized. Source: Microsoft Press Computer and Internet Dictionary, 4th Edition 2000.

The Lenses

<u>Expressive</u>

Political authority, ideas, and values are represented by and expressed in the architecture of web sites just as they are in the architecture of the government building. Moreover, both built environments are also representative of a "readout of common tendencies in political life prevailing at the time of construction" (Goodsell, 1988, p. xv). One example of a readout of such tendencies in the physical domain could take the form of an open and airy office plan that mirrors and or complements a philosophy of open government. The openness and airy effect may be achieved through a combination of design features such as a decreased reliance on interior walls and doors to demarcate interior space and an expanded use of windows opening the interior space to the outside environment. An example of a readout of prevailing tendencies in the web site environment might take the form of a homepage that through language, graphics, and organization emphasizes the role of the user as "customer" and services as "transactions." In this example, the philosophy of reinventing government is manifested, in part, through site design.

It is important to note, however, that the readout in physical space is far more enduring because of the increased costs and permanent nature of the materials employed in constructing an actual government building. The readout in a web site is much more ephemeral in nature and subject to redesign in response to political, policy, and programmatic exigencies. The present inherently non-durable character of web sites may also foreclose their functioning "as carriers and perpetuators of social ideas over time" or serving "as a kind of enduring text that we can judiciously attempt to 'read'"(Goodsell, 2000, p. 8). Yet this very ephemeral nature of web environments may have an interpretive advantage. Instead of focusing on the past and the attribute of regime stability, it serves as an effective barometer of the winds of political change—that may or may not carry or perpetuate social ideas over time.

<u>Behavioral</u>

Government buildings and web sites are not merely utilitarian tools or technology. They represent conscious design choices, infused with values and ideas underpinned by political

authority, intended to affect behavior and not just reflect the social world (Goodsell, 2000). The behavioral effects of web sites on groups and individuals, just as those of buildings, are a byproduct of design features. Intuitive or counterintuitive site organization and the presence or lack of a site index or search feature could facilitate ease of use or elicit feelings of frustration. Potential barriers to accessing a web site such as an English only presentation or the use of overly bureaucratic language can be as daunting as an actual physical barrier, i.e., security checkpoints in buildings or a department of motor vehicles service counter with twenty stations.

It is quite possible that web sites may influence behavior in much the same way that the environments of a public library, city council chamber or state legislative chamber do. Each of these structures were architecturally designed for specific functions and their respective designs were intended to convey a variety of messages to reinforce those functions. Thus, a good architect, knowing that the building he or she designs may have an impact on its viewer or visitor, will take considerable time with the client to discern the intended messages or impressions. There is sparse evidence that web site designers are trained to incorporate a similar sensitivity with their technical expertise. That being said, it is worth noting that a nascent movement to approach web site information design and presentation from an architectural perspective is now emerging from the confluence of graphic design, communication theory, and web site design (Cooley, 1999; Horn, 1999; Jacobson, 1999; Whitehouse, 1999).

Societal

The gestalt of the e-government web site can provide the user and society as a whole with a set of symbols and mood cues that affect both the way in which the site is presented and perceived by society. Distinctive web sites, like a state capitol or the Library of Congress or U.S. Supreme Court, may symbolize, just as distinctive government buildings may do—a legal jurisdiction, government body, or system of authority, whether negatively or positively portrayed (Goodsell, 2000, p. 12). Although the e-government web site may not physically enclose the citizen, it does capture or enclose the citizen's attention. This capture of the citizen's attention and concentration occurs as he/she engages the content—words, graphics, colors, animation, and links—to initiate the public encounter. Web site design elements, i.e., color, text, graphics, and information density and type, may also conceivably intimidate and or be perceived as

manipulative through directive link sequencing from one web page to another. The ubiquitous automated phone response system is an analogue to web site directive link sequencing.

The preceding discussion of the lenses has provided the requisite context needed to anchor the examination of the web site analysis which follows. The ensuing web site analysis observations, of the 50 state portals and 59 federal web sites comprising the sample in this study, are intended to both draw and build upon the three lenses. The analysis is, as noted earlier, approached from two perspectives—a normative or values based perspective and an aesthetic one. The normative dimension refers to the extent to which certain key norms are fulfilled and or emphasized in web site architecture while the aesthetic dimension refers to whether certain technical features of what is considered good message design or high message quality are present.   This dual analytical approach is used to both delve into and explore the complex interaction of site content, features, and design considerations which collectively constitute a site's architectural gestalt.

Web Site Analysis: Normative Dimension

The reporting of the results of the normative web site analyses will be approached in two parts. I begin by reporting the findings of the state portal analysis. I then discuss the federal web site analysis findings and compare and contrast those to the state results.

This component of the web site analysis was structured to identify the normative aspects of both web site design and content as determined by the presence or absence of select criteria adapted from previous studies (West, 2000; West, 2001; West, 2002). These criteria are operationalized into the values of (1) equity, (2) privacy, (3) publicness, and (4) participation. These evaluative criteria were subsequently coded into twenty-three variables for SPSS analysis purposes. Refer to Appendix A for a list of these variables.

Seven variables were used to code the value of equity, five for privacy, six for publicness, and five for participation. The presence of a given value variable on a web site resulted in the assignment of a "1" while the absence of that variable resulted in a "0." The four values in conjunction with the three lenses discussed in the preceding section provide the framework for

reporting on the normative character of the 50 state portal web sites and 59 federal web sites comprising the sample used in the project. We begin by looking at the state portal data for each of the operationalized values.

State Portals

The normative state portal web site analysis component was conducted June 25 and 26, 2003. These dates are noted because they anchor the snapshot in time during which this research was conducted and also acknowledge the dynamic nature of web site content.

As noted in Chapter 3, there is some evidence that state portals are becoming both the cyberspace proxy for the state capital dome and the primary citizen access point for state services (Taylor, 2002). These two emerging dynamics, of perception and practice, place the state portal at the center of the citizen initiated e-government public encounter and at the forefront of normative considerations relative to both site design and content.

Equity features most frequently provided on state portals were the offering of a text version of site content (36%) and the offering of portal site content in a language other than English (16%). Yet these percentages constitute a concern because of the circumscribed access potential they represent. We recall that provision of a text version of web site content facilitates site use by the vision impaired as well as for those individuals using low speed modems. Text reading software programs allow the vision impaired person to engage site content. Text version site content also loads much faster using a low speed modem than would graphic rich content.

Eighteen of the 50 state portals surveyed offered a text version of their site content and eight provided content in a language other than English. Of particular note is the fact that with respect to accessibility only the state of Virginia's portal was found to be both Section 508[3] and W3C[4]

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[3] Section 508 of the Rehabilitation Act Amendments of 1998 established electronic and information technology accessibility standards for the disabled.

[4] The World Wide Web Consortium (W3C) has promulgated accessibility guidelines, known as Web Content Accessibility Guidelines 1.0, which focus on eliminating basic web site design problems that could prevent or impair use of a web site by disabled individuals. These guidelines are also sometimes referred to as Level A Conformance to Web Content Accessibility 1.0. The organization also develops interoperable technologies, standards, and software to optimize the utility of the Internet. Source: http://www.w3.org/

compliant and that no state portal was found to be Bobby[5] compliant. These findings are particularly troubling because many state portals incorporated notices on their sites that they were a Bobby approved site or that they were W3C compliant and/or Section 508 compliant. This researcher used the free online Bobby[6] evaluation software and its companion WebXact[7] software to scan each state portal web site for these features. In almost all instances, state portals that advertised themselves as being Bobby approved or Section 508 and/or W3C compliant were found not to be. This finding is also noteworthy in relation to previous studies, some of which have been discussed in this dissertation, that have documented the presence or absence of disability or equitable access features. Equity is one of the four important normative considerations for government web sites. It is also a proxy for inclusiveness. By their very existence, government web sites should convey not only the impression but also the reality that access to the web site and its content are being made available to the widest possible constituency—all citizens.

West's study methodology did not discuss a verification procedure for a web site's putative compliance with Bobby, Section 508 or W3C access guidelines. His methodology, by and large, sought only to verify the presence of a specific feature just as I have sought to do but with one key exception—I tested each web site's claim of voluntary compliance with extant access guidelines.

The lack of compliance with advertised access standards by state portals was but one problem area. State portals generally fared poorly relative to the provision of web site features that would facilitate the e-government citizen encounter by the disabled and by those who speak another language other than English. A state portal containing all seven variables or features used to measure equity would receive a score of 7.0. The mean equity feature score for state portals was

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[5] Bobby is a non-profit web site rating group that has developed accessibility evaluative software. Its free web site accessibility software evaluation tool was created to help identify and repair web page barriers to accessibility and promote compliance with extant accessibility standards, i.e., W3C and Section 508.
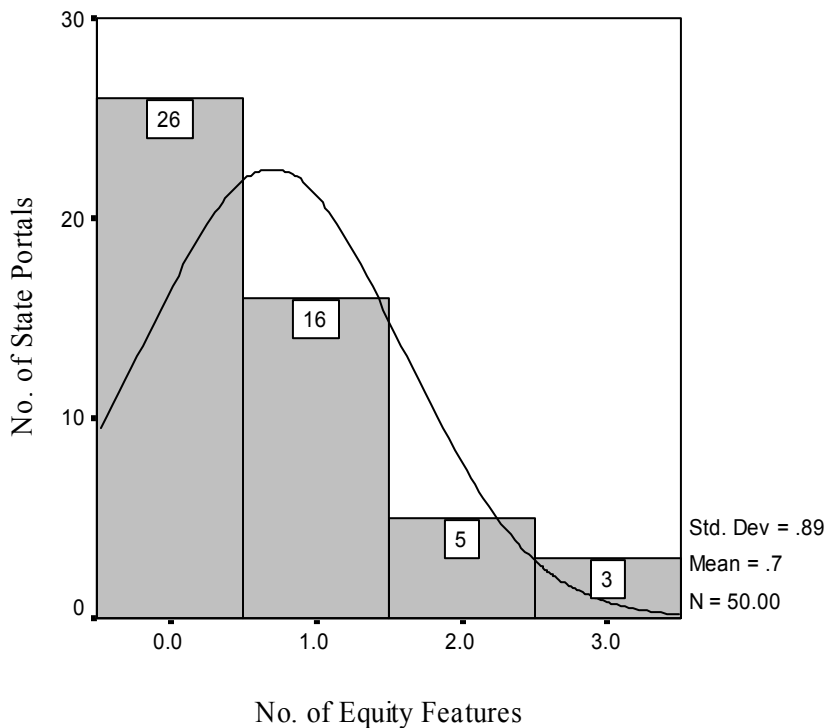
[6] Source: http://bobby.watchfire.com/bobby/html/en/index.jsp

[7] Source: http://webxact.watchfire.com/

less than one (0.7) with a standard deviation of 0.89.   Figure 1 below summarizes the distribution of the state portal equity scores.

