Review: Digitalizing Japanese Art

Reviewed Work(s):

Kokuh# Uesugi-ke-bon rakuch# rakugai zu taikan by Shimosaka Mamoru; Kawashima Masao
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Digitalizing Japanese Art

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Kokuhō Uesugi-ke-bon rakuchū rakugai zu taikan 国宝上杉家本洛中洛外図大観.
  Supervised by Shimosaka Mamoru 下坂守 and Kawashima Masao 川嶋将生.
  Shōgakukan, 2001. CD-ROM for Macintosh and Japanese Windows. One
  disk. ¥94,000.

COMPUTERS have radically transformed the ways in which most of us con-
duct our research and teaching. The majority of the changes have come
from the digitalization of written texts and the resulting ease with which
they can be manipulated and—above all—searched. Images, however, are a dif-
ferent matter. Tempting as it may be in theory to think of images as "texts," when
converted to digital methods of reproduction, they present possibilities and chal-
lenges utterly different from those of character-based texts. Images, unlike writ-
ing, cannot be reduced to a limited character set. Immensely more information
is thus required for their accurate conversion to digital form, resulting often in
extremely large files, particularly at high resolution. At the same time, especially
as storage media increase in capacity and decrease in price, the possibility of
quick and easy access to large and detailed images at high resolution becomes
one of the great advantages of digitalization. It is one fully exploited in the CD-
ROM under review here, of the Uesugi set of *rakuchū rakugai zu* screens.
    The other great potential of digitalization is linked to what at first appears to
be another critical limitation in comparison with texts, the fact that in the absence
of a common set of recognizable symbols, digital image files cannot be mean-
ingfully searched. The only way to provide searchability is to insert "metadata"
within the image file, textual data that serves to identify and explain the image.
At the simplest level, this is merely catalog-like data for the object itself, com-
parable to the information written on slides or as the captions of printed images.

The real potential of metadata comes rather through the use of a web format in which a variety of types of information can be accessed at different points within the image. When the mouse passes over such a point, a label pops up that not only can serve itself as identification or explanation, but also can be hyperlinked to more detailed and complex forms of information. The hitch, of course, is that it requires a great deal of labor to compile the metadata and place it effectively within the image, a task that generally has to be done by hand at great expense. The results, however, can be impressive and offer new ways to study a work of art, particularly if the metadata is plentiful and searchable, as is the case with the Uesugi *rakuchū rakugai zu* CD-ROM.

As the first effort at the digitalization of Japanese art that combines high resolution of a large and detailed work with extensive embedded metadata, the Uesugi *rakuchū rakugai zu* CD-ROM presents an opportunity to consider some of the possibilities and pitfalls of this medium. Below, after discussing some of the particular features of the screens, we will explain how the digital version works. We will also consider some other recent efforts at digitalizing Japanese art-related images for access by CD-ROM and through the World Wide Web, and will conclude with some thoughts on future directions.

Practical Problems

Before plunging into the details of the screen painting that it records and documents, it is necessary to warn of some practical problems that may stand in the way of using this CD-ROM. First is that of the platform. A single CD-ROM limited to one user at a time on a single machine, the Shōgakukan Uesugi *rakuchū rakugai zu* CD-ROM cannot (at least not legally) be copied to multiple hard disks or networked. Libraries willing to put up with dedicated CD-ROM terminals—a delivery system that is inconvenient and rapidly disappearing—may be prepared to acquire it as a specialized reference work that is consulted only occasionally. But such a restricted medium defeats the promise of "ubiquity" (availability to multiple users from their own network terminals at any time—"24/7" in current jargon) that is one of the greatest boons of computer networks. As teaching materials, single-user CD-ROMs are fine for classroom presentation by the instructor, but difficult to use for out-of-class viewing assignments. A related issue is the operating systems on which the CD-ROM will run: it works fine on Japanese-enabled Macs above OS 8.5, but only on Japanese versions of Windows 95, 98, ME, and 2000. We attempted to run it on versions of Windows 2000 and XP distributed in the United States, but without success.[1] This serious limitation will be a first concern for many potential users outside Japan.

The second problem is the list price of ¥94,000.[2] This steep price seems to

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[1] When tested on a computer purchased in the United States and equipped with Windows XP set for Japanese language, the CD-ROM installed and loaded properly, and the Japanese-language functions worked without problems, but the hyperlinks on the labels failed to respond.

[2] Discounts, however, appear to be available: as of autumn 2002, the CD-ROM was offered on amazon.co.jp at 17 percent off list price.

have been set with two classes of users in mind. One is Japanese libraries that have terminals for single-CD-ROM resources and enough users to justify purchase of the Shōgakukan work. The other target was surely the many dedicated amateur historians in Japan, primarily older men with time and some money to spare for their hobby. Since many such amateurs are retired businessmen and professionals, they are ironically more likely to be able to afford such a high-priced item than professional scholars. The third limitation is that of language, since the interface and reference materials of the CD-ROM are entirely in Japanese. This will restrict its use outside Japan primarily to professional scholars and graduate students of Japanese culture, although it could also be profitably used with a digital projector for class lectures on Momoyama Kyoto or on the *rakuchū rakugai zu* genre.

