Western Association of Map Libraries

"...to encourage high standards in every phase of organization and administration of map libraries..."
The Western Association of Map Libraries is an independent association of persons. The Membership has defined its Principal Region for meeting locations as: the Provinces of Alberta and British Columbia, and the States of Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming.

Membership in WAML is open to any individual interested in furthering the purpose of the Association, which is “to encourage high standards in every phase of the organization and administration of map libraries.” Membership includes receipt of all issues of the Information Bulletin and Electronic News & Notes (if an email address is provided), mail announcements of WAML meetings, voting privileges and receipt of WAML ballots.

Dues are US$20 per year and all memberships begin July 1. You may join any time of the year by sending your name, address, phone, fax, email address and US$20 to the WAML Treasurer at the address below. Make checks payable to “WAML” or the “Western Association of Map Libraries.” Lifetime membership is open to any individual for a one-time payment of US$500. In addition to all membership privileges listed above, Lifetime Members also receive a copy of each volume published in the WAML Occasional Paper series. For more information about WAML, its purpose, meetings and membership, see the WAML Website at <http://gport.ucsd.edu/mw/waml/waml.html> or contact an officer listed below.

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EDITOR'S MESSAGE

Hello WAML Members and Subscribers —

Summer has flown, WAML's fall meeting in Golden, Colorado is only a month away and holiday catalogs are arriving in the mail! Time marches on. I see that this is Issue No. 1 of Volume 31 of WAML's Information Bulletin. That means the IB's been here for over thirty years. That speaks to the commitment and energy of WAML members and supporters. I hope you'll find the articles and information in this issue enlightening. Please feel free to send me comments or suggestions. I do want to know what you want to know and read about.

Cheers,

Kathryn
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(206) 543-0302
September 1999

The Information Bulletin and WAML Electronic News & Notes are published by the Western Association of Map Libraries as tools for communicating with its Membership and Subscribers; however, opinions expressed in these publications do not necessarily reflect an official Association position.

CONTRIBUTION GUIDELINES FOR THE INFORMATION BULLETIN

Please submit material in electronic form. You may send material via e-mail as an attachment or regular mail (3.5" diskette, PC, Microsoft Word preferred). A file may also posted on a server where the Editor may download it. Photographs should be black & white glossy prints or digital image files. Please contact the Editor if you have any questions.

IB copy deadlines are: September 1 for Issue No. 1, January 1 for Issue No. 2, May 1 for Issue No. 3

FEATURE ARTICLES

Submit contributions and ideas for articles to the IB Editor, Kathryn Womble. These may include, but are not limited to, feature articles about maps and map librarianship, GIS and geospatial data use and services in libraries, mapping agencies, conference reports, historic mapping and future mapping trends, information about a specific map library or collection, map use or user studies, map librarianship training and cartobibliographies. “Something to Make Your Life Easier” features a procedure, handout, Web page or brochure to share that may help other map librarians in their work.

PHOTO ESSAYS

Contributions and ideas for photo essays are accepted by Ross Togashi, Photo Essay Editor.

REVIEWS

Atlas and book reviews and reviews of digital cartographic products, software and data are welcome. Contact the Atlas & Book Review Editor, Kathy Rankin or the Digital Data Editor, Linda Zellmer. Hardware and Reproduction Technology reviews may be sent to the Micrographics/Technology Editor, Larry Cruse.

CONTRIBUTION GUIDELINES FOR WAML ELECTRONIC NEWS & NOTES

Submit items to Lucinda Hall <hallx030@tc.umn.edu> or the appropriate State or Province Editor (see below) at any time for inclusion in the WAML Electronic News & Notes. E-N&N is an irregular e-mail publication that is compiled and sent
only to WAML members via e-mail. The E-N&N Editor appreciates receiving contributions via e-mail, but accepts regular mail as well. Please flag time-sensitive items in the subject line.

Back issues of WAML E-N&N are available for viewing at the WAML Website. WAML E-N&N items will also appear in the Information Bulletin.

E-N&N includes the regular feature “New Mapping of Western North America.” Submit citations for new print and digital maps and atlases of the western United States and Canadian Provinces to Ken Rockwell. New Mapping Editor and include ordering information if possible.

Contributions to E-N&N may include people news such as promotions, job changes, retirements and obituaries. Also, cartographic cataloging news, conference/convention announcements, job announcements, industry/map dealer news, announcements of new cartographic materials (maps, atlases, data and software, CDs, URLs), citations for articles/special journal issues, preservation news, remote sensing news and agency news are welcomed.