Figure 1

Histogram of State Portal Scores for Equity

No. of Equity Features

Only three state portals, or a mere 6% of all of them, contained three of the seven equity features: Kentucky, Virginia, and Washington.   More than half or 26 contained no features for equitable access and another 21 state portals, or 40%, contained no more than two features. Overall, ninety-four percent of the state portal sites made little or no provision (two or fewer features available) for access to the disabled or for those who speak a language other than English.

Table 1 below provides the presence of individual equity feature components among the state portals. We recall that a teletypewriter (TTY) or telecommunication device for the deaf (TDD) enables the speech and or hearing impaired individual to communicate with people by telephone.

Table 1

Number of Individual Equity Features Observed Among State Portals

Features	Bobby compliant	foreign language	Section 508 compliant	tdd	text version	tty	W3C compliant
N = 50	50	50	50	50	50	50	50
Count	0	8	1	3	18	4	1
Percent	0.0	16.0	2.0	6.0	36.0	8.0	2.0

West observed that the most frequently provided disability access features were the provision of a text version followed by TTY and TDD phone lines (West, 2002, pp. 3, 10). My observations are in consonance with West relative to the most frequently provided feature—a text version. In my state portal data, the text version provision frequency was followed by foreign language capability and then by TTY and TDD phone lines.

West documented the limited availability of disability access on government web sites in each of his three studies. In his 2002 study, he noted that 28% of the 1,265 state and federal government web sites he analyzed had some form of disability access. This represents a 1% increase from West's 2001 study but is still very low. My data, for the state portal component only of the analysis, reflected a 48% provision of some form of equitable or disability access. I employed all four of West's criteria for disability access plus one additional criterion in my analysis of equity features.

The equity data indicates that state portals are not as accessible as advertised with respect to their voluntary compliance with Bobby, Section 508, and W3C accessibility guidelines. The data also suggest that much work is needed before the citizen-initiated encounter in the e-government environment can be considered universally accessible. We now examine the extent to which state portals incorporate privacy features in their site design and content.

Privacy is an ever present concern within our society. It is a major concern for the millions of Americans who daily log onto the Internet to obtain government information and services, or for e-commerce purposes. State portals collect, manage and share large volumes of personal information with other state agencies in the course of processing growing numbers of e-

government enabled citizen-encounters. State portals may also use this personal information for economic gain, such as selling of lists of portal users to marketing concerns.

The portal user or citizen should be able to determine what the portal's privacy policies are prior to initiating and/or completing an encounter linked transaction. This knowledge may help engender and/or maintain a level of trust that I would argue is an essential element in sustaining governance practices (Gawthrop, 1989; March & Olsen, 1995; Nye, Zelikow, & King, 1997; Putnam, 2000).

A state portal containing all five variables or features used to measure privacy would receive a score of 5. I employed four of West's five criteria for privacy in my analysis and added the criterion of a web site feature that would provide notification to the user of a site breach. Web sites analyzed for the "Prohibits Cookies" or "Prohibits Sharing Personal Information" features and which had only one half of the features present were assigned half a point.

The mean privacy feature score for state portals was 2.0 with a standard deviation of 1.12. Figure 2 below summarizes the distribution of state portal privacy feature scores.

Figure 2

Histogram of State Portal Scores for Privacy

No. of Privacy Features
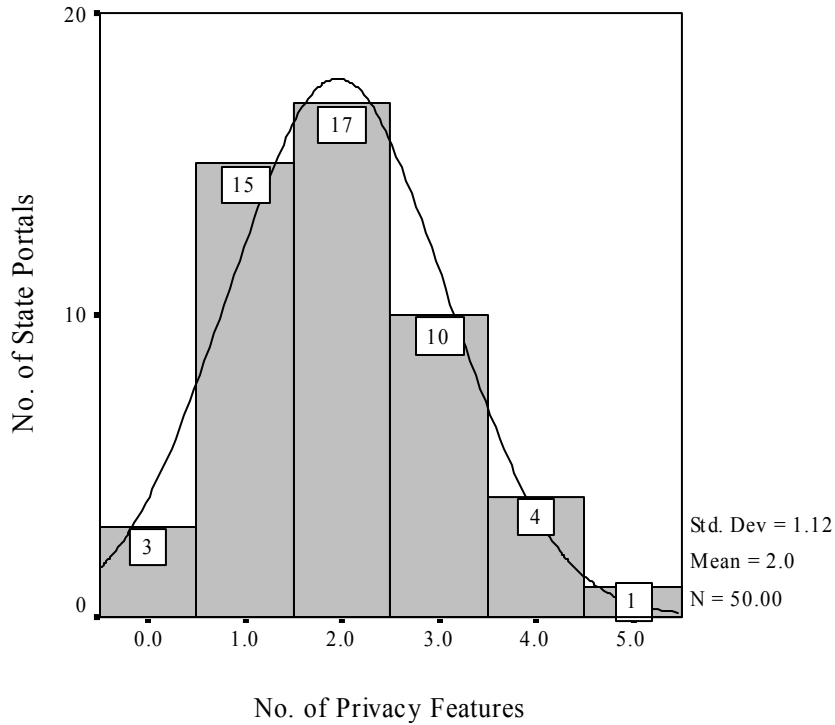
Arizona was the only state portal found to contain all five privacy features. The portals for Georgia, Indiana, New York, and Vermont followed Arizona with four privacy features. Of the remaining state portals, 8 contained three privacy features, 14 just two privacy features, and 18 portals 1 to1.5 features. The portals for California, Illinois, and New Mexico contained none of the privacy features analyzed in this study. Overall, the privacy data collected on state portals indicates that 35 of the 50 portals examined, or 70%, contained two or fewer privacy features. The most common privacy features observed on state portals were those concerning alerting the user to the portal's policy on monitoring user activity through the use of cookies or other monitoring software and the marketing of user personal information.   Table 2 below shows the presence of individual privacy feature components among state portals.

Table 2

Number of Individual Privacy Features Observed Among State Portals

Features	breach notice	no marketing	no monitoring	no cookies	no sharing
N = 50	50	50	50	50	50
Count	1	22	33	27	17
Percent	2.0	44.0	66.0	54.0	34.0

The data in Table 2 above highlights several areas of concern. Foremost among these is the fact that only one state portal, Arizona, contained the web site feature for broadcasting a notice of site breach to site users. This particular feature capability on any web site collecting personal and/or financial information from users is an important one given the increase in crimes of identity theft. Next among concerns are (1) the broad absence of policy statements by state portals concerning their practices with respect to sharing user personal information and (2) the corresponding absence of policy statements on the commercial marketing of user personal information. In the first instance, only 34% of state portals contained policy statements on the sharing of user information and in the latter instance less than half or 44% of state portals had policy statements addressing the commercial marketing of user personal information. Nevertheless one should not automatically conclude that the absence of policy statements in these two areas on a state portal are indicators that the state inappropriately uses the personal information it collects. Yet the absence of these policy statements could leave the individual user to speculate about the state's practices and may have the unintended effect of vitiating user trust in the web site.

The preceding concerns and related statistics help identify the remaining work needed on state portal site privacy provisions. However, it is important to observe that progress in the area of web site privacy provisions has been made. A brief look at West's 2002 study findings relative to my own highlight this fact.

West documented the growing availability of privacy policy statements on government web sites in each of his three studies. In his 2002 study, he noted that 43% of the 1,265 state and federal government web sites he analyzed had some form of privacy policy on their site. In related findings, West documented that 39% of web sites prohibited commercial marketing, 6%

prohibited cookies, 36% prohibited the sharing of personal information and 37% used computer software to monitor user traffic (West, 2002, pp. 7-8). The 43% figure West noted in the 2002 study represented a 15% increase from his 2001 study. My data, for the state portal component only of the analysis, reflected a 94% provision of some form of a policy statement on state portals.

The preceding two sections have been used to discuss my research observations for the values of equity and privacy. Equity in its broadest conceptualization speaks, in part, to the issues of fundamental fairness and the opportunity for inclusion within our system of governance. It also speaks to the sharing of benefits and burdens. Privacy and the related concerns about its presence or absence and the governance practices impinging upon it have been longstanding concerns of the Republic. Indeed, concerns about privacy were at the center of the Founding arguments about the need for a Bill of Rights. The next two sections will examine the data on the values of publicness and participation. I begin with publicness.

Publicness pertains to a web site's availability and openness to the general public within certain procedural and/or statutory limits. Portal users and citizens initiate public encounters through the e-government web site for one major reason and three basic purposes. Convenience is the major reason portal users and citizens decide to visit e-government web sites. They can initiate their encounters at a time and place of their choosing. Their purposes are to obtain information, to find out how to contact a government official, and to initiate and complete an online transaction. The obtaining of information is presently the primary purpose that users and citizens initiate public encounters. This, however, will change as more online transactions are made available on state portals. The degree to which a portal's features facilitate the citizen public encounter within the preceding broad definition is indicative of its publicness.

The proxy for publicness in my study is the availability of basic online information such as address and phone information, publications, and so forth. I used three of West's criteria for online information availability and added the criteria of (1) a welcome message, (2) availability of an index, and (3) availability of a portal search engine (West, 2002, p. 5).

A portal web site containing all publicness features would receive a score of six. Figure 3 below shows the frequency distribution of publicness scores for state portals. A discussion of the issues emerging from these data follows.