The *Uesugi* Rakuchū Rakugai Zu

Rakuchū rakugai zu, literally "views inside and outside the capital," designates a genre of paintings of famous places of the city of Kyoto, in particular large works on folding screens that emerged in the sixteenth century and proliferated in the first half of the seventeenth century. Usually created in six-panel pairs representing the east and west sides of the city, some one hundred sets of *rakuchū rakugai zu* screens survive, the majority from the seventeenth century. Most are painted in intricate detail with bright colors embellished with clouds of gold leaf that seem to drift over their surfaces. Only four examples remain from the sixteenth century, of which the Uesugi screens are the best known, and the only one of the genre to be designated (in 1994) a National Treasure. As such, the Uesugi screens were an obvious choice for Shōgakukan's ambitious digitalization project, but the *rakuchū rakugai zu* screen genre in general is precisely the type of painting whose enormity of particular visual data cries out for the indexing and cross-referencing that is made possible by an electronic web format. *Rakuchū rakugai zu* are also works that benefit from study by scholars from a wide variety of academic disciplines, for whom the provision of a common database can become a powerful tool, fostering creative, comprehensive approaches to understanding the screens. Reflecting the loose, shifting boundaries of *zu* 図 and *e* 絵 in Japanese visual culture, such screens are a complex mixture of what in the West are identified as either "maps" or "pictures," and offer a natural starting point for advanced digitalization.

   The Uesugi pair of screens is distinguished from other surviving examples of the genre not only by its relatively early date, but also by several other features that help explain its designation as a National Treasure. First, their "Kuninobu" 州信 seals indicate that the screens can be confidently attributed to a particular artist and his workshop, the leading Momoyama painter Kanō Eitoku 狩野永徳 (1543–1590), who from the 1570s through the 1580s led the Kanō painting atelier to great success under the patronage of powerful warlords such as Oda Nobunaga and Toyotomi Hideyoshi. Second, the screens remained in the possession of the Uesugi daimyo family from not long after their production until

the late twentieth century, giving them an unusually clear and stable provenance. Third, rare among such paintings, specific written documentation exists for the Uesugi screens. According to accounts in Uesugi domain records dating from the seventeenth century, Oda Nobunaga gave the pair of screens to his rival Uesugi Kenshin 上杉謙信 in the early 1570s.[3] These three factors mean that far more is known about the actual circumstances of the paintings' commission than for any other *rakuchū rakugai zu* screens. A final factor worth mention is the astonishingly good condition of the screens: little of the abundant gold leaf has flaked, the colors remain bright and fresh, and the surfaces are largely free of abrasions and tears. Conservation in the late 1990s further enhanced the strong visual impact of the paintings (although the photographs used for the CD-ROM predate the restoration).

The Uesugi screens are standard-sized *hongen* 本間 screens, roughly two by five *shaku* per panel, measuring 160 × 365 cm (63 × 148 inches) for each six-panel side. Over this wide composition unfold the four seasons, moving left to right: from spring to summer in the right screen, and from autumn to winter in the left. Mt. Hiei 比叡 and the eastern hills form a backdrop for and enclose the space in the right screen, with Mt. Atago 愛宕, the northern hills, and the Katsura 桂 river performing the same function in the left screen. Within this space defined by Kyoto's natural topography, a total of 2,485 figures engage in all manner of activity, from ritual events marking the passage of time, to commerce, agricultural labor, worship, and play. Equally important, particularly as a historical record, are the 320 buildings depicted, including temples, shrines, houses, shops, and palaces, providing a panorama of the architectural environment of Kyoto within its natural setting.[4]

Long kept at Uesugi shrine in the city of Yonezawa 米沢, Yamagata prefecture, the Uesugi screens were given by the Uesugi family to Yonezawa in 1989, and have become the crown jewel of the collection of the Yonezawa City Uesugi Museum (Yonezawa-shi Uesugi Hakubutsukan 米沢市上杉博物館) that was subsequently established, with an impressive new museum building completed in autumn 2001. Despite—or perhaps because of—their fame, the Uesugi screens have only occasionally been available for public viewing. When kept at Uesugi shrine, they were displayed for one month in the spring and again for a month in the fall, and left Yonezawa for public exhibitions in 1965, 1978, 1983, and 1994.[5] The screens have never left Japan, and in their new museum setting, they will now again be shown in the spring and autumn for thirty days each.

The Uesugi screens have been the subject of scholarly inquiry since the beginnings of the discipline of Japanese art history, resulting in a rich and complex

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[3] For the text and a detailed discussion of the Uesugi documents, see Kuroda 1996, pp. 167–96. See also McKelway 1999, pp. 109–12.

[4] For elaborate breakdowns of the types of buildings and figures in the painting, panel by panel, see Ishida et al. 1987, pp. 136–37 and 160.

[5] See Kyōto Kokuritsu Hakubutsukan 1965, Tōkyō Kokuritsu Hakubutsukan 1979, Kyōto Furitsu Sōgō Shiryōkan 1983, and Kyōto Kokuritsu Hakubutsukan 1994.

historiography that can only be sketched briefly here.[6] At a stage in the development of the study of Kyoto screens when their numbers were not yet fathomed, prewar scholars emphasized the Uesugi screens' importance within the genre as a whole, particularly in light of their attribution to Kanō Eitoku, and focused on their significance as precursors to the art of ukiyo-e painting that emerged in the seventeenth century. Writing in the 1920s and 1930s, Tanaka Kisaku 田中喜作 first established the methodological tool of the *keikan nendai* 景観年代, literally "the date of the [depicted] landscape," indicating an "internal date" established primarily by the historical buildings that appear in a painting and based on the assumption that this is not necessarily the same as the *seisaku nendai* 製作年代, or date of the actual production of the painting that constitutes an "external date." The complex issues surrounding the matter of dating would continue to be central points of debate over the following decades.