Potential sources for news item include: communications with colleagues, listservs (please acknowledge original author and listserv), Websites (use search engines & search for maps, atlases, cartography, geospatial data, GIS and your state, county or city), automated notification services such as those offered by amazon.com or CARL. Uncover, journals and newspapers, vendor, publisher and agency catalogs and newsletters and conference announcements.

STATE AND PROVINCE EDITORS
State and Province Editors will accept contributions at any time for their state or province and will forward them for publication. State and Province Editors have volunteered to be especially vigilant for news, notes, ideas for feature articles, reviews or photo essays about cartographic developments affecting their state or province.

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President’s Message
Greetings Wamlites:

By the time you read this, we should have had another interesting and enjoyable meeting with librarian-colleague-friends in Golden Colorado. Now we prepare for the June 2000 joint WAML/ACMLA meeting in Edmonton. How fast the millennium has flown! It seems like I just gave my east oriented T-O cloth map to the ragman and replaced it with one of those new-fangled Mercator curios with “printed” text only now to exchange it for a 3-D satellite uplink hologram map.

My thanks go to the hard work of Dale Steele and Kathryn Womble, who in conjunction are helping to produce the Information Bulletins you see. Your work is greatly appreciated by the membership.

Au revoir jusque’ au Canada
‘Till we meet in Canada

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WAML Spring 2000

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The Cantino Bridge from Antillia to America

by

Gunnar Thompson, Ph.D.

[Gunnar Thompson is a pioneer in multicultural policy studies. He is Director of the Multicultural Discovery Project with the New World Discovery Institute in Seattle, Washington. He has written three books on multicultural discovery: The Friar’s Map of Ancient America (1996); American Discovery—The Real Story (1994); and Nu Sun—Asian Voyages to America (1989). He graduated Magna Cum Laude with High Distinction in Anthropology from the University of Illinois, Urbana in 1968. He earned a Masters Degree in Anthropology (1969) at the University of Wisconsin—Madison and a Doctorate in Counseling Psychology (1979). Thompson believes that a truly multi-ethnic history of New World discovery can help improve the social well-being of people living in the United States. He may be reached at: Gunnar Thompson, c/o 3253 Haines St., Port Townsend, WA 98368]

One of the more enigmatic maps from the Age of Discovery is a copy of the Portuguese Padrao which Alberto Cantino purchased in 1502. Called the “Cantino map” because the actual cartographer’s name is unknown, it is generally regarded as an up-to-date version of the secret world map which royal cosmographers maintained for the King of Portugal. Details from all the latest maritime expeditions to the New World and the Far East were included on this Padrao. Thus, obtaining a copy of the Padrao was a prime objective for Cantino’s patron, the Duke of Ferrara. J.B. Harley calls this “a spy map.” According to Harley, the Portuguese had commercial secrets they wanted to keep from foreign rivals. In this case, the principal objective was to guard potentially lucrative ventures in the Indies.2

Aside from the map’s value as a testimonial to Portuguese exploration in the early 1500s, many historians regard this document as the foundation for a group of subsequent maps in the Lusitano-Germanic series. This series led directly to Martin Waldseemüller’s 1507 maps of the New World. These later maps are of vital importance to our national heritage, because Waldseemüller initiated the effort to name the new mainland “America.”

Both Cantino and Waldseemüller produced maps that defy the traditional account of New World discovery; and therein lies the enigma. Both cartographers included an unusual isle, a “terra incognita,” that is situated directly west of Gibraltar in the place where we might expect to find Florida. Directly towards the southeast of that “terra incognita” on these maps, we notice the isle of “Isabella” (or what we would call Cuba). It is not just this “terra incognita” that is intriguing. Attached to the southeastern corner of the isle is a macro-peninsula that looks surprisingly like Florida. It is in about the correct relative position of Florida with regard to the adjacent Antilles—Cuba and Haiti.3 (Figure 1)

Kenneth Nebenzahl has this to say about “terra incognita” on the Cantino map: “Northwest of ‘Isabella’ is an area, incomplete and partially off the map, that is perhaps the greatest...
unsolved cartographic puzzle of the
period. If we are seeing Cuba and
Florida, no one knows from whom this
information came, as Florida was not
formally discovered until 1513."

