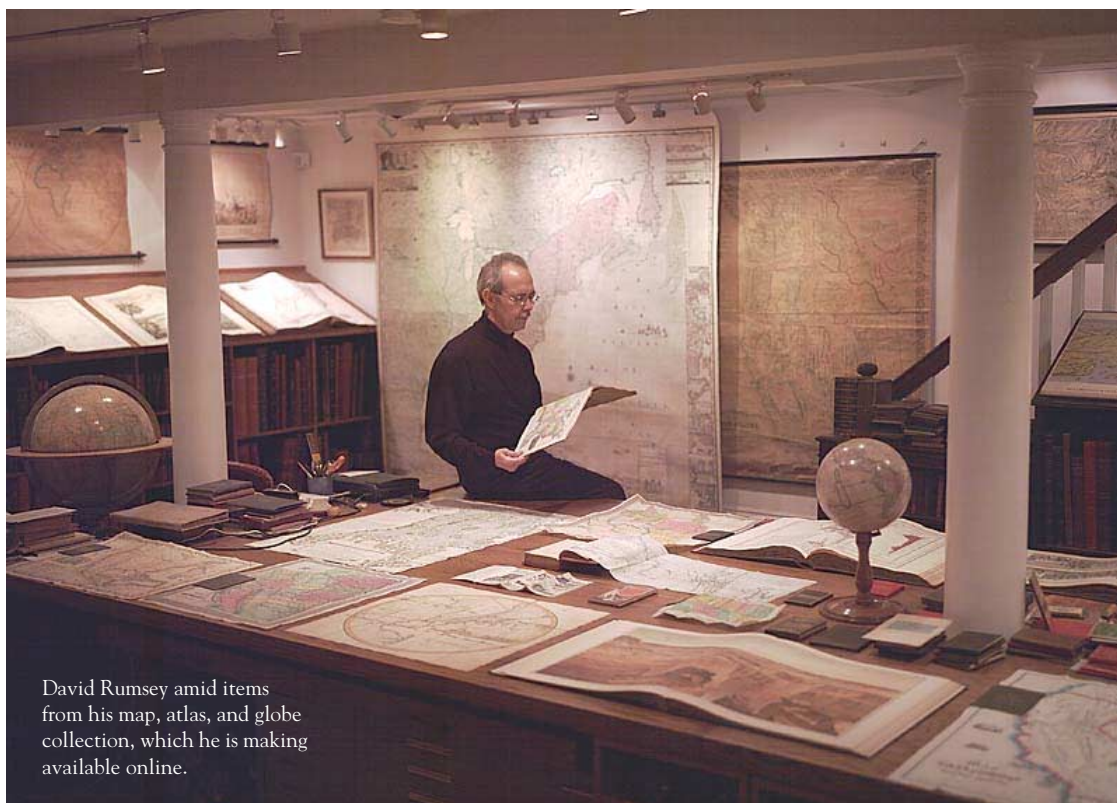


State of the Art

David Rumsey's Online Map Collection

By Julie Sweetkind

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David Rumsey amid items from his map, atlas, and globe collection, which he is making available online.

March 2000 was an exciting time for David Rumsey. After more than two years of hard work, his Web site, www.davidrumsey.com, was going “live.” More than 2,300 images had been selected, digitized, and posted from a map collection that had taken almost twenty years to build. The previous year had been spent in a flurry of scanning original materials, creating data records, and working with software designers to create something innovative and unique in the display of cartographic materials online.

Rumsey’s dream was to make accessible a large private map collection that few had ever seen. Most important, he wanted to bring his collection to the public in a revolutionary way — via the Internet. Cutting-edge software would allow visitors to view maps side by side and then zoom in to see even the smallest level of detail. Complete cataloguing records would include not only a map’s standard information, but also its cartographic relevance. A robust search engine would enable users to quickly pull together a variety of images based on an area or a theme. Together, these tools would help to convey online the intimacy Rumsey felt when exploring his vast collection in the privacy of his library.