A new phase of scholarship began after the war when *rakuchū rakugai zu* screens as a whole were made available to public view in a major exhibition curated by Takeda Tsuneo 武田恒夫 in 1965 at the Kyoto National Museum, which greatly heightened scholarly interest.[7] At this stage, much of the work on such screens, including the Uesugi pair, remained largely descriptive. Further exploration was encouraged by publication in the 1970s of affordable high-quality color reproductions of Japanese art, a development that made available unprecedented numbers of Kyoto screens in color and in greater detail than ever before.[8] In 1983, a single deluxe volume devoted exclusively to the Uesugi screens was published by Iwanami Shoten.[9] This volume, which was annotated with literary references to places depicted in the screens, anticipated the appearance in 1987 of Shōgakukan's *Rakuchū rakugai zu taikan* 洛中洛外図大観, which devoted a volume each to three major screens: the Uesugi, Machida 町田 (the earliest known exemplar of the genre, now in the Japanese Museum of National History, Kokuritsu Rekishi Minzoku Hakubutsukan 国立歴史民俗博物館, in Sakura 佐倉), and Funaki 舟木 (a particularly animated example of the early seventeenth century).[10] The Uesugi screen volume of this series in turn provided the essential data for the CD-ROM under review.

The richly illustrated publications that appeared between 1978 and 1987 catalyzed a further and particularly active phase of *rakuchū rakugai zu* studies from the 1980s to the present, particularly with respect to the Uesugi screens. The increased availability of detailed color images converged with Japanese historians' growing curiosity about paintings as historical "documents" to usher in a wave of scholarship that encouraged ever greater methodological sophistication

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[6] Kuroda Hideo offers a useful overview of the historiography of the Uesugi screens (Kuroda 1996, pp. 37–62), the main points of which are reviewed in McKelway 1999, pp. 127–40.

[7] See Kyōto Kokuritsu Hakubutsukan 1965.

[8] Notable examples are the series *Nihon byōbu-e shūsei* and *Kinsei fūzoku zufu*, both of which included volumes on *rakuchū rakugai zu* screens: Takeda et al. 1978 and Hayashiya et al. 1983.

[9] Okami and Satake 1983.

[10] Ishida et al. 1987. The fourth volume is a cumulative index for the entire series.

on the part of both historians and art historians. A 1984 controversial essay by the historian Imatani Akira 今谷明, which questioned the Eitoku attribution and radically revised the dating of the Uesugi screens, set the tenor for the next decade of scholarship.[11] Imatani's claims for a highly precise internal date of 1547, expanded in his 1987 book *Kyōto, 1547-nen: Egakareta chūsei toshi* 京都・一五四七年: 描かれた中世都市, were largely refuted, but in part because of the interest generated by the book, from the late 1980s through the 1990s a variety of other scholars entered the debate over the Uesugi screens, focusing primarily on the fundamental issue of dating.[12] Of these, Seta Katsuya 瀬田勝哉 made a significant contribution by shifting the center of the debate from architectural description (Imatani's primary emphasis) to a consideration of the way in which political power is represented through the buildings and other details of the paintings. In a word, Seta argued that the genesis of the screen was intimately related to politics, and that it was specifically connected in some way to the person of the thirteenth Ashikaga shogun, Yoshiteru 足利義輝 (1536–1565). No one has challenged Seta's thesis since its appearance in 1994, although Kuroda Hideo 黒田日出男, with characteristic precision, attempted to expand and finalize Seta's findings in his 1996 book *Nazotoki rakuchū rakugai zu* 謎解き洛中洛外図.

In a sense, research on the Uesugi screens has paralleled the growing availability and quality of the reproductions from which scholars inevitably had to work, since the screens themselves were on display only for brief periods. Better-quality reproductions have made the content of the screens available to an ever wider group of interested scholars, leading to increasingly systematized bodies of accompanying data. The development of research on the screens, particularly over the past two decades, testifies to the ways in which scholarly debate is enriched by the combination of increased data and heightened interdisciplinary exchange. As art historians, architectural historians, and social historians have argued in succession from their own specialized vantage points, they have educated one another and contributed to an emerging consensus. This scarcely means, however, that the final word is in on the Uesugi screens, and hopefully the publication of this CD-ROM will help spur a new stage of inquiry, just as the improved medium of color printing did in the 1980s.

The CD-ROM "Edition"
The term "CD-ROM edition" (CD-ROM *ban* 版) adopted by the publisher indicates that this CD-ROM is essentially a digitalized version of the format of the Uesugi volume in the *Rakuchū rakugai zu taikan* published by Shōgakukan in 1987. This series as a whole represented a giant leap forward in the indexing and documentation of the leading *rakuchū rakugai zu* screens, reproducing each screen in its entirety at actual size and providing a system of indexing for the huge variety of items depicted in them. Each plate covered one-fourth of a single

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[11] Imatani 1984.
[12] Imatani 1987; for responses, see Okudaira 1991, Seta 1994, and Kuroda 1996.

panel, and to facilitate finding the different buildings, customs, and so forth that appeared in that plate, it was divided into an 8 × 6 grid. This type of locating system, which will be familiar as a common way of indexing maps, was clumsy at best and better suited to a search of specific items than to study of the screens as a whole. Not only was it tedious to track down the grid locations of, say, "dogs" at "39-E VI; 41-H V; 47-D II, -D V; 73-F III; 89-D I; 95-D VI," one also had to turn to still another section of the book to access the general entry on "dogs." The information was extensive but scattered and time-consuming to locate.