Of course, the explorer who is
formally credited with discovering and
naming Florida is Ponce de Leon.
According to legend, Ponce de Leon
fell upon the mainland while seeking
the Isle of Bimini and the Fountain of
Youth. Surprisingly, no maps have
survived from his expeditions, nor is
there any appreciable modification to
existing charts of “terra incognita”
that would reveal any new knowledge
of the mainland northwest of Cuba.
So, in spite of Ponce de Leon getting
the credit for making a discovery, it
appears as though the place he
supposedly found (Florida) was
already on the map—the secret
Padrón. 5 The so-called “Isle of
Bimini” actually shows up on a map
by Peter Martyr (a.k.a., Pietro Martyr
d’Anghiera) in 1511. This map has
a large mainland north of “Isa de cuba”
in the right location for Florida bearing
the title: “Isa de betmen.” 6 So, it
appears that de Leon went in search
of Bimini and wound up in Florida.

We are still left with the problem of
who might have charted the coast of
Florida early enough for it to show up
on the Cantino map. Nebenzahl
suggests that Amerigo Vespucci or an
unknown Portuguese pilot might have
sailed between Florida and Cuba prior
to 1502. 7 Vespucci’s first voyage
westward beyond Hispaniola (Haiti) is
said to have occurred in 1497. That
voyage took him to a region of
mainland he called “Purín” which
Waldseemüller subsequently
identified as land directly west of
Cuba or what is now the Yucatan
Peninsula of Mexico. 8 Presumably,
Vespucci then traveled north past
Florida. The English historian, Ian
Wilson, who wrote about voyagers
from Bristol sailing to the New World
as early as 1480, suggests that John
and Sebastian Cabot sailed past Florida
in 1497 or 1498. 9 Wilson believes that
the mainland to the northwest of Isabella
(Cuba) on the Juan de la Cosa map of
1500 is evidence of English explorers
sailing from Newfoundland to the Gulf
of Mexico. Indeed, the Cosa map is the
earliest known map to show such a
coastline slanting from the southwest
to the northeast. As this kind of
coastline is known for prior maps of
Asia, but is nevertheless consistent
with all later maps of the New World,
there can be no doubt that New World
mainland is indicated. Historian David
O. True believes the Cabot voyage past
Florida might have occurred as early as
1491. 10

Portuguese Expeditions to Florida
Most writers have attempted to
interpret the enigmatic Cantino map in
the context of historical accounts
following the Columbus voyage of
1492. However, it may well be that the
cues required for solving the riddle are
to be found in more ancient
documents. 11 Indeed, a Portuguese
Atlantic chart by Andrea Bianco dating
to 1436 includes an isle called “Antillia”
that has the same peculiar, macro-
peninsula extending towards the
southeast. 12 And this peninsula
happens to be situated at the same
latitude as the macro-peninsula on the
Cantino map (Figure 2). Although
many writers have referred to Antillia as
a “fantasy isle,” because it seems to be
situated in the middle of the Atlantic
Ocean on early Portuguese charts
(where no such land exists), it is quite
possible that this early Antillia was
the prototype for “terra incognita” on
the Cantino map.
If we place a silhouette of Bianco’s
Antillia beside a silhouette of “terra
incognita” on the Cantino map, we
notice a surprising similarity: besides
occurring at the same relative latitude,
both have a distinct, hook-shaped
macro-peninsula extending towards
the southeast (Figure 3). Even the
name of the island group on the
Cantino map, “The Antilhas of The
King of Spain” (or simply, the
Antilles), suggests that the same isle
is represented on both charts.
Furthermore, Portuguese
expeditionary commissions specified
that mariners who sailed west
between 1420 and 1492 seek “isles or
mainland” known as Antillia or The
Seven Cities. We notice that in both
cases, the macro-peninsula is indeed
attached to a mainland which is
represented by a rectangular icon on
erly Portuguese maps. It is also
important to note that this “terra
incognita” with its peculiar macro-
peninsula on the southeastern corner
happens to be distinctly separate
from Asia. On the Bianco map,
Antillia is surrounded by ocean. The
mainland of Antillia on the Cantino
map is likewise surrounded by ocean
even though the western border
seems uncertain because it is
truncated by the frame of the map.
We can be certain that ocean lies
west of Cantino’s Antillia because
the entire east coast of Asia is clearly
shown on the opposite side of the
map bordering the Pacific Ocean.
between Antarctic seas and the Arctic Circle.