Figure 3

Histogram of State Portal Scores for Publicness

No. of Publicness Features
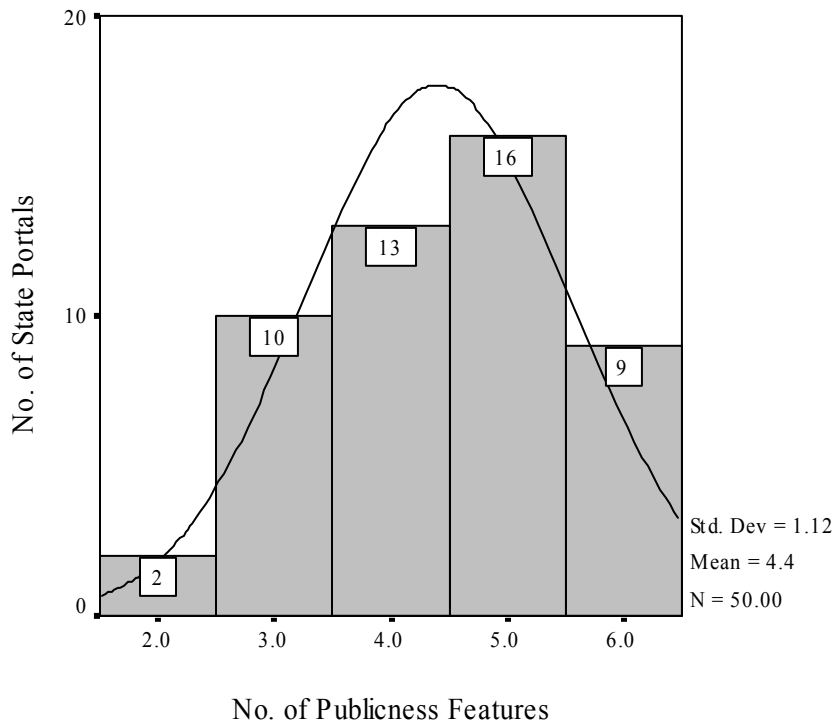
Overall, state portal scores for publicness were considerably better than the portal scores for both equity and privacy. This is not too surprising given that the features analyzed represent in large measure a baseline of web site functionality which mimics the traditional public encounter. That is to say that generally a citizen expects to be greeted by a public official upon entering a public office, to be able to locate a phone number and or address for the agency he/she wants to visit, to be able to obtain printed information about procedures and services, and to be able to either view a building directory delineating programs and or services housed in the building or obtain a printed directory for them.

The publicness feature score mean was 4.4 out of a possible 6.0. Nine state portals contained all 6 publicness features. Those states were Alabama, California, Florida, Illinois, Maine, Mississippi, Nevada, New Hampshire, and West Virginia. Overall, thirty eight state portals contained four or more publicness features.

It is interesting that both New Jersey and New York, two high population states, had the lowest number of publicness features present: two. Those two features for New Jersey were index and search and for New York they were search and welcome. All state portals incorporated the search feature, 70% included both the address and phone features in their site content, 60% incorporated a welcome statement, and little more than half or 56% of portals made publications available online. Table 3 below presents the number of individual publicness score features observed among state portals.

Table 3

Number of Individual Publicness Features Observed Among State Portals

Features	address	index	phone	publications	search feature	welcome
N = 50	50	50	50	50	50	50
Count	35	35	42	28	50	30
Percent	70.0	70.0	84.0	56.0	100.0	60.0

Publicness is of necessity entwined with the value of participation. Citizens attempting to initiate a public encounter on a portal site with a paucity of publicness features would be hard pressed to participate—inasmuch as they might not be able to locate an office, phone an official, or even be aware that public meetings will be held in the absence of a published meeting calendar. The preceding observations open the door for the examination of state portal participation data which follows.

Participation has been and remains a central concern of public administration practice and democratic governance processes. A great deal has been written about the participation capabilities e-government and its underlying infrastructure, the Internet, make possible. Visions of participation range from the utopian to the dystopian and from the egalitarian to the socially

and politically elite. Admittedly, e-government has enormous potential for promoting some forms of participation. The only limits on what form e-government participation may take, aside from political considerations, are those that may be imposed through web site design and content choices which we will now explore.

The proxy for participation is the availability of portal features that help bring the portal user or citizen closer to government by facilitating bidirectional communication and or enabling the citizen to personalize portal content for their specific information/service needs. West characterized the aggregation of those web site features that enabled participation as "democratic outreach" (West, 2002, p. 13). I used five of West's six criteria for democratic outreach. A state portal containing all participation features would receive a score of five. State portal scores for participation were better than those for equity and privacy but lower than those for publicness. The mean portal score for participation features was 2.3 with a standard deviation of 1.23. This compares to a mean portal score for equity of 0.7 out of a possible score of 7, a mean portal score for privacy of 1.95 out of a possible 5 and a mean portal score for publicness of 4.4 out of a possible 6. Figure 4 below shows the frequency distribution of participation scores for state portals. Let us now examine that data and see to what extent state portals have incorporated participation features in their web site design and content.

Figure 4

Histogram of State Portal Scores for Participation

No. of Participation Features
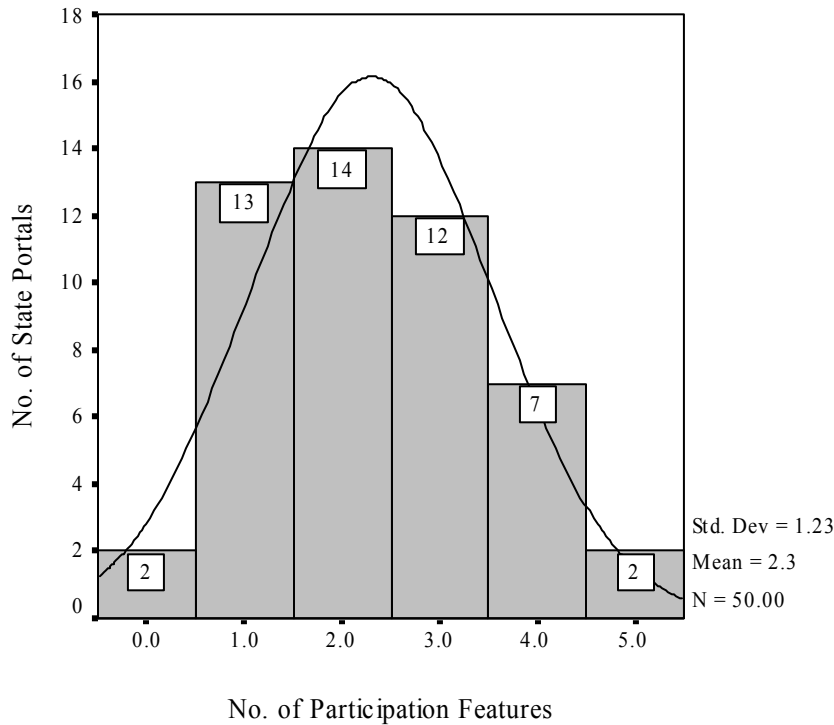
With respect to participation features, we find two sets of states at opposite ends of the score continuum. New Mexico and New York had no participation features on their portal sites while the Arkansas and Virginia sites each contained all five features. Only seven states, or 14% of state portals, had four participation features. Those states were California, Florida, Maine, Michigan, New Jersey, North Carolina, and Washington. Twelve states, or 24% of state portals, contained three participation features and a disappointing 54%, or 29 state portals, contained two or fewer participation features. Table 4 below summarizes the number of individual participation features observed among state portals.

Table 4

Number of Individual Participation Features Observed Among State Portals

Features	e-mail	e-updates	comments	personalization	broadcast
N = 50	50	50	50	50	50
Count	29	7	44	14	21
Percent	58.0	14.0	88.0	28.0	42.0

It is important to note that while only 14% of state portals made provisions for e-mail updating (e-updates) citizens on issues of interest to them, almost half, or 42%, did have streaming audio or video capability for broadcasting public hearings and/or speeches. Just slightly more than a quarter of state portals, 28%, allowed the user to personalize portal content.

The most common participation features I observed on state portals were comments at 88% and e-mail 58%. These findings are interesting relative to West's observed prevalence of comments and e-mail in his 2002 study. In that study of 1,265 state and federal government web sites, he noted that only 10% provided comments capability and 81% an e-mail feature. The frequency of state portal provision of comments capability as evidenced by the data in this study far exceeded that of West's study. Yet West's study documented a higher provision of e-mail capability. Are state portals more concerned with user feedback relative to site content than their subsidiary agencies or federal government web sites? I will address federal user feedback below. The issue of centralized portal versus agency web sites is a topic for another study. The discussion of the participation data has helped identify the strengths and weaknesses of portal participation efforts. These findings illustrate that state portals do provide a measure of participation capability but also that more is still required, if e-participation is to become more of a reality.

The preceding analyses of the values of equity, privacy, publicness, and participation have been approached from a discrete or somewhat isolated perspective—separately. However, I would argue that it is the cumulative presence or absence of these values that imbue a state portal or other government web site with either a normative (or in their absence), a utilitarian character. I constructed a normative index to determine how the 50 state portals fared individually and scored overall with respect to their normative character.

State Normative Analysis: Summary Index

Index construction can be fraught with problems if the researcher does not attend to the basic principles of index creation. In its simplest formulation, an index is merely a term for a set of variables used as a measure for a more abstract concept (O'Sullivan & Rassell, 1999, p. 291). The most common mistakes made in index construction involve combining items measured in different units without transforming them, incorrectly weighting items used in the index, or

ignoring the principle of additive independence (Miller & Whicker, 1999). The principle of additive independence permits the researcher to add two variables together only if he knows or otherwise assumes the variables do not interact. My approach to index construction both assumes the principle of additive independence controls and borrows from West's previous research in web site evaluation. West created a 100 point e-government index in which he assigned 4 points to each of 24 features present on a government web site (West, 2002, p. 15). He assigned one additional point for each fully executable online service present on a web site.

In creating my 100 point normative index, I have assigned 4 points to each of the 23 features present on state portals and an additional 2 points for portals that have all features present for any one of the four values examined in this study. The index formulation is therefore $(23 \times 4) + (2 \times 4) = 100$. The data derived from the index was used to determine how the 50 state portals fared individually and ranked overall. Refer to Appendix E for a list of state portal normative index scores. Figure 5 below graphically depicts the frequency distribution of the state portal index scores.