“When you can see all the maps, globes, charts, atlases and their related materials in one space, as you can in my physical library, you can start to sense how maps grow one from another in time, as one map incorporates the new discoveries of an earlier map, and thus you can visually feel the flow of history over several centuries,” says Rumsey. “By putting all my maps in one site on the Web, I hope to re-create this sense of connection between the maps and history, as well as introducing people to the stunning beauty of these arcane materials that most have never seen.”

Rumsey’s map collecting started more than twenty years ago with an 1839 school atlas. In its pages were hand-colored, copper-engraved maps of the United States and the world, amended by a young student noting the big event of the time — the secession of Texas from Mexico and its declaration as an independent republic. Texas was shown within the atlas as an independent country. It brought home to Rumsey in a visual way the dramatic historic milestones of that period, and the student’s notes added a human element that made it real and engaging. He was hooked.

Over the years Rumsey built his collection with the help of dealers, auction houses, bookstores, and other collectors. He met many of his contacts personally while traveling frequently on business. “My interest in maps reflects my varied background,” says Rumsey, who has a degree in art from Yale and has spent his professional life as a builder and real estate developer. “To me, maps are artistic and show interesting changes in land use and the growth of settlements.”

Rumsey’s collection focuses on nineteenth- and twentieth-century America, an area that was not popular while he was acquiring, which gave him the ability to collect widely and quickly. The cartographic publishing business in America took shape during this time period, however. American mapmaking businesses often were interconnected, such as those of Colton and Johnson, Melish and Tanner, and Finley and Mitchell, and these relationships are important when trying to re-create a cartographic picture of the period. “I’m interested in cartographic materials that were made in America and that illustrate the evolution of the country’s history, culture, and population,” Rumsey explains.

His goal has been to create as complete a record of the time as possible, which obviously encompasses a broad range of materials. His collection now includes more than 2,000 atlases, including 700 world atlases and 600 school atlases, along with hundreds of other thematic atlases focusing on geology, statistics, military campaigns, religion, counties, and individual states.

Numbering more than 800, pocket maps are stored in specially made three-ring binders arranged geographically. More than 625 wall maps decorate the walls or are stored in hollowed-out shelves under large viewing tables. Fifty globes, including Wilson’s first dated globe from 1811, rest atop tables, along with puzzles, a map in the shape of a fan, games, and one of Rumsey’s favorite pieces, James Cushee’s pocket globe from 1731. Just three inches in diameter, it sits in a fishskin-covered, hinged case, the inside of which depicts the heavens