Thus, it appears as though the Portuguese had some concept of mainland in the middle of the Atlantic Ocean that was separate from Asia; and this mainland had a hook-shaped peninsula that was situated west of Gibraltar. This is a fairly reasonable assessment of the North American coastline if you allow for the infancy of navigation and the difficulties inherent in determining longitude and latitude. Keep in mind that the Cantino map was a copy of the secret Portuguese geography.

As most 15th-century maps showing Antilia are rather schematic and lack the southeastern macro-peninsula, anyone who didn’t have access to Bianco’s 1436 map would not have realized that the macro-peninsula (Florida) was located on a mainland that was separate from Asia. Indeed, there was a tradition current in the mid-15th century that such a macro-peninsula (called “Zaiton,” “Mangi,” or “India Tercer”) was actually located on the coast of Asia near the Tropic of Cancer.

Although most historians seem to focus upon the Portuguese effort to sail around the southern tip of Africa on their way east to the Spice Islands, there were actually many expeditions sailing west to explore the Atlantic Ocean. Gonçalo Velho Cabral sailed west in 1425 and 1427 when he located the Azores. In 1430, a vessel was reportedly blown by a storm to the mainland of Antillia. The crew of this vessel reported gold in sand taken from the shore; and numerous expeditions were sent west in hopes of getting rich. Gonçalo Cabral sailed west again in 1431; João Fernandez sailed frequently between 1431 and 1486. Vincent Dias sailed in 1445; Diego de Tieve’s journey began in 1454.

Diego de Tieve’s original commission stipulated that his royal assignment was to look for Antillia. According to Pedro Velasco, a confidant of Columbus, the isle of Antillia had been sighted by a Lusitanian vessel prior to Diego de Tieve’s voyage.

Some writers place João Vaz Corte-Real in Newfoundland by 1464. Others believed that he sailed with a joint Norse-Danish expedition under the joint command of Didrik Pining and Johannes Pothorst in 1471. According to a letter written in 1551, the expedition charted continental land across the Atlantic. At about this time, Jao Vaz Corte-Real and Alvaro Martins Homen sailed to “Stockfish Land.” (i.e., Newfoundland). A letter to King Christian III of Denmark referred to the 1473 Luso-Norwegian expedition under the command of Pining and Pothorst (two German captains) who sailed with several ships to “islands and continents in the north.” Ruy Concalves da Camera sought islands in the northwest Atlantic in 1473—according to a patent issued by Alfonso V. In 1474, King Alfonso V awarded to Fernao Telles a patent to discover and govern any lands he might find westward in the Atlantic.

The Dutch captain, Antonio Leme, led a Portuguese expedition west from Madeira in 1476. It was claimed that they found three islands west of Terceira. That same year, two Azorean brothers, Jan and Alvare da Fonte, spent a fortune seeking the western isles. João Fernandez traveled north in 1492; but he might have been in the area of Labrador as early as 1431 on an expedition for Prince Henry. Fernao Domingo de Arco of Madeira led an expedition in 1484. His commission called for him to occupy an isle west of Madeira, presumably Antillia. Fernao Dulmo of the Azores petitioned John II for a license to search for Antillia and the Isle of Seven Cities in 1484. Two years later, Dulmo joined into partnership with João Alfonso de Estreito. A record of the expedition says that a German resident of the Azores was sent as a cosmographer. This description best fits Martin Behaim—a Nuremberg apothecary who had distinguished himself as a globemaker in Lisbon before moving to the Azores.

The net result of all these expeditions was a fairly accurate assessment of the positions of isles in the Western Atlantic Ocean. We can see by examining a series of maps made between 1414 (the DeVirga map) and 1492 (Martin Behaim’s globe) that the conceptualization of the macro-peninsula (Zaiton or Florida) gradually improved with the passing decades (Figure 4). This record of gradual improvement is precisely what we would expect if cartographers corrected their maps in accordance with the latest navigational information. By the time of the Columbus voyage in 1492 which had Zaiton (Florida) as a principal target, the Portuguese had located the tip of the macro-peninsula (Florida) right near the Tropic of Cancer approximately 4,000 miles west of Europe. The problem with all these maps, of course, is that Portuguese cartographers deceptively portrayed the overseas mainland with its
peculiar macro-peninsula as the coast of Asia!