The CD-ROM editors took this existing data and converted it to a much more accessible web format, where movement between the screens and the index could be made with a single click. Some basic updating was done, correcting errors of identification, indicating several dozen additional locations, and adding some new items to the existing list—such as the "red blanket saddle cover" (*aka mōsen no kuraōi* 赤毛氈の鞍覆い) that was a symbol of shogunal or shugo-level daimyo authority.[13] These revisions have been incorporated into a new version of the print edition that was issued at the same time as the CD-ROM, for a list price of ¥60,000, and now referred to by the revealing neologism of "book edition" (*shoseki-ban* 書籍版).[14] But at the same time, in terms of the debates over the essential meaning of the Uesugi screens, both editions remain for the most part locked into the time frame of the late 1980s. The CD-ROM edition refers to these debates only in a single paragraph in very small print at the bottom of page 3 of the accompanying handbook (not included in the "Help" section of the CD-ROM), in which Shimosaka Mamoru reports that "of the various *rakuchū raku-gai zu*, few have been debated as fiercely, from such a variety of angles, as the Uesugi screens, a debate that even now seems to have no end in sight." He gives no details, however, beyond observing that Seta Katsuya's 1994 speculations about the primacy of the shogun Ashikaga Yoshiteru to the political meaning of the screens are "highly persuasive." No mention is made of any other of the several historians, art historians, and architectural historians who participated in the debate, and no bibliography is provided.

How the CD-ROM Edition Works

The CD-ROM is best viewed at a screen resolution of 800 × 600 pixels, so that the image fills most of the monitor. At this resolution, with a 15-inch monitor, the actual pictorial area of the selected segment of the Uesugi screen is about 30 × 15 cm (12 × 6 inches). (All measurements hereafter of the size of virtual images assume an 800 × 600 screen resolution on a 15-inch monitor.) After various preliminaries of installing some software on one's computer and allowing

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[13] Seta Katsuya in particular (Seta 1994) relied on the political connections implied by the red saddle blankets to develop his theory about the centrality of the shogun Ashikaga Yoshiteru to the genesis of the Uesugi screens. This is one of the few cases in which recent scholarship has been reflected in the revisions for the new edition.

[14] Nihon Āto Sentā 2001.

the program time to load, there appears a full image of either the right or left screen (easily switched from one to the other) and, at the lower left, a schematic grid of the entire screen pair for selecting a starting location. A click on the image itself would have been easier, but all of the navigation for this CD-ROM must be done with tools lying outside the image. The primary tool is a "magnification controller" for choosing among five levels: the opening screen is level one, at about one-twelfth actual size, level two is one-fourth actual size, and each higher level doubles the magnification, so that level four is roughly actual size, and level five is twice actual size. The detail is compelling at level-five magnification, enabling close study of facial expressions, brushwork, and architectural details. This degree of resolution, double that of the print edition (which was actual size), stands out as one of the most important advantages of the CD-ROM version. The ease of movement from the entire screen into fine details helps replicate the experience of viewing the actual screens far more effectively than was possible with the printed page.

At the four higher levels of magnification, a four-arrow control pad enables vertical and horizontal movement throughout a single screen. The movement is not continuous, but in relatively small increments of about 5.5 cm (two inches) at a time, a minor inconvenience. (In the future, with faster processing speeds, software like this will enable "dragging" the surface smoothly in any direction with a mouse.) The ability to travel at will over the entire surface—an area of almost six square meters (sixty-three square feet) for each single screen—at the chosen level of magnification constitutes a significant democratization of the pictorial surface, breaking the hold of the limited number of "details"—the imperial palace, Gion Festival, or nenbutsu dancing—that have been singled out for close-up reproduction in most printed versions of the screens. (In reproducing the entire screen at actual size, in forty-eight sections, the Shōgakukan "book edition" of 1987 was actually the crucial first step in this process).

A further advantage of the CD-ROM format, as mentioned above, is the integration of extensive textual information (the "metadata") into the image in the form of embedded labels that are revealed when passed over by the cursor arrow of the mouse. In the Uesugi screen CD-ROM, a click on any label produces a pop-up screen to the left, in two sections. On the top is a detailed description of the object indicated by the label, and on the bottom a list of all other occurrences in the screen of the same item. Any of those other occurrences may then be instantly accessed by a single click. Conversely, the same pop-up screen can also be accessed through a complete index of all the items labeled (a total of close to one thousand individual names and terms, many found in multiple locations). This index may be searched either by syllabic (*gojūon-jun* 五十音順) order, or by six subject categories: 1) buildings, public works, and famous sites (*kenchiku, doboku, meisho* 建築・土木・名所); 2) annual events and performances (*nenjū gyōji, geinō nado* 年中行事・芸能等); 3) people and their occupations (*hito, shokugyō* 人・職業); 4) daily life (*nichijō no seikatsu* 日常の生活); 5) dress and hairstyle (*fukushoku, kamigata nado* 服飾・髪型等); and 6) plants and animals

(*dōshokubutsu* 動植物). Within each subject category, the items are arranged in *gojūon* order. Clicking on any item will reveal all locations within the screens where it appears, and a further click takes you to any one of them.

The programming of the embedded labels was clearly by far the most costly part of producing the CD-ROM, since each of the total of over three thousand labels had to be placed carefully by hand. The variety of labels differs from one level of magnification to another, with larger items (like rivers or large temple complexes) available only at the lower levels, and smaller items (like dress, hair-style, and architectural details) provided only at the higher levels.[15] One can appreciate the intricacy of the system only by experimenting with it for a while. Although small glitches and errors appear here and there, it works remarkably well for such a complicated arrangement, and one is soon able to maneuver smoothly and easily through the many sites and activities depicted in the screen. What was a tedious and frustrating chore with the book edition is now actually fun.

Another feature of the CD-ROM is that one can select "clips" from any part of the screen and place them in "albums" that allow side-by-side comparison of items from widely different parts of the screen. The clips may be selected at any of the top four levels of magnification, although the size is fixed at about eight cm (three inches) square. The clipped images may then be placed into "tables" of six images each. A total of five such tables can be created, and the resulting thirty images may all be viewed in a single screen. It is also possible to add text memos to each image. We felt this ability to compare small details side-by-side to be potentially one of the most powerful tools of analysis enabled by digital-ization, of use particularly when trying to trace stylistic elements across differ-ent works of art in order to estimate dating and authorship. In this case, of course, comparison can only be made within the confines of the Uesugi screens, with the further limitation that the clipped images themselves cannot be printed out for storage and reference.