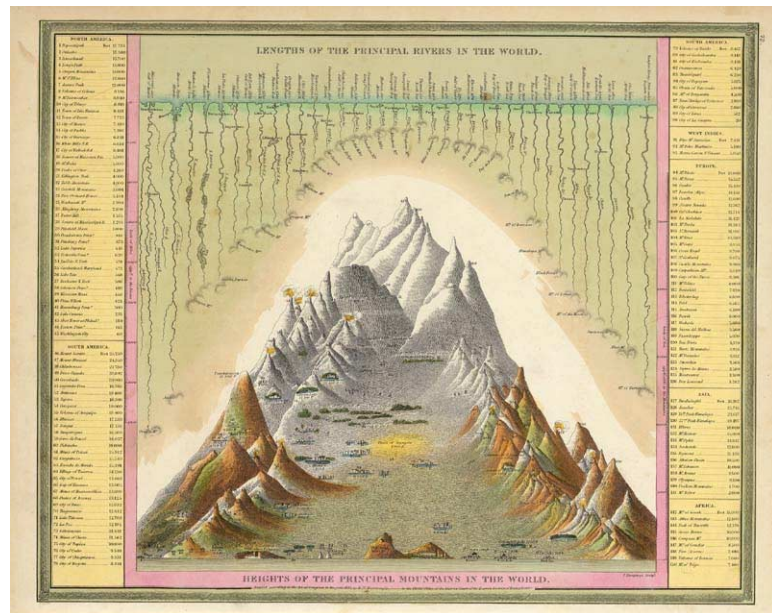
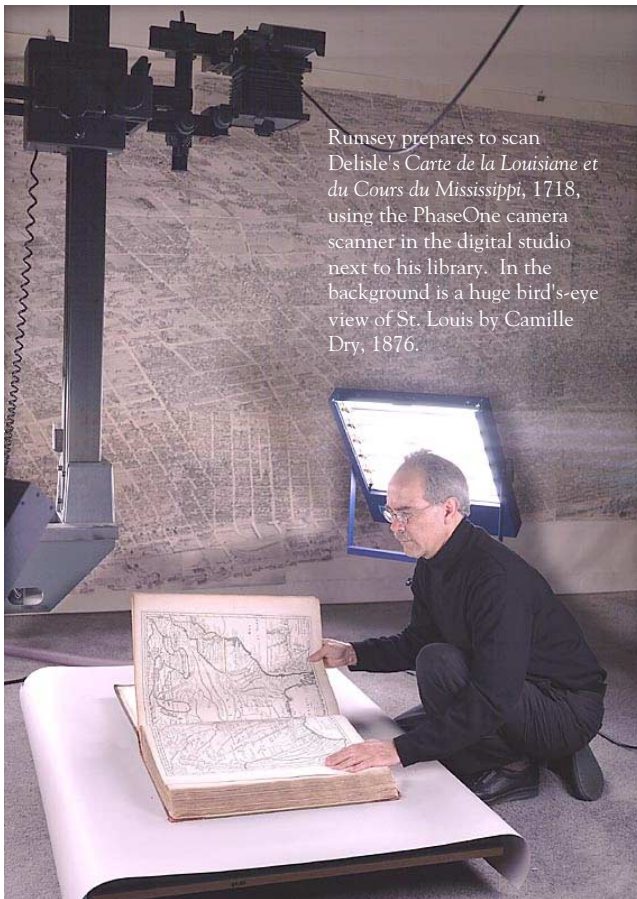


Plate 72 from Samuel Augustus Mitchell's *New Universal Atlas*, published in 1846, illustrating the heights of mountains and the lengths of rivers.

and constellations. The small world globe shows California as an island. Rumsey notes, “The whole thing fits in your pocket, should you care to carry the world around with you.”

A large number of exploration books, government documents, and reports detail the official exploration and surveys used to map the country as it grew westward. All told, the Rumsey collection includes nearly 6,000 pieces, or about 150,000 individual cartographic items when one counts all of the maps inside atlases as well as in books and geographies.

Over the years a few hundred scholars, researchers, and interested individuals have visited Rumsey’s collection in San Francisco. He wanted to make it accessible to even more users. But because the materials are old and easily damaged, it is less than ideal to have them regularly handled. Also, it has been difficult to arrange access for everyone who has wanted to study them. Rumsey decided to introduce the collection to a wider audience with the publication of a print catalogue, but this solution did not address the needs of those who wanted to study the original maps themselves.



Rumsey prepares to scan Delisle's *Carte de la Louisiane et du Cours du Mississippi*, 1718, using the PhaseOne camera scanner in the digital studio next to his library. In the background is a huge bird's-eye view of St. Louis by Camille Dry, 1876.

The technological tools Rumsey needed were being developed during the mid- to late 1990s. Advancements in scanning technology, driven by the growth and needs of the Internet, as well as powerful computing environments, finally allowed him to bring his collection to the public, rather than having the public come to him.

In the spring of 1997, after trying for nearly a year to develop the necessary software to display his maps, Rumsey learned of a CD-ROM published by Luna Imaging featuring the houses of Frank Lloyd Wright. Luna, started in 1993 by Michael Ester (previously the director of the Getty Art History Information Program), was formed to create software for use in the arts and humanities — specifically to highlight the visual aspects of these disciplines. It was Luna’s commitment to producing the highest-quality images that attracted Rumsey. He called Ester and found they were working toward the same goals, with Luna just starting to redesign software for the Internet. The two decided to work together. Rumsey, self-taught in computers,

had considered CD-ROM technology to display his collection, but like Luna decided the Internet would be more suitable for his needs.