Figure 5

Histogram of Overall State Portal Normative Index Scores
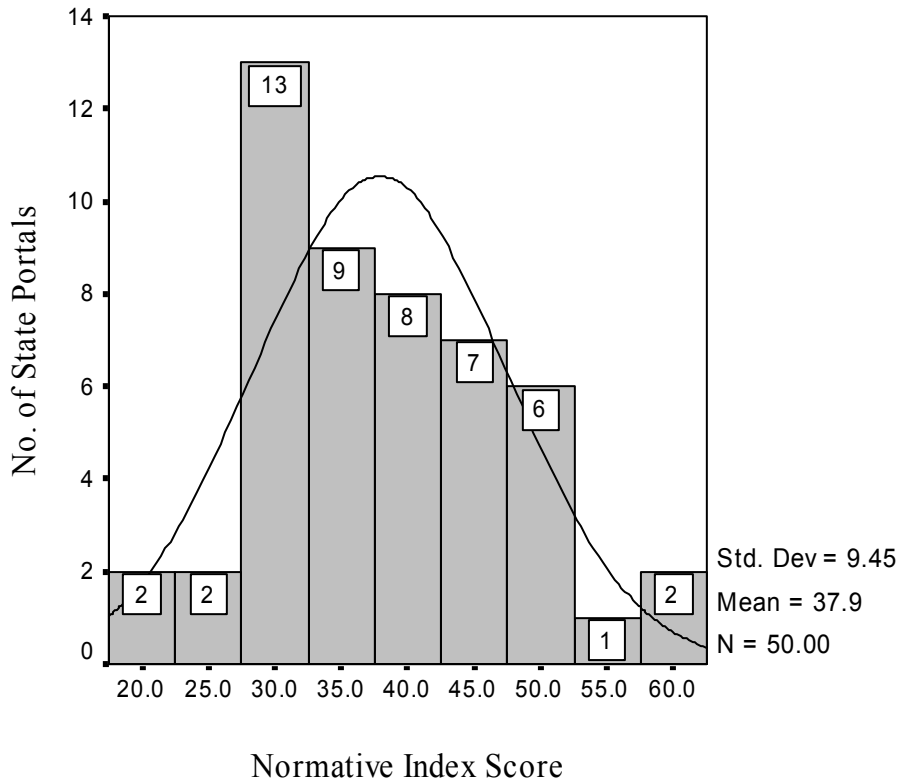
Overall, 90% of state portal normative index scores were under 50 out of a possible 100. The minimum index score was 20 and the maximum score was 62, which only the state of Virginia achieved. Only four other states had normative index scores of 50 or higher. Those states and their related index scores were Nevada (58), Arizona (54), Maine (52), and Florida (50). Two sets of states had index scores less than 25. The normative index scores for Louisiana and New Mexico were 24 and those for Missouri and Montana were 20. The very low index scores for several state portals (< 25) coupled with the large number (45) of state portal normative index scores under 50 highlight the normative shortcomings of current state portal design and architecture. Table 5 below summarizes the distribution of state portal normative index scores.

Table 5

State Portal Normative Index Score Distribution

Frequency	Percent	Cumulative Percent	Index Score
2	4.0	4.0	20.00
2	4.0	8.0	24.00
7	14.0	22.0	28.00
2	4.0	26.0	30.00
4	8.0	34.0	32.00
1	2.0	36.0	34.00
8	16.0	52.0	36.00
2	4.0	56.0	38.00
3	6.0	62.0	40.00
3	6.0	68.0	42.00
6	6.0	80.0	44.00
1	2.0	82.0	46.00
4	8.0	90.0	48.00
1	2.0	92.0	50.00
1	2.0	94.0	52.00
1	2.0	96.0	54.00
1	2.0	98.0	58.00
1	2.0	100.0	62.00
50	100.0		Total

How do federal web sites score on the normative index? On an a priori basis one might assume that the federal government would do better. The analysis of the federal web sites that follows provides an opportunity to compare and contrast the normative dimensions of the citizen-initiated public encounter at the two levels of government.

Normative Analysis: Federal Web Sites

The normative federal web site analysis component was conducted June 27, 28, 29 and 30, 2003. E-government implementation and expansion at the federal level has received increasing levels of attention from both the legislative and executive branches. Congress, through the General Accounting Office (GAO), has requested various analyses to assess the effect of e-government on federal government operations and policy initiatives (GAO, 2000a; GAO, 2000b; GAO, 2001; GAO, 2002). The Executive branch, through the Office of Management and Budget (OMB) and

recent legislation,[8] has incorporated the management and expansion of e-government into the Bush II administration's vision of a more efficient and cost-effective government which simplifies delivery of services to citizens (107th U.S. Congress, 2002; OMB, 2002; OMB, 2003). Indeed, e-government is a cornerstone of the Bush II presidency management agenda. We now turn to the normative dimensions of federal web sites and how these dimensions compare to those of state portals.

As we recall, a web site containing all *equity* features would receive a score of 7. In order, the mean equity scores for state portals and federal web sites were 0.70 and 0.746 ($\underline{SD}$s = 0.88 and 0.86 respectively). The variance between the mean equity feature scores for state portals and federal web sites was 0.046. Thus, overall, the equity dimension of federal web sites mirrored that of state portals. However, the most frequently provided equity features on federal web sites differed markedly from those found on state portals.

Provision of site content in a foreign language (34%) was the most frequently provided equity feature observed on twenty federal web sites followed by the provision of TTY (18.6%) capability and provision of a text version (14%) of site content. This is in contrast to state portal equity features in which text and foreign language site content access provisions were most frequently present. On an overall basis, just under half, or 47.5%, of the federal web sites contained no equity features and an additional 35.6% contained only one feature. Table 6 below gives the presence of individual equity features observed among state portals.

Table 6

Number of Individual Equity Features Observed Among Federal Web Sites

Features	Bobby compliant	foreign language	Section 508 compliant	tdd	text version	tty	W3C compliant
N = 59	59	59	59	59	59	59	59
Count	0	20	0	5	8	11	0
Percent	0.0	33.9	0.0	8.5	13.6	18.6	0.0

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[8]On December 17, 2002, Public Law 107-347, otherwise known as the E-Government Act of 2002 became law.

Of particular note is the fact that federal web sites fared more poorly than state portals in the provision of Bobby[9], Section 508[10], and W3C[11] compliance. No federal web sites were observed to be compliant in the provision of these features yet many advertised that they were. This researcher repeated the verification procedures used for state portals on federal web sites. The free online Bobby evaluation software and its companion WebXact software were used to scan federal web sites. In all instances, federal web sites that advertised themselves as being Bobby approved or Section 508 and/or W3C compliant were found not to be. Among the federal web sites either not bothering to incorporate these features and/or whose features were found not be compliant we find the following: (1) Department of Education, (2) Department of Housing and Urban Development, (3) Department of Justice, (4) Department of Veterans Affairs, (5) Social Security Administration, (6) United States Courts of Appeals, and (7) the White House. The federal web site equity data indicates that much work remains in both the design and incorporation of equity features on these sites to provide even a minimal access level for disabled citizens and/or for those who speak a language other than English. Figure 6 below graphically depicts the distribution of equity feature scores across federal web sites.

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[9] Bobby is a non-profit web site rating group that has developed accessibility evaluative software. Its free web site accessibility software evaluation tool was created to help identify and repair web page barriers to accessibility and promote compliance with extant accessibility standards, i.e., W3C and Section 508.

[10] Section 508 of the Rehabilitation Act Amendments of 1998 established electronic and information technology accessibility standards for the disabled.

[11] The World Wide Web Consortium (W3C) has promulgated accessibility guidelines, known as Web Content Accessibility Guidelines 1.0, which focus on eliminating basic web site design problems that could prevent or impair use of a web site by disabled individuals. These guidelines are also sometimes referred to as Level A Conformance to Web Content Accessibility 1.0. The organization also develops interoperable technologies, standards, and software to optimize the utility of the Internet. Source: http://www.w3.org/

Figure 6

Histogram of Federal Web Site Scores for Equity
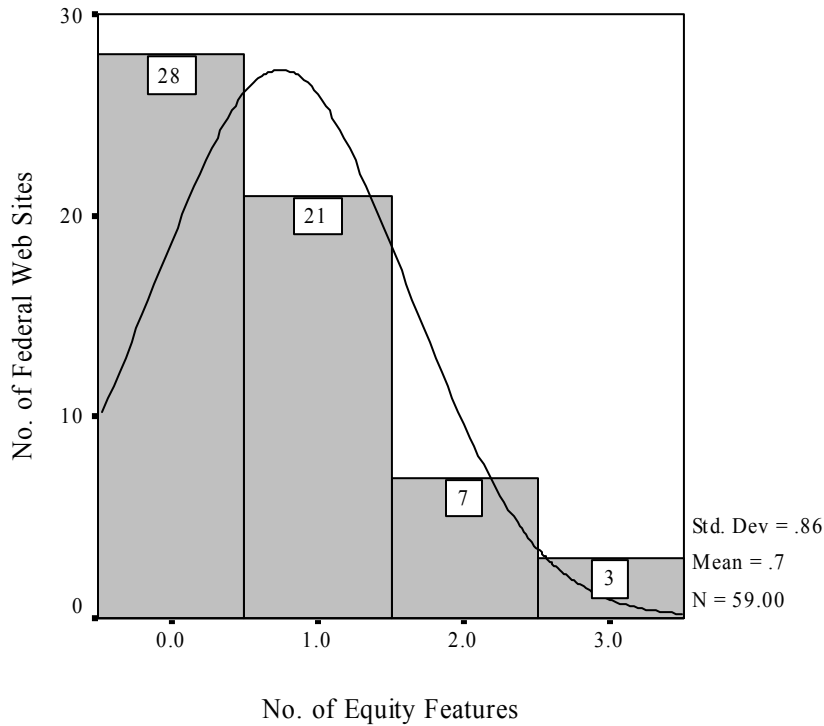
Privacy feature scores on federal web sites, for the most part, again mirrored those of the state portals. The variance between the mean privacy feature scores for the state and federal sites was 0.323. The means for state portals and federal web sites were 1.95 and 1.63 (SDs = 1.12 and 1.22), respectively. Although there was relative statistical comparability between the means of the two groups, the differences are worth noting. No federal web site was observed to contain all five privacy features. In contrast, one state portal, Arizona, was found to contain all five features. Twenty-five percent of federal web sites, or 15 sites, were found to contain no privacy features as opposed to only 6% or 3 state portals. Figure 7 and Table 7 below provide the privacy score frequencies and presence of privacy score components among federal web sites.