The high resolution and ease of accessing the copious metadata are wonder-ful features of this CD-ROM, but what do they really change about the way in which we can deal with the Uesugi screens? For research purposes, the ability to view any details at twice actual size is a useful advance, but the key advan-tages are those of convenience and speed of access, so it is doubtful that the CD-ROM will enable any kinds of research that were not possible with the print version alone. For most readers of this review, however, few of whom will ever aspire to become experts on the Uesugi screens, the CD-ROM will provide a wonderful tool for learning efficiently both about the basic contents of the screens themselves and, in the process, about the city of Kyoto in the Momoyama period and the myriad details of its buildings, its people, and their customs, trades, celebrations, and daily life. It is a great educational tool.

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[15] A chart showing exactly what types appear at what levels may be found on page 10 of the instruction manual, but not in the "Help" section of the CD-ROM itself.

Users of the CD-ROM should be warned, however, that the single disk does not contain all the information needed for a full grasp of the contents of the screens. For that, additional reference books will be necessary. Most sorely lacking on the CD-ROM is a good map of Kyoto to help viewers relate the hundreds of depicted buildings and sites to the actual topography of the city. As anyone who has ever looked closely at a *rakuchū rakugai zu* screen is well aware, they are organized in a distinctive type of perspective that is roughly homologous with the real space of the city, but in no way corresponds to it accurately. Large areas of the actual city are abbreviated, while others are exaggerated, and it takes considerable study even to begin to grasp the exact relationship of the painting to the real city. The only aids provided on the CD-ROM (under the "Shiryō" 資料 tab) are two rather schematic maps taken from the print edition, one showing the "composition of the landscape" (*keikan kōsei* 景観構成) of each screen, and the other the names of major streets (*tōri-mei* 通り名) imposed on an image of the screens. But nowhere is there a detailed map of Kyoto that shows the precise location of the sites depicted. For those wishing to know the modern location of the sites, a still further challenge awaits, since the historical information provided on the CD-ROM stops with the time of the screen itself in the 1560s. To know whether a building survives, and in what location, one is forced to turn elsewhere. This is a particular concern since so many of the shrines and temples shown on the screen were moved two decades later by Hideyoshi. For this additional information, we recommend *Kyōto-shi no chimei* 京都市の地名,[16] which provides current place-names for historical sites, so that any indexed map of contemporary Kyoto will make it possible to pinpoint the sixteenth-century locations. We would also recommend that those who wish to explore the Uesugi screen in depth by using the CD-ROM equip themselves with a copy of *Zusetsu Uesugi-bon rakuchū rakugai zu byōbu o miru* 図説上杉本洛中洛外図屏風を見る, a handy small guide to the screen in full color.[17] We strongly urge as well a review of the recent historiography of the screen using the summaries mentioned in note 6.

Finally, it should be reiterated that there is no substitute for seeing the actual Uesugi screens themselves. We were able to travel to Yonezawa in the autumn of 2001, when the screens were displayed for the first time in their new home in the Yonezawa City Uesugi Museum. As a result of a just-completed thorough cleaning and restoration, the visual impact of the screens was even more dazzling than in the past. The organization of the screens takes on a clarity not perceptible in either print or CD-ROM reproduction, partly because of the luminous qualities of the colors and the gold leaf, and partly because the eye can take in both the broad composition and the fine detail at once, naturally moving around and shifting focus from far to near without the awkward mediation of a hand-manipulated mouse. To be sure, the conditions of museum display, in which the two screens are stretched in a line under electric lights within a glass case that keeps

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[16] Heibonsha 1979.
[17] Ozawa and Kawashima 1994.

the eye about one meter away from the surface of the painting, are utterly different from the setting in which the screens were originally designed to be seen. Although no direct evidence is available to tell us how these particular screens were actually viewed, one hypothesis proposes that the viewer was intended to be seated between the two screens, which would be arranged to face each other, not to stand side-by-side, as displayed in museums today. The "right" screen would thus reveal the panorama to the east and the "left" screen that to the west, with the seasons proceeding in clockwise order around the viewer.[18] In trying to reconstruct the impact of the viewing experience, we should also keep in mind that the screens were probably illuminated only partially by filtered daylight or candles, requiring an attentive viewer to move about to examine now this detail, now that. It may take a bit of imagination, but with enough study of the CD-ROM and the museum experience of the screen itself, we can now come closer than ever before to understanding the power and complexity of this remarkable work of art.

Other Projects to Digitalize Rakuchū Rakugai Zu *Screens*

The Uesugi screens are not the first *rakuchū rakugai zu* screens to be accessible in digital form. For several years already, the National Museum of Japanese History (popularly "Rekihaku" 歴博) has made available on its public website digital versions of both the Machida *rakuchū rakugai zu* and one of the two most important early screens of the city of Edo (formerly in the Hayashi 林 family collection).[19] Recent enhancements have brought the highest magnification to a level that is slightly larger than lifesize. This is less than the Uesugi CD-ROM, and the quality of the detail indicates that the original photographs were considerably inferior to those used for the Uesugi screens, but the Rekihaku site nevertheless constitutes a valuable resource. Besides, it costs nothing, and the images can easily be printed—two attractive features not available on the Uesugi CD-ROM. In the end, however, the latter is vastly superior, above all for the immense amount of integrated metadata, but also for much greater ease of movement. This is because the Uesugi CD-ROM has a single image file for each six-panel screen; in contrast, the online Rekihaku versions of the Machida and Edo screens divide each panel into 36 separate images at the highest resolution, for