Throughout that summer and fall of 1997, Rumsey built his first scanning station. It required a scanning back capable of making high-resolution digital pictures, which was then attached to a digital camera, rather than a traditional flatbed scanner. Traditional scanners flatten the images, whereas a scanning back and camera allow the scanning of three-dimensional items, such as globes, puzzles, and books. They also allow for depth of field, a critical step toward making a map look “real,” as if one could hold it. Lenses were tested for sharpness, and a stand had to be built to rid the setup of vibrations from the passing buses on the adjacent street. Also around this time, Lizard Tech introduced the first good wavelet compression, allowing large images to be compressed, saved, and transmitted over the Internet. By fall

1998 the three main components of Rumsey's Web project were in place: the software from Luna Imaging, a high-resolution scanning back, and the compression technology.

Deciding which cartographic items to make available first was not a simple process. With 150,000 maps to choose from, Rumsey realized he couldn't just start with the "A's" and then progress through the alphabet. It would take years to get to the "M's," much less the "Z's." He also felt that simply putting up the collection's "greatest hits" would trivialize its comprehensiveness and the importance of contextual items. Rumsey explains the approach he finally adopted: "Think in terms of the broad themes of the collection, chose representative items within those themes, and then build out from those items to get depth." Civil War maps, bicycle maps, globes, children's manuscript maps, and critical atlases were among the first groups to be scanned.

The next task was to build the cataloguing database. Rumsey's print catalogue was valuable for its exhaustive list of cartographic materials as well as its copious use of notes to tie the items to one another. The same had to be done for scanned images.

Rumsey decided to scan complete atlases, as well as covers for pocket maps, puzzles and their cases, folding globes shown compressed and then opened, and maps enclosed within books. Thus, if one searched for an entire atlas, all of the pages had to come up together and in the proper order. When browsing the collection, the covers for a pocket map had to appear next to the map itself. The answer was to create a "container" for each complete set of items. An atlas would have one unique number that would tie all of the component parts together (0123). The individual items in that atlas would have derivations of the unique number (0123.001). By numbering each record in the series sequentially, the items would appear together and in the correct order.



A view of a corner of Rumsey's library showing his shelved atlases with open atlases on display. Wall maps cover all available wall space; pocket maps lie on the table to the left.

Meanwhile, Luna Imaging was working to customize software to display the map collection. They added additional zooming levels, enhanced the ability to pan across images, increased search capabilities, and changed and added data fields specifically to meet the conventions of cartographic materials, such as scale and geographic locations. The new technology would also be used for university and museum collections.

By the fall of 1999 the David Rumsey Collection Java Client was released to a select group of about forty people working at institutions for testing and evaluation. The Java Client, a downloadable software program, would allow users to view the maps over the Internet as a whole or in detail, search for images using numerous methods, and create presentations by grouping items of interest and saving that group. Printing at high resolution allowed for either the whole map or a specific part to be reproduced. Meanwhile, internal testing was ongoing for an easily accessible Web browser version that did not require downloading, and was tailored for the beginning user and the general public, and yet would create a viewing experience that would be much the same as the Java Client.

The countdown to March 15 began as everyone prepared for the browser launch on the Internet. The launch date had been set to coincide with an article about the collection that was to be published in

the April issue of *Wired* Magazine. The days following the release were heady times. The site was a huge success, garnering “Best of the Net” awards from Yahoo and About.com. Rumsey remembers, “I hoped when we launched the site that there would be broad interest, but I was thinking that 200 visitors a day would be a lot.” By May, with the site online for just sixty days, more than 60,000 people had viewed the maps. “I think what surprised me most was the sheer number of people who were interested in maps, have used the site to view and print maps, and have then e-mailed me to express their excitement,” he continues.

The feedback from users also allowed Rumsey to modify what was being put on the Web. One of the largest groups to use the site were Civil War buffs. With more than one hundred Civil War maps available on the site, it is a rich source of information. Many groups added links to the site on their home pages, including K-12 teaching resource groups, large map libraries, directories, history departments, and of course, map-related sites.