Meanwhile, a series of anonymous or secretive Atlantic charts reveal that Portuguese navigators had fairly accurately determined the position of isles and mainland between Newfoundland and Brazil. The anonymous “Paris Map” of 1490 has the “Isle of Seven Cities” located within a few hundred miles of the actual position of Newfoundland. (Figure 5) Likewise, Bianco’s second Atlantic chart of 1448 shows an unnamed mainland very close to the actual position of Brazil southwest of Cape Verde, Africa. A notation on this map beside the mainland says “isle authenticated.” Use of the word “authenticated” instead of “discovered” seems to confirm that explorers under Prince Henry were trying to improve the geographic placement of shores that had already been identified by earlier voyagers. (Figure 6)

It is important to note that most of the maps in Figure 4 were available to the public. Fra Mauro’s 1459 map was on public display in a Venetian library; the Martellus map was put up on a wall; and Behaim’s globe was on public display in Nuremberg. Besides having access to these representations of Atlantic geography, Columbus is said to have received a copy of a map which the Venetian cartographer Paolo Toscanelli sent to the King of Portugal in 1474. Now, it seems clear from Toscanelli’s concept of the Atlantic and from Behaim’s globe that the shortest route to the Spice Islands and to the Zaiton Peninsula would be straight west. If we are to accept the orthodox paradigm of New World discovery, it would seem that the Portuguese ignored their own intelligence by going the long way around Africa.

A Solution to the Enigma of Cantino & Columbus

Most historians tell us that the understanding Columbus had of world geography was essentially identical to that of Martin Behaim.16 Historian Zvi Dor-Ner puts it succinctly: “Behaim’s globe, in fact, showed the world as Columbus believed it to be.”17 Now, Columbus was quite familiar with the public version of Portuguese geography, having worked as a mapmaker in Lisbon, and he knew enough about Portuguese expeditions into the Atlantic Ocean to know that they had accurately charted mainland on the other side. His son, Ferdinand, says as much in his biography of the great admiral: the Portuguese had found Antillia. Therefore, Columbus was confident that his Portuguese-inspired map would lead him to mainland, the Zaiton Peninsula, approximately 4,000 miles west of Europe if he sailed along the Tropic of Cancer.

There was one other geographical feature that figured into the Columbus Enterprise of the Indies. Marco Polo’s book, Travels (a.k.a., Description of the World, c. 1300), had mentioned that an island rich in gold and silks called “Cipangu” (or Japan) was situated about 1,000 to 1,500 miles east of the Zaiton Peninsula. Cipangu was the Spanish mariner’s first objective in 1492 with an additional stop scheduled to visit the Great Khan in Mangi. After concluding any formal diplomatic business he had promised their Catholic Majesties, Columbus expected to pursue his own quest for the Indies—which Marco Polo had described as being rich in gold and spices, but poorly defended. Columbus suspected, as did many of his contemporaries, that Polo’s Cipangu was synonymous with the Portuguese Isle of Antillia and with King Solomon’s Land of Ophir and its famous gold mines. That is why, when he returned in 1493, Columbus claimed that he had found Ophir: while his brother said that he had made it to Cipangu; and historian Peter Martyr concluded that he had actually sailed to the Antillae. They were all thought to be various names for the same place.

Columbus wasn’t able to interest the King of Portugal, John II, in his Enterprise of The Indies. Why? Because the King already knew what was on the other side of the ocean, and it wasn’t China! Indeed, the Indies Islands were beyond the reach of European ships sailing west because of continents that were in the way.

Nevertheless, it was to King John’s advantage to keep erstwhile explorers and his Spanish opponents preoccupied with the idea of sailing west to the Indies because that would keep them out of the way of Portuguese ships heading east.18 So, he entertained the Columbus proposal without revealing to the foreign entrepreneur what the Portuguese already knew about lands across the Atlantic. In spite of the decision on the part of John II’s advisors not to back the Columbus proposal, the Genoese mariner remained convinced of the practicality of his dream. And why not? After all, his concept of a reasonably narrow Atlantic was
supported by his letter from Toscanelli, by his research of Classical writers, by Cardinal D'Ailly's *Imago Mundi*, and by his association with Lisbon mapmakers among whom were the likes of Martellus and Behaim.

Columbus must have derived some assurance, also, from two maps generally attributed to classical and Medieval geographers. The Macrobius map of the 5th century, which was copied or revised in 1483, portray the east coast of Asia with a huge gulf across from Gibraltar. At the southeastern tip of the mainland above the gulf is a macro-peninsula much like the Zaiton/Florida peninsula seen on maps by Portuguese cartographers (Figure 7). Whether or not the Macrobius map was made this way in Roman times or doctorred to