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[18] Ozawa and Kawashima 1994, p. 4, provide a graphic illustration of such an arrangement, using a cut-out portrait of Uesugi Kenshin as the viewer, and a caption in which it is claimed that it was common in traditional Japan to stand screens facing each other rather than side-by-side on the east and west sides of a room facing the center. They further claim that the proper viewing position would be from the north to the south, so that what is now considered the "right" side of the Uesugi screen would have appeared to the viewer's left, and would in fact have been called the "left" screen (*saseki* 左隻). This rather plausible theory is contradicted by their illustration, however, in which the eastern screen appears to be on Kenshin's right. The fact remains that we have no definitive information regarding how *rakuchū rakugai zu* screens were actually used in the sixteenth century.

[19] The Machida *rakuchū rakugai zu* screen is at <http://www.rekihaku.ac.jp/gallery/rakutyuu/> and the Edo screen at <http://www.rekihaku.ac.jp/gallery/edozu/>.

a total of 432 individual files for the entire screen pair, among which movement is slow and laborious.

At the opposite end of the technological spectrum are two major on-going projects to digitalize *rakuchū rakugai zu* screens that will far outstrip the capacities of the single-CD-ROM format and will require high-speed network (possibly Internet) delivery. One has been commissioned by the Hayashibara Museum of Art (Hayashibara Bijutsukan 林原美術館), in Okayama, to digitalize an important pair of screens in its own collection. The film photography and subsequent digitalization yielded a single seamless image file of about 1.6 gigabytes for each of the six-panel screens, well over twenty times the resolution of level five on the Uesugi CD-ROM. Using the Gigaview software produced by PFU Co. (of the Fujitsū group), these files can be manipulated smoothly with a high-speed CPU, and they provide stunning detail, far beyond that of the Uesugi CD-ROM, enabling close inspection of minute flakes of paint at the highest magnification. This system is designed for network delivery with relatively high security to prevent copying or printing of the images. The image data will be used by a research group at the Historiographical Institute (Shiryō Hensanjo 史料編纂所) of the University of Tokyo in conjunction with an interface currently being developed by PFU that will enable different members of the research team to insert metadata information at any point in the screen. Many practical details remain to be worked out, but the Hayashibara–Historiographical Institute project promises to be a pioneering use of digital technology for collaborative research in Japanese art.

Meanwhile, a second project to digitalize a *rakuchū rakugai zu* screen is in progress at the International Research Center for Japanese Studies ("Nichibunken" 日文研), using an unusual pair of screens in the Kōzu Kobunka Kaikan 高津古文化会館, a Kyoto museum. This project has adopted an innovative method of photography, in which a state-of-the-art laser surveying instrument is used to correct for any distortion in the surface of the screens caused by warping of the wooden frame. The method both saves on the costs of photography and assures greater accuracy when the separate photos are integrated into a single file for each screen. This particular pair of screens will then be linked with Nichibunken's separate "Kyoto Project," in which historical maps of the city of Kyoto from various eras in the Tokugawa period are digitalized and indexed by place-name, so that it will be possible to view any particular location in the city at a given time.[20]

A still further digital possibility for city screens is three-dimensional virtual rendering on the basis of the visual data available in the screens themselves. A glimpse of such possibilities, although one that may horrify serious scholars, is provided by short animations of three different sections of the Uesugi screens that have been installed in a special viewing room at the Uesugi Museum in Yonezawa. Figures copied from the screens become cut-out puppets that make rudimentary movement of the limbs as they move, with imaginative and some-

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[20] A description of the "Kyoto Project" and reports on its progress may be found at <http://www.nichibun.ac.jp/~heian-tr/kyoto-map/>. The project is headed by Mori Hirohisa.

times wacky effects, through the space of the city of Kyoto as depicted in the screens. This is pure entertainment, to be sure, but it does serve a useful museum function of making these difficult screens more approachable. Hopefully it will thereby encourage more involved and imaginative viewings of the actual screens when the latter are on display.

Other Japanese Visual Resources on CD-ROM

We took a look at some other recent CD-ROMs of Japanese visual resources with an eye to the two key features of high resolution and rich metadata, and found three that we consider worth mentioning briefly. Most comparable in these respects to the Uesugi screen CD-ROM is Yumani Shobō's CD-ROM version of *Edo meisho zue* 江戸名所図会, the famous illustrated gazetteer of the city of Edo that was first published in 1834–1836.[21] The two-CD-ROM set includes high-resolution images of the complete text as well as the 742 illustrations of a specimen of *Edo meisho zue* in excellent condition; at ¥58,000, the two-disk set costs less than two-thirds the single Uesugi disk. Far less glamorous than the Shōgakukan production, it is almost completely in monochrome and without background music or sophisticated design elements. It also lacks one feature that would have been extremely useful: a digitalized and searchable version of the entire written text. As it is, if one wishes to consult a modern edition of the text, it is necessary to acquire a copy of the six-volume pocket-sized print edition published by Chikuma Shobō,[22] for which cross-references are provided.

The crucial merit of the *Edo meisho zue* CD-ROM, like that of the Uesugi screens, is the embedding of labels within the images, often dozens within one picture, to identify both particular places and elements of daily life (these can also be accessed directly from an index). The identified places have detailed text descriptions, and each full picture also has a helpful text summary below the image itself. This rich documentation, compiled over a period of ten years under the supervision of Suzuki Akio 鈴木章生 at the Edo-Tokyo Museum, is fully comparable to that of the Uesugi screens CD-ROM, and it makes the *Edo meisho zue* CD-ROM a valuable tool for research on Edo history and culture. The *Edo meisho zue* CD-ROM also includes some useful features not found on that of the Uesugi screens, such as red framing lines (the sole touch of color on the CD-ROM) to identify the labeled "hot spots," the ability to draw a box and immediately jump to a full-screen enlargement of that area, and the ability to print the images (albeit only those at the full-page size).