Figure 7

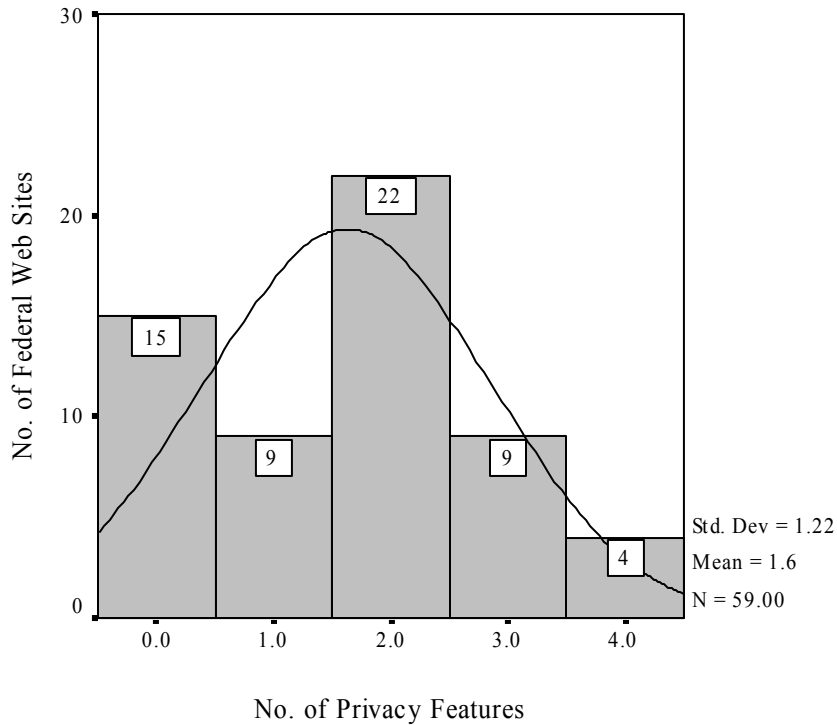Histogram of Federal Web Site Scores for Privacy

No. of Privacy Features

Table 7

Number of Individual Privacy Features Observed Among Federal Web Sites

| Features	breach notice	no marketing	no monitoring	no cookies	no sharing
N = 59	59	59	59	59	59
Count	0	16	44	17	19
Percent	0.0	27.1	74.6	28.8	32.2

The most common privacy feature observed on federal web sites was a policy statement advising the user of the site's policy on monitoring user activity. Forty-four sites, or 75%, of the 59 federal web sites in this study contained this feature. This 75% figure was marginally higher than the 66% presence of this feature on state portals. However, the overall presence of privacy features was higher on state portals than federal government web sites. No federal web site contained a site breach notification feature whereas one state portal, Arizona, did. The preceding concerns and highlighted statistics help shed light on the important work remaining on federal

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web site privacy provisions. The citizen initiating an e-government encounter should not have to worry about the confidentiality of his or her personal information nor be fearful of providing it to secure information or services.   In the following two sections I examine the federal data on publicness and participation.

A web site containing all *publicness* features would receive a score of 6. No federal web sites incorporated all six publicness features whereas nine (9) state portals or 18% did. However, 49.2% or 29 of the 59 federal sites examined contained five publicness features in comparison to 32% or 16 of the 50 the state portals. Only two web sites out of the entire state and federal sample of 109 sites were observed to contain just one publicness feature each—these were the Department of Agriculture and the National Aeronautics and Space Administration (NASA). Figure 8 below reflects the frequency distribution of publicness scores for federal web sites.

Figure 8

Histogram of Federal Web Site Scores for Publicness

No. of Publicness Features

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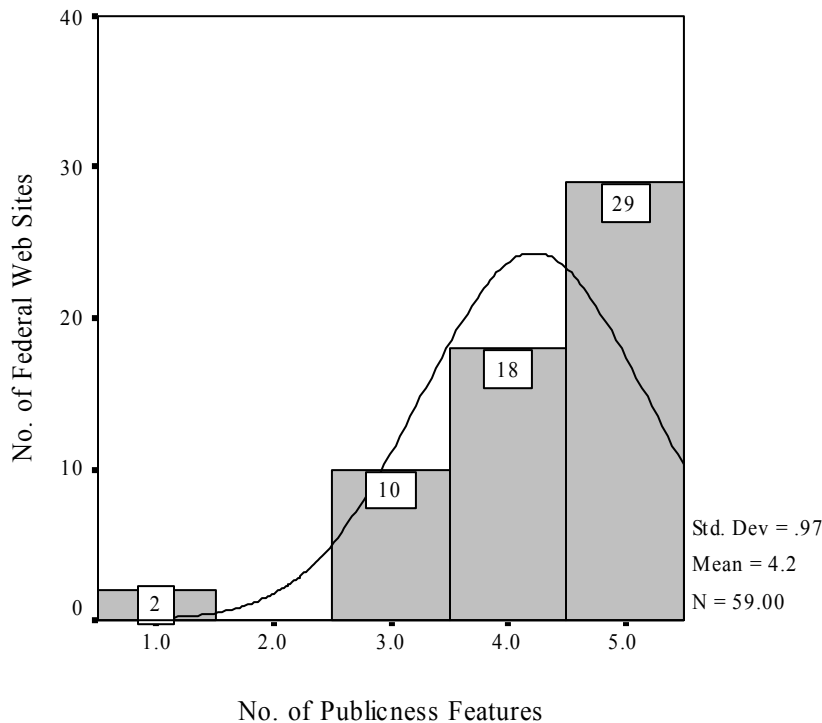
Overall, federal web site scores for publicness were considerably better than those for both equity and privacy. However, federal web site publicness scores were overall still lower than those of the state portals.

I would argue that the importance of publicness on federal web sites is of a different order than that of state portals. This is because the federal government has the overall national (moral) responsibility for ensuring that the web sites of the federal government are both available and open to all citizens within certain procedural and/or statutory guidelines. This argument can logically also be extended to the other three values of equity, privacy, and participation. Admittedly, anyone with the requisite computer equipment, browser software, and Internet access may visit any state portal he or she chooses. However, as a general rule the focus of the content on state portals is geared toward specific state functions and the citizenry of that state. Federal web sites have a much broader statutory mission, a national citizen base, and international implications as well. Table 8 below gives the presence of publicness features among federal web sites.

Table 8

Number of Individual Publicness Features Observed Among Federal Web Sites

Features	address	index	phone	publications	search feature	welcome
N = 59	59	59	59	59	59	59
Count	55	40	53	54	47	6
Percent	93.2	67.8	89.8	91.5	79.7	10.2

Another way of comparing the relative differences of publicness between federal web sites and state portals is from the perspective of the citizen initiating an e-government encounter in both environments. A citizen visiting any one of the 59 federal web sites examined in this study is on average 23.2% more likely to locate an address and approximately 5% more likely to locate a phone number of someone in comparison to visiting a state portal. That same citizen is also 35.5% more likely to locate downloadable publications on federal web sites than on state portals. However, state portals are approximately 50% more likely to contain a welcome message than federal web sites. Publicness, as noted earlier, is of necessity entwined with the value of participation to which we now turn.

A web site containing all *participation* features would receive a score of five. With respect to participation features, we find two departments and one institution at opposite ends of the score continuum. Websites for the departments of Justice and Health and Human Services contained no participation features. The National Science Foundation web site was the only site observed to contain all five features. Figure 9 below illustrates the frequency distribution of participation scores for federal web sites.

Figure 9

Histogram of Federal Web Site Portal Scores for Participation

No. of Participation Features
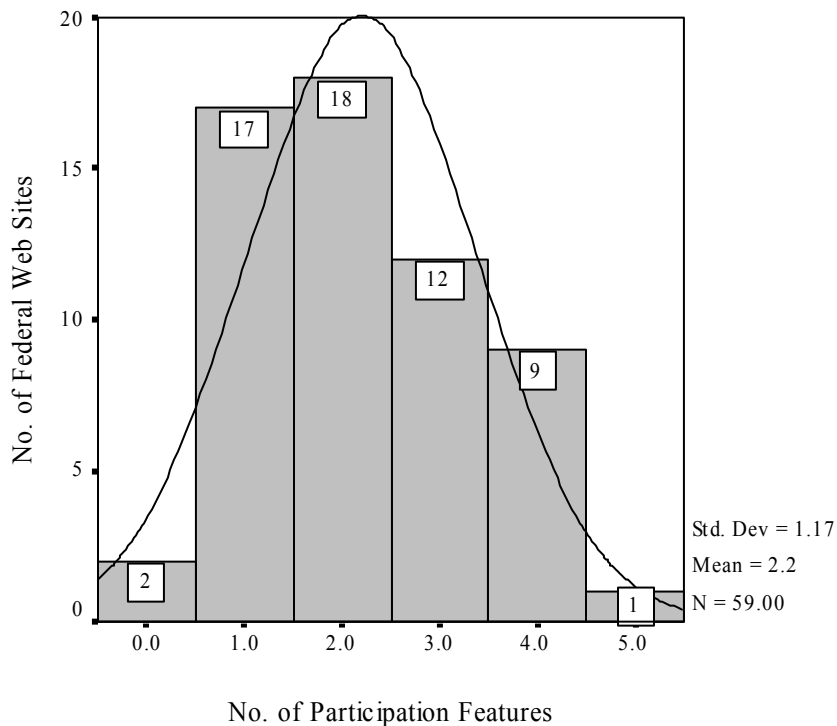
Participation scores for federal web site scores were better than those for equity and privacy but lower than those for publicness. This pattern mirrors that of state portals. The federal web site portal score means for (a) participation, (b) equity, (c) privacy and (d) publicness were, respectively, (a) 2.23, (b) 0.74, (c) 1.62, and (d) 4.22. The most common participation feature noted on federal web sites was the provision for citizen comment on the site and/or services.