Matching three-inch-diameter terrestrial and celestial globes, unusually mounted on their sides, by America's first globemaker, James Wilson, 1822.

Aaron Arrowsmith, the English and French editions of John Mitchell's important *Map of the British and French Dominions in North America* (1757), John Melish's 1816 and 1823 editions of his *Map of the United States*, Henry Popple's *Map of the British Empire in America* (1733), maps from the Philadelphia and London editions of Lewis and Clark's *History of the Expedition...* (1814), and numerous maps of explorations of the American West by Pike, Long, Fremont, Warren and others.

The online maps and illustrations are scanned at very high resolution, at least 300 pixels per inch, which allows for examination of minute details online. Some extremely detailed maps are scanned at 600 ppi. This kind of resolution results in very large file sizes, approaching two gigabytes, hence the need for effective compression to allow for transmission over the Web.

Rumsey believes that creating the online map collection has fundamentally changed his relationship to the collecting process. For more than twenty years he shepherded a dispersed group of material into a physical collection stored in one place. “Now, by putting it on the Web, I am reversing the process and sending all the maps out into the world for people to see,” he explains.

With nearly a thousand people a day visiting the site, Rumsey is able to share the pleasure of his collection with people in many countries, including Japan, Estonia, Australia, and Brazil, as well as those closer to home. Sharing his collection allows him to interact with others who are equally excited by the

The sheer quantity of information available on www.davidrumsey.com is mind boggling. The Web site contains more than fifty complete rare atlases, including Thomas Jefferys's *American Atlas* (1776) and *West India Atlas* (1788), Guillaume Delisle's *Atlas de Geographie* (1731), Georges Henri Collot's *Journey in North America* (1796), Henry Schenk Tanner's *A New American Atlas* (1823), David H. Burr's *American (Postal) Atlas* (1839), John Arrowsmith's *London Atlas* (1844) and Garcia Cubas's *Atlas Pintoresco* (1885). Also represented is the first American printed globe by James Wilson (1811), seven wall maps by

time period. "I don't think I'm that different from other collectors," he reflects. "I just think there hasn't been a model in which it's easy to display what you have. I do believe other collectors will do this over time."

The future of the online collection is alive with possibilities. The site will continue to expand, with the goal of 5,000 maps by year's end, and 10,000 by the close of 2001. Since March, 700 more images have been added to the site. The potential to share multiple collections online through the use of common software platforms is becoming a reality. Before long, users will be able to search and browse multiple map collections at once, comparing maps from widely dispersed institutions in a common Internet space. Rumsey is presently in discussion with several major public map collections interested in achieving this broad goal.

A joint project currently underway with the University of California at Berkeley will allow users to search Berkeley's online catalogue and find Rumsey's records, complete with an active URL that when clicked will take the user directly to the requested map.

Spearheading the project with Rumsey and acting as librarian of the collection will be Phil Hoehn, map bibliographer at Stanford, and past map librarian of the Bancroft Library at Berkeley.

As for other collectors interested in moving their maps onto the Internet, Rumsey emphasizes that it requires a major investment of time and resources, but the rewards are big. A wide variety of software and hardware options are available to assist in the process. Rumsey strongly suggests that prospective online exhibitors "examine other online collections to see how your own maps would fit in. Think of all of the online resources as a 'virtual library' that you will be contributing to. Determine what unique materials you have to add."

Rumsey is encouraged about the future of historic maps. The very existence of high-resolution copies of maps on the Web will bring these beautiful and important materials to the attention of the general public in ways that have not been possible before. To that prospect, Rumsey concludes, "I think it bodes well for historic maps and their place in society."

Julie Sweetkind is the GIS and map librarian at Stanford University and an active member of the California Map Society. She previously was the librarian of the Rumsey Collection and remains a consultant for David Rumsey's online map collection.



The Image Workspace of the online David Rumsey Collection.