In a rather different category are two CD-ROMs that share a number of characteristics, since both present a single handscroll of a work in a European museum in a multilingual format. Although far more modest in scope than the Uesugi screens CD-ROM, both combine the appeal of a reasonable price (about 25 euro each) and a Western-language interface. Apart from this, however, the

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[21] Suzuki 2000.
[22] Ichiko and Suzuki 1996–1997.

two CD-ROMs, which were produced wholly separately, are quite different both in the objects they present and in the ways they work.

The first of the two European CD-ROMs presents a handscroll from the collection of the Museum für Östasiatische Kunst in Berlin that depicts the bustling street life of the city of Edo, in an interface that offers a choice of language between German and English. The scroll, entitled *Kidai shōran* 熙代勝覧 (Excellent View of Our Prosperous Age), is by an anonymous artist and shows the main street of Edo north of Nihonbashi 日本橋, in about the year 1805.[23] Over twelve meters (forty feet) in length, the scroll depicts shops and street life, offering a virtual encyclopedia of the commoner city. As with the other CD-ROMs we have described above, this one includes many labels within the image to identify shops, social types, signs, activities, and so forth. One can move easily to more detailed textual description of selected items, and every single piece of writing on the scroll (mostly shop signs) is identified in romanization and translation. The system of navigation for movement within the scroll is particularly smooth and easy to use, either by dragging the surface or by clicking anywhere on a small image of the entire scroll at the bottom of the screen, which zips you to the selected point. The detail at the highest of the three levels of magnification is good, slightly larger than actual size (at 800 × 600 screen resolution). Much of the textual information is fairly basic, but it is useful and professionally executed. The scroll itself is a generic sort of painting, but it offers a pleasant and stimulating way to learn about Edo customs. It could well serve as an interesting study assignment for undergraduates.

The other handscroll from a European museum in CD-ROM format is the *Chōgonka* 長恨歌 scroll from the Chester Beatty Library in Dublin.[24] Painted by Kanō Sansetsu 狩野山雪 (1590–1651),[25] it illustrates Bai Juyi's 白居易 ninth-century epic poem "Changhenge" (Jp. "Chōgonka," here translated as "Song of Everlasting Sorrow") telling the story of Yang Guifei 楊貴妃 (719–756), the famous beauty and ill-fated mistress of the Tang emperor Xuanzong 玄宗. The two-scroll set is divided into twenty-seven frames on the CD-ROM, each accompanied by an excerpt from the poem and a narrative description of the scene, which may be accessed as either written text or voice narration (with a choice among English, French, German, Irish, and Japanese). If set for "slide show," the two scrolls may be watched as a continuous sequence with voice narration. A separate window may be opened in each frame to show the relevant Chinese text of the Bai Juyi poem, with a voice recitation in Chinese. Details may be

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[23] It appears that the scroll may originally have been a pair, of which the missing scroll perhaps continued the depiction of the main street south of Nihonbashi.

[24] Chester Beatty Library 1997.

[25] The English narration of the "Introduction" to the CD-ROM states that the "Chōgonka" scrolls were "copied" by Sansetsu from lost "originals." As the Japanese narration confirms, however, prevailing scholarly opinion considers the pair of scrolls to be an original work by Sansetsu, although probably based in part, as with many of the artist's works, on an existing scroll or other available pictorial models.

magnified to about actual size. Other explanatory material is limited to a sum-
mary of the scroll and an account of its provenance (all in voice narration, with
no written text). The CD-ROM is attractively, even elegantly produced, befit-
ting the decorative beauty of the painting itself, but one must ultimately ask
whether a conventional printed-book format might not be a more pleasant and
effective way to enjoy the scroll. Except for the voice narration, a CD-ROM of
this sort offers very little that a book could not, and a good deal less in terms of
the quality of the color illustrations.

Both the *Kidai shōran* and *Chōgonka* CD-ROMs suggest the particularly great
potential of the electronic format for presenting handscrolls. Handscrolls can be
adapted to the printed page only awkwardly, and are often of such length that
(as is true also of screens and illustrated books), frequently only the most strik-
ing sections are illustrated in any detail. An electronic format can restore some
of the sense of movement of the surface itself that is so essential to the ambience
of the scroll format. A hyperlinked design also makes it easy to incorporate nar-
ration into the images and to transcribe and translate textual passages if they are
part of the scroll itself. This sort of approach is ideal for classroom materials,
and a project is currently being developed by X. Jie Yang at the University of
Calgary (Alberta) to develop such a multimedia approach to the *Haseo sōshi* 長
谷雄草紙 scroll of the Kamakura period that Yang himself has studied closely.[26]
Such approaches promise to make the narrative handscroll format far more
accessible, both for teaching purposes and as a resource for museums that are
rarely able to display scrolls in their entirety.

Internet Delivery and the Future of Digitalizing Japanese Art

All four digital products discussed above are in CD-ROM format, which imposes
certain key disadvantages for end-users as well as some appealing safeguards
for the producers. For libraries, single-user CD-ROMs are inconvenient unless
permission can be obtained to mount them on a closed library network—and
even then, access may still be restricted to one user at a time. Many CD-ROM
producers also have purposely limited the resolution of the images to prevent
their appropriation for other uses, which greatly reduces the impact and often
the utility of the images. And finally, the current CD-ROM format has a limited
capacity of about 650 megabytes, so that high-resolution images and large data-
bases will often require multiple disks.