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Fifty-five of the 59 sites, or 93.2%, examined contained this feature as compared to a similarly high figure of 88% on state portals. Table 9 below summarizes the presence of individual participation features observed among federal web sites.

Table 9

Number of Individual Participation Features Observed Among Federal Web Sites

Features	e-mail	e-updates	comments	personalization	broadcast
N = 59	59	59	59	59	59
Count	27	20	55	5	23
Percent	45.8	33.9	93.2	8.5	39

There were only two noteworthy differences observed in the presence of participation features between federal web sites and state portals. Federal web sites were more than twice as likely to contain e-update capability than state portals: 33.9% versus 14%. However state portals were three times more likely to contain a personalization feature: 28% versus 8.5%.

The preceding analysis of the extent to which the values of equity, privacy, publicness, and participation were or were not present on federal web sites has set the stage for discussion of the normative character of federal web sites. This was analyzed by an index in the same manner as the state portals.

 Federal Normative Analysis: Summary Index

A 100 point index, identical in form to that used in state portals, was used. I discuss the data derived from this index, as I did in the state portal analysis, to highlight how the 59 federal web sites fared individually and scored overall with respect to their normative character. I also discuss these findings in relation to the state portal findings. Recall that the index has 100 points derived from assigning 4 points to each of the 23 features present on federal web sites with an additional 2 points added for web sites that have all features present for any one of the four values.

Overall, 88.1% of federal web site normative index scores were under 50 as compared to 90% of those for state portals. The minimum index score of 16 for federal web sites was lower than the

minimum score of 20 for state portals. Only two state portals had minimum scores of 20. Seven of the 59 federal web sites, or approximately 12%, had index scores of 16. These low scores were not randomly distributed throughout the 59 federal web sites. Six of the seven minimum scores were achieved by the 2nd.,3rd, 4th, 5th, 6th, and 9th Circuits of the United States Courts of Appeals. NASA achieved a minimum score of 16 as well.   Refer to Appendix F for a list of federal web site index scores. Figure 10 and Table 10 below illustrate the normative score frequencies and distributions for federal web sites obtained from the index.

Figure 10

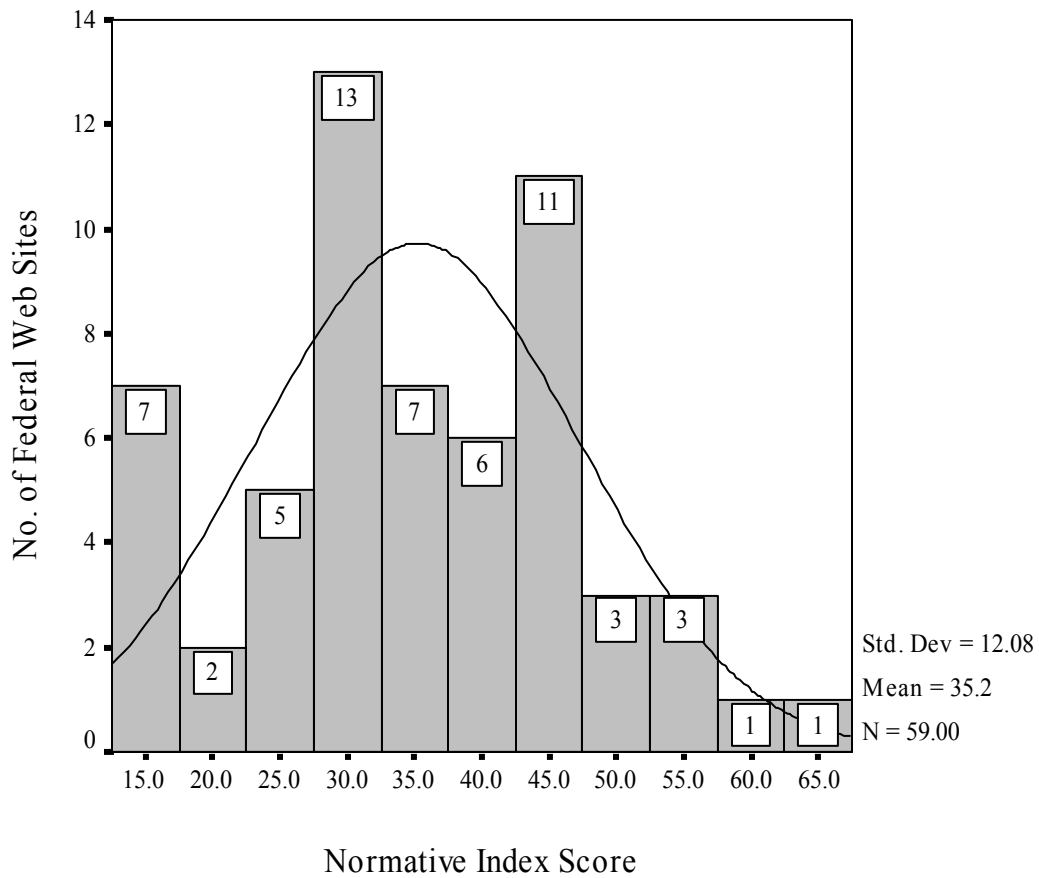Histogram of Overall Federal Web Site Normative Index Scores

Table 10

Federal Web Site Normative Index Score Distribution

Frequency	Percent	Cumulative Percent	Index Score
7	11.9	11.9	16.00
2	3.4	15.3	20.00
5	8.5	23.7	24.00
7	11.9	35.6	28.00
6	10.2	45.8	32.00
7	11.9	57.6	36.00
6	10.2	67.8	40.00
11	18.6	86.4	44.00
1	1.7	88.1	48.00
2	3.4	91.5	52.00
3	5.1	96.6	56.00
1	1.7	98.3	58.00
1	1.7	100.0	64.00
59	100.0		Total

The maximum index score for federal web sites was 64, achieved by the Department of Housing and Urban Development. FirstGov, the federal government's portal web site, achieved a normative index score of 56 as did the Small Business Administration and White House. The high percentage of index scores under 50 for federal web sites, coupled with the large number of minimum scores, pinpoint both normative failings and important policy considerations which I address in the concluding chapter. We now turn to the aesthetic web site analysis component.

Web Site Analysis: Aesthetic Dimension

State Portals

This component of the web site analysis was structured to identify the aesthetics of both web site design and content as determined by the presence or absence of eight criteria. They are starkness, purpose, density, legibility, emotive, organization, human agency, and stability. The evaluative criteria were derived from a synthesis of selected literature in the fields of instructional message design, information design, and information presentation (Fleming & Levie, 1993; Tufte, 1997; Wurman, 1990; Wurman, 2000). The criteria were subsequently

coded into eight variables for SPSS analysis purposes. The presence of a given aesthetic variable on a web site resulted in the assignment of a "1" while the absence of that variable resulted in a "0." The reporting of the results of the aesthetic web site analysis will be approached in the same manner that the normative was conducted. I begin by reporting the findings of the state portal analysis, then move onto reporting the federal web site analysis findings, and finally compare and contrast those to the state results.

The aesthetic state portal web site analysis component was conducted July 9 and 10, 2003. State portals, as noted earlier, have been characterized as the cyberspace proxy for the state capitol dome. If this is indeed the case, and I believe that it may be, then these portals represent or have the potential to represent much more than a mere cyberspace hub for processing electronic transactions. The state portal or virtual capitol dome may also enclose the citizen by capturing his or her attention and serve to symbolize democracy at the state level just as physical state capitols do (Goodsell, 2000). The two emerging dynamics of (1) the state portal becoming the citizen's primary access point for state services and (2) its nascent symbolism of state democracy place the state portal at the forefront of both aesthetic design and normative site content considerations. We begin with a brief overview of the findings for each of the aesthetic variables, followed by an overall in-depth summary analysis of them across the state portals.

The *starkness* variable addresses whether or not the web site designer has placed too much text on the computer screen thereby generating an overly crowded presentation that is evidenced by text of any color dominating the screen. A web site exhibiting starkness is both difficult for the individual to follow and appears less than professional. Only 10% or 5 state portals exhibited starkness: Nevada, Florida, Virginia, Oregon, and Kentucky.

The *purpose* variable identifies whether or not the web site has incorporated graphic images to aid the citizen in both identifying the site as a government one and in articulating either the purpose or mission of the organization. Overall, 60% of portals were observed to have incorporated this aesthetic in their site design.

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The *density* variable is a proxy for content excess. The computer screen can display less text than a printed page. As a result, in attempting to avoid the starkness issue designers will often resort to expanding the web page to two or more pages. A home web page that spans several pages may undermine user comprehension and thus diminish the information itself. This variable identifies whether or not the web page fits on one screen. Again, 60% of portals were observed to have incorporated this aesthetic consideration in the design of their web site. At the time this research was conducted, the state portals for Illinois and Pennsylvania were observed to be the most dense. The state portals for Indiana, New Hampshire, and Washington were observed to be the least dense.

Legibility addresses the appropriate use of both font style and size which aid in the reading and understanding of printed information (Fleming & Levie, 1993; Tufte, 1990). The relationship of font style and font size to legibility is immediately apparent to anyone who has ever tried to read the stock listings so prevalent in most daily newspapers or the small type on product labels. In both instances, the goal seems to have been that of reducing printed text to its minutest scale. The legibility aesthetic addresses whether or not a web site has employed the appropriate font style and font size in the presentation of its written content. Overall, slightly less than half or 48% of state portals were observed to have used the appropriate font style and font size in their written web site content. The state portals for North Carolina and Washington are noteworthy for their appropriate use of font type and font size.

The *emotive* aesthetic relates to the effect of color use in web site design. Empirical evidence on the affect of color in both message and web site design is not well established. However, principles for its appropriate use in both business communications and the graphical presentation of data are well established, as are the psychological dimensions and cultural contexts of its use (Jones, 1997; Sharpe, 1975; Tufte, 1990). Tufte has argued that the use of a natural color palette incorporating the blues and grays of the sky as well as other colors found in nature, such as yellow, are important considerations. The emotive aesthetic is a determinant of the extent to which color has been appropriately used in web site design.

A relatively high percentage (72%) of state portals were observed to have appropriately used color in their site design. However two of them, New Hampshire and New Mexico, were at opposite ends of the continuum for color use. The New Hampshire portal was observed to be an excellent example of a well conceived color scheme employing a natural palette such as the blues, yellows, and grays of the sky (Tufte, 1990). The New Mexico portal in contrast represented an example of an ill conceived color scheme. The visitor to the New Mexico portal site could not help but be struck by its almost overpowering blood red background.

The o*rganization* variable is a proxy for the coherent presentation of site content. A documented key design consideration in organizing the presentation of information is the appropriate use of blank or so called white space (Fleming & Levie, 1993; Tufte, 1990; Wurman, 1990). The appropriate use of white or blank space to visually separate and/or categorize information aids the reader in locating the information and in understanding it. State portals for the most part incorporated this aesthetic. Overall, 74% did so. Two of the state portals that fared poorly on this aesthetic were the same ones that scored low on the density aesthetic: Illinois and Pennsylvania.

Human agency is the aesthetic that binds or links the virtual experience to the rituals of everyday life. The inclusion of pictures of people in instructional and/or informational material has been documented as a valuable aid for both gaining and maintaining the reader's attention (Fleming & Levie, 1993). In Chapter 3, I also argued that the inclusion of pictures of people (other than elected officials) in government web site content was also important because they help reinforce the connection between citizens, human agency, and government operation. Although both of the preceding purposes are important, from my perspective the latter purpose is the more important of the two. The human agency aesthetic is a measure of whether or not a web site has included a picture or pictures of people. Unfortunately, slightly less than half (46%) of the state portals incorporated the human agency aesthetic in their web site design. The New Mexico and New York portals were found to be the most sterile in this regard.

Stability is a proxy for permanency. The architectural styles of many government buildings are intended to reflect their function, the values of the regime, a tradition of service, and of course a

sense of permanency or stability. It is this latter reality that is perhaps the most difficult for web sites to convey given their dynamic nature. However, it is still possible for government web sites to bridge the gap so to speak between their physical and virtual presentations by incorporating an image of a building on the site. Such incorporation also may, as was the case with the human agency aesthetic, serve to remind citizens of the nexus between themselves and their government. Overall, 70% of state portals were found to have incorporated the aesthetic of stability in their web site design.

Table 11 below shows the presence of the individual aesthetic variables among state portals.

Table 11

Number of Individual Aesthetic Variables Among State Portals

Variables	Starkness	Purpose	Density	Legibility	Emotive	Organization	Human Agency	Stability
N = 50	50	50	50	50	50	50	50	50
Count	45	30	30	24	36	37	23	35
Percent	90.0	60.0	60.0	48.0	72.0	74.0	46.0	70.0

The data in table 11 indicate that state portal designs have, by and large, learned how to incorporate a balanced text-to-background approach and thereby avoid a starkness of content presentation. The table also pinpoints several areas of concern. Less than 50% of state portals incorporated legibility and human agency design consideration into their site. The extensive absence of these two design elements in the states substantively effects the citizen user, as would the absence of any of the other aesthetic considerations. Although a clear majority or 60% of state portals included both purpose and density design considerations in their web sites 40% did not. On balance, I would argue that state portals have demonstrated more attention to aesthetic design considerations than they have to normative issues. Nonetheless, the overall state portal aesthetic index scores indicate that there is still room for improvement.

The preceding discussions have provided an overview of the findings for each of the eight aesthetic constructs. The next section explores the data in more depth on a summary basis across state portals, using an aesthetic index.

State Aesthetic Analysis: Summary Index

In creating my 100 point aesthetic index for this exploratory project, I assigned 12 points to each of the eight aesthetic variables and an additional 4 points to any portal that had incorporated all eight aesthetic design considerations. The index formulation is therefore (8 x 12) + 4 = 100. The data derived from the index was used to determine how the 50 state portals fared individually and scored overall. Refer to Appendix G for a list of state portal index scores. Figure 11 below graphically presents the distribution of state portal aesthetic scores.

Figure 11

Histogram of Overall State Portal Aesthetic Index Scores

Std. Dev = 20.55
Mean = 63.0
N = 50.00

Aesthetic Index Score
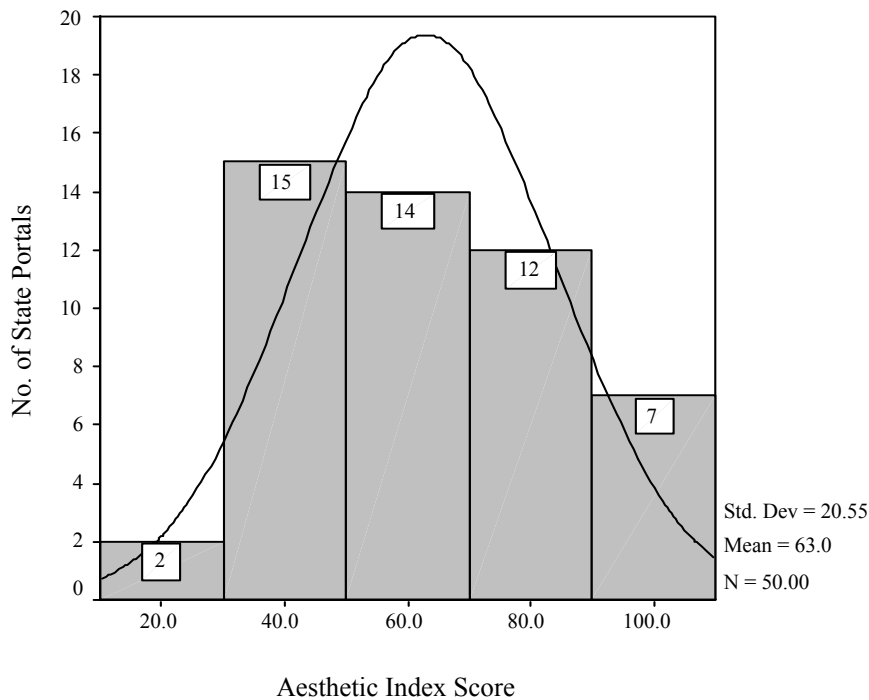
Seven states achieved index scores of 100. They were Tennessee, Washington, Utah, Maryland, Arkansas, Maine, and Colorado. Two thirds, or 66%, produced scores exceeding 50. Two states, New Mexico and Hawaii, had index scores of 24, while another five—10% of all state portals—had scores of 36. Those five states were New York, Virginia, Oregon, Iowa, and Delaware.

To sum up, state portals did much better on the aesthetic dimensions than they did on the normative. Recall that 90% of state portal normative index scores were under 50, with 62 representing the highest score achieved. Approximately 66% of state portal aesthetic index scores exceeded 50 and seven states scored 100. The aesthetic analysis of the federal web sites that follows provides an opportunity to compare and contrast the aesthetic character of the citizen-initiated public encounter at that level to that of the states.

Aesthetic Analysis: Federal Web Sites

The aesthetic federal web site analysis was conducted July 8 and 9, 2003. I argued earlier that the provision of normative features on federal web sites was of a different order of normative importance than state portals. This does not diminish the normative importance of state portal provision. Rather, I distinguish between a state government's responsibility for its own citizens, as compared to the federal government's responsibility for the citizens of all fifty states. For the same reason, I argue that aesthetic design considerations at the federal level are also at a different order of magnitude than at the state level. We now compare and contrast the aesthetic dimensions of federal web sites with those of state portals. Table 12 below gives the incidences of individual aesthetic elements for federal web sites.

Table 12

Number of Individual Aesthetic Variables Observed Among Federal Web Sites

Variable	Starkness	Purpose	Density	Legibility	Emotive	Organization	Human Agency	Stability
N =59	59	59	59	59	59	59	59	59
Count	46	31	32	20	37	41	23	16
Percent	78.0	52.5	54.2	33.9	62.7	69.5	39.0	27.1
State Portals Percent	90.0	60.0	60.0	48.0	72.0	74.0	46.0	70.0

Generally speaking federal web sites did not do as well in the incorporation of aesthetic design considerations in comparison to state portals. All federal web site frequencies for aesthetic considerations were surpassed by those of the state portals. For example, whereas 70% of state portals incorporated a building image or stability aesthetic only 27.1% of federal web sites were found to have incorporated this aesthetic consideration. In another such example, 90% of state

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portals appropriately addressed the issue of web site starkness whereas only 78% of federal web sites did. How federal web sites fared individually and scored overall with respect to aesthetic considerations is examined and discussed in the following section.

Federal Web Site Aesthetic Index

The state portal aesthetic index was replicated for the federal analysis. Not surprisingly, the federal aesthetic index scores mirror the poor showing for federal web sites with respect to individual aesthetic considerations. However, the federal aesthetic index scores also help to identify a few successes and unfortunately quite a few failures from the aesthetic standpoint. No federal web site achieved a perfect index score of 100 whereas seven state portals did. Refer to Appendix H for a list of index scores. The highest federal aesthetic index score of 84 was achieved by only three web sites: the Library of Congress, the National Endowment for the Arts, and NASA. Figure 12 below graphically illustrates the federal web site aesthetic ratings derived from the index.

Figure 12

Histogram of Overall Federal Web Site Aesthetic Index Scores
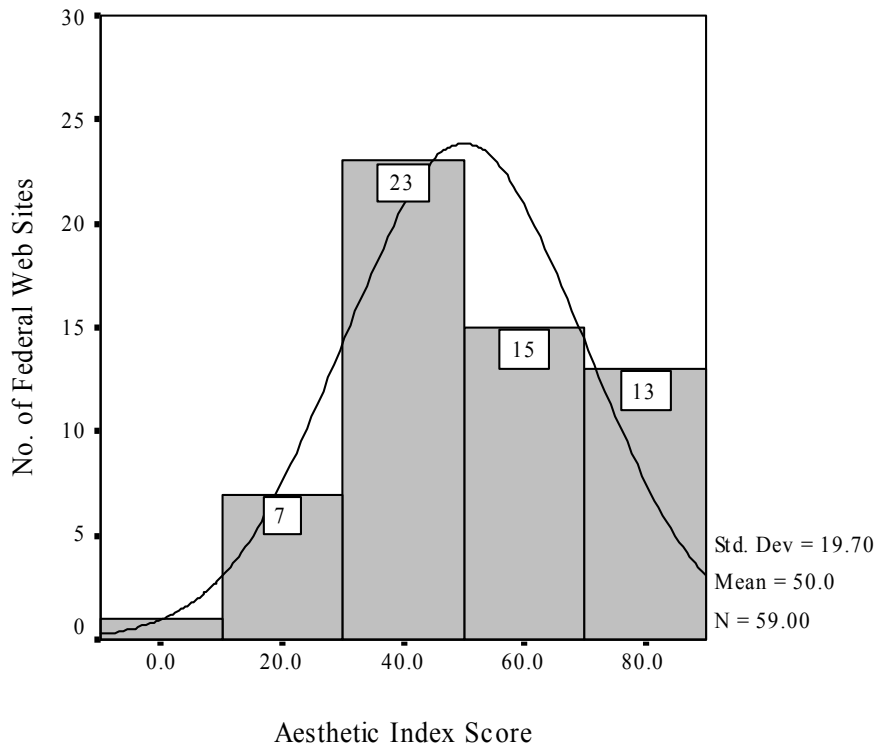
Less than half (47.5%) of federal web site aesthetic index scores exceeded 50, in contrast to two-thirds (66%) of state portal aesthetic index scores. Four federal web sites achieved index scores of 12, indicating the incorporation of only one aesthetic design consideration. Those four federal web sites were the United States Government Printing Office and the 5th, 8th, and 10th Circuits for the United States Court of Appeals. Refer to Appendix I for a list of the Appeals Courts. The United States Court of Appeals for the 3rd Circuit incorporated no aesthetic considerations on its site. While at first blush it might appear that the United States Appeals Courts as a group fared poorly, that was not the case. The index scores for the remaining judicial circuits were widely dispersed. The United States Court of Appeals for the 7th Circuit attained an index score of 60 and five other Circuits, the 1st, 2nd, 4th, 6th and Federal Circuit attained scores of 36. The Supreme Court of the United States attained an index score of 48. Other notable index scores were those of the Department of Justice (36), House of Representatives and Senate each (48), White House (72), United States Postal Service (72), and Department of Veterans Affairs (72).

The low aesthetic index scores for federal web sites serve two important functions. The low scores are a proxy for aesthetic design problems that can effect the overall character and quality of the citizen-initiated public encounter on these sites and they are also benchmarks or reference points for focusing improvement efforts. The ability to measure and quantify the aesthetic as well as normative dimensions of e-government web sites, whether at the state or federal level also provides a valuable alternative to the more commonplace utilitarian evaluative methodologies used to evaluate web sites. The latter methodologies typically focus on the amount of downloadable information available on the site, the number of links to other government sites, the number of transactions offered, and other similar considerations. Published ratings of government web sites by the Center for Digital Government, Council for Excellence in Government, and the A. Alfred Taubman Center for Public Policy and American Institutions at Brown University, for the most part, employ utilitarian evaluation methods.

It is quite possible that web sites rated high by one of the above organizations may be feature rich but content poor. A site could contain a plethora of features and be content poor because aesthetic and or normative considerations were not appropriately incorporated into site design. Assessing a web site's aesthetic and normative character is one possible way to gauge the richness or poorness of site content. Let us test the preceding hypothesis by comparing the normative and aesthetic index scores developed in this dissertation to the index scores for the same federal web sites identified in a 2002 study conducted by West of the A. Alfred Taubman Center. By way of a reminder, the federal web site sample I used in my research encompasses all federal web sites included in West's 2002 work. Table 13 below compares West's highest index score sites to the aesthetic and normative index scores I developed for the same federal web sites.

Table 13

Aesthetic and Normative Index Score Comparison to West's Federal Web Site Index Scores

West's 2002 Federal Web Sites	West's Index Score	Aesthetic Index Score	Normative Index Score
Federal Communications Commission	92	60	52
Department of Labor	88	72	40
Environmental Protection Agency	84	72	44
Department of Treasury	84	48	44
Department of State	84	72	32
Social Security Administration	80	60	44
FirstGov	80	72	56
NASA	76	84	16
Internal Revenue Service	76	60	36
Department of Transportation	76	60	40

The comparisons yield some interesting insights. Overall, the aesthetic and normative index scores for the ten web sites were less than West's index scores. The one exception was the NASA site in which the Aesthetic index score surpassed West's score. However, the NASA site's normative index score was one of the lowest. As a whole, the normative index scores for these sites were markedly lower than West's index scores for them with only two sites, the Federal Communications Commission and FirstGov, achieving scores above fifty-percent. So what does this all mean and does it matter?

Overall Findings

The preceding data comparison highlights the complexity of web site design and the related importance of an architecture that incorporates consideration of both the intended messages and/or impressions to be conveyed through the finished work. These are very human considerations which, I would argue, should not be subordinated to mere technical ones. Government web sites, in addition to being efficient and convenient, should ideally also be responsive and reaffirm both the values of the regime and the relationship of the citizen to his or her government. We now turn to a discussion of some of the key observations flowing out of the overall analysis.

The normative dimensions of state portals and federal web sites were roughly comparable. However, state portals generally were observed to possess more robust aesthetic dimensions than federal web sites. The mean normative index scores for state portals and federal web sites were 37.9 and 35.2 respectively. State portal and federal web site mean aesthetic index scores were respectively, 63.0 and 50.0.

On the normative side, both state portals and federal web sites fared well with respect to the incorporation of publicness features—a web site's availability and openness to the general public. State portal and federal web site mean feature scores for publicness were 4.4 and 4.2 respectively out of a possible score of 6. However, both state portals and federal web sites fared poorly in the incorporation of equity and privacy features. We recall that equity features facilitate access by disabled and/or non-English speaking individuals while privacy features protect users' personal information.

State portals and federal web sites incorporated less than one equity feature per site. The mean equity features provided, out of a possible 7, were 0.70 for state portals and 0.746 for federal web sites. A related equity concern involved state portal and federal web site advertising of compliance with disability access standards for which they were not. Software used by this researcher to verify compliance highlighted this problem. Only one state of the 50 sampled, Virginia, was observed to be compliant while none of the 59 federal web sites were. State portals and federal web sites incorporated two or fewer privacy features, out of a possible 5. The mean privacy features incorporated were 2.0 for state portals and 1.6 for federal web sites. And lastly, participation scores for state portals and federal web sites paralleled each other with mean scores of 2.3 and 2.2 respectively, out of a possible five. The relative congruence of state portal and federal web site normative dimensions was not replicated in the aesthetic component.

State portal frequencies for aesthetic considerations surpassed all federal ones. Overall, 66% of state portal aesthetic index scores exceeded 50 compared to 47.5% of federal web sites. Seven state portals achieved aesthetic index scores of 100 whereas no federal web site did. Only three federal web sites attained aesthetic index scores of 84. State portals were also more than two and one-half times more likely to address the *stability* aesthetic than federal web sites. We recall

that *stability* is a proxy for permanency as well as a bridge between the physical and virtual presentation of an institution.

The noted similarities and differences between the normative and aesthetic dimensions of state portals and federal web sites serve two purposes. The first is that web site architectural successes which may be replicated have been identified as have observed deficiencies to be avoided. The second purpose involves the synthesis of these observations to gauge their broader expressive, behavioral, and societal implications to which I now turn.

We remember that the expressive lens is the prism through which political authority, ideas, and values embedded in web site architecture are viewed. From this vantage point we cannot help but be concerned with the anemic expression of the values of equity, privacy, and participation across both state portals and federal web sites. The weak expression of these values has behavioral and societal import as well.

The value of equity, we remember, is a proxy for inclusiveness. The citizen initiating a public encounter on an e-government web site claiming, but not delivering, features facilitating access for the disabled or by individuals who speak a language other than English may experience feelings of frustration and exclusion. These feelings could result in web site avoidance behavior by citizens who may, correctly or incorrectly, conclude that their ability to access a site is not important to the institution. Similar arguments can be made for the values of privacy and participation. Citizens may conclude that the weak expressions of these two values are indications that the institution is not concerned with either protecting citizens' personal information or enabling citizen participation. These citizen conclusions could also engender web site avoidance behaviors—and, very likely negative perceptions of the physical based institution itself. The potential societal effect of the above considerations is worth noting.

Americans have historically mistrusted government and government officials (Light, 1997; Nye et al., 1997). This mistrust was at the core of the American Revolution as were related concerns of fairness or equity, personal privacy, and participation in government. Government sites which weakly express or omit these values unwittingly provide both form and substance to citizen

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concerns which may, at the end of the day, ironically justify the historical mistrust of government.

The appropriate incorporation or inappropriate omission of aesthetic considerations collectively provide and shape the user's initial sensory perception of, feelings about, and behavior toward the web site. This perception may be compared to the familiar assertion that "a picture is worth a thousand words" or alternatively to a web site Rorschach test.[12] Tufte argued, in part, that the lack of attention to appropriate aesthetic considerations in presenting information damages the communication and conveys disrespect for the audience. He also asserted that ". . .the operating *moral* premise of information design should be that our readers are alert and caring; they may be busy, eager to get on with it, but they are not stupid" (Tufte, 1990, p. 34). The expression, through web site aesthetic deficiencies, of either disrespect for the user or that the user is stupid has behavioral and societal ramifications. First impressions are as important in the new civic space of e-government as they are in traditional civic space. Web site users who feel disrespected or who are made to feel stupid in the course of a public encounter are probably less likely to revisit the site and speak positively about their experience or the institution. On the societal level, web site aesthetics that intimidate rather than attract are bound to have a negative symbolic impact on the public's use of these sites and related perceptions of the institutions these sites re-present. The next chapter continues the exploration of the human implications of e-government. It examines citizen attitudes, perceptions, and reactions to e-government.

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[12] The Rorschach test is a projective test of personality or mental state based on somebody's interpretation of a series of standard inkblots. It is also sometimes referred to as the inkblot or projective test. Source: *Encarta® World English Dictionary* © & (P) 1987 - 2000 Microsoft Corporation.