The obvious answer, particularly for very large image databases, is high-speed
Internet delivery, which also enables easy updating and enhancement. The great
stumbling block here is copyright protection, particularly for high-resolution
images. It is beyond the limits of our own expertise to enter into the complex
legal and technical issues of the security of digital images, but suffice it to report
that various software developers are working hard on the problem. In Japan, for

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[26] See Yang 2002. Yang is also the author of *kanaClassic* (Yang et al. 1998), an innovative CD-
ROM for learning classical kana writing; for a review, see Gatten 1999.

example, the Gigaview software of PFU Co. mentioned earlier is being developed with a strong emphasis on security. At the moment, projects of this sort are still largely in progress, and few public websites are available. An important and revealing exception is to be found in three databases that may be accessed on the public site of the Historiographical Institute at the University of Tokyo: the "Portrait Information Database" (*Shōzō jōhō dēta bēsu* 肖像情報データベース), the "Shōen Map Database" (*Shōen ezu dēta bēsu* 荘園絵図データベース), and the "Historical Pictionary Database" (*Rekishi ebiki dēta bēsu* 歴史絵引データベース).[27] These have been created largely under the leadership of Kuroda Hideo at the Center for the Study of Pictographical Materials (Gazō Shiryō Kaiseki Sentā 画像史料解析センター), which he founded within the Historiographical Institute in 1997 and which has emerged as a leading center for the development of digital visual resources for Japanese history.

It is not possible here to explain the details of these large, complex, and still growing databases produced by the Historiographical Institute. We can only encourage readers to experiment for themselves and note some of the ways the institute has dealt with the problem of copyright. Many of the portrait paintings and shōen maps illustrated and indexed in these databases, for example, are not the original documents but rather professional handmade copies commissioned by the institute in the prewar period as part of its ongoing compilation of materials for Japanese history. Ironically, these hand-drawn copies are considered independent creations; their electronic distribution by the institute thus does not infringe on the copyright of the originals, which would not be the case if the images disseminated were photographic. The Center for the Study of Pictographical Materials continues to take advantage of this crucial distinction by utilizing hand tracings of material from sources not in the collection of the Historiographical Institute itself. For art historians, these practices raise all sorts of difficult issues, but when the primary focus is the historical information to be found in such sources, the problems are fewer.

The Shape of the Future

On the whole, it is remarkable how few really useful resources as yet exist for Japanese art in digital form. The whole process of digitalization faces major obstacles. First is the problem of copyright. Technical software solutions may offer answers fairly quickly, but it will continue to be the single most worrisome issue for the owners of works of art. A second problem lies in the limitations of the standard computer monitor, with its relatively low resolution (of about eighty pixels per inch), for presenting visual images with an impact comparable to high-quality color printing. At the same time, however, the digital format can more easily allow for color correction, including the manipulation of color in film photographs once

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[27] See <http://www.hi.u-tokyo.ac.jp/cgi-bin/ships/LIB/std_m_ipcheck.pl>. To access the three databases it is necessary to sign in by providing one's name and topic of research; no password is needed.

they have been digitalized. A third problem is probably the most daunting in practical terms, namely the cost and difficulty of converting from analog to digital modes of projection. The day will surely come when our personal and institutional slide libraries have all been transformed into neatly catalogued high-resolution digital images instantly accessible over a high-speed connection from a networked storage base, and when we will be able to display these images on readily available digital projectors that can zoom in to the finest details or out to the whole composition. The work is underway, but we doubt that any of us yet enjoy this state of bliss, and for most, it is going to take a number of years and a lot of labor to get there.

It is obviously a mistake, however, to think of digitalization as simply a way of making better slide shows. The real promise is for a change in our approach to images through linkage with text-based materials in a way that the CD-ROMs reviewed here have successfully begun to do. We also need to think through our own educational and scholarly priorities, and not leave decisions on such matters to museums and commercial publishers (the producers of all the CD-ROMs we have considered), which have quite different needs and audiences. As pointed out by Max Marmor, head of the Yale Arts Library, in a useful article on issues of building digital image libraries, most such imaging initiatives are "advanced and shaped by consortia of collecting institutions" and hence "understandably take as their point of departure the institutional commitments, constraints, and imperatives of participating members in the library and museum sector." Such efforts tend to favor materials for which photographic and descriptive documentation already exist, and privilege "materials that participating institutions need or wish to employ in their own educational, exhibition, outreach, and publication programs." What is lacking, Marmor suggests, "are digital imaging initiatives designed and developed expressly to meet the needs of the educational and scholarly communities."[28] One example of such an initiative is the "Imaging America" project that has been launched by Marmor and others at Yale University. It is certainly not too early for a consortium of those concerned to start planning a comparable project for "Imaging Japan."

In the meantime, the CD-ROM version of the Uesugi screens offers a tantalizing glimpse of the potential of the electronic media for integrating high-quality digital images with rich textual databases. It is a format that is particularly promising for some of the chief modes of Japanese art, not only large and densely descriptive screens like *rakuchū rakugai zu*, but also narrative handscrolls and illustrated books, both of which combine text and image in ways that can be conveniently and effectively brought together through links to transcriptions, translations, and other data. The bottom line remains that such projects will always require more than the simple digitalization of images: they demand new research and hard labor, often by experts from a wide variety of disciplines, to supply the relevant metadata. But surely much such work will be its own reward, and,

[28] Marmor 2000.

assuming the promise of the resulting integration proves worth the effort, hope-fully increased numbers of users will make projects of this sort economically viable. Shōgakukan and the other CD-ROM producers we have reviewed here are to be congratulated as pioneers in this rapidly evolving field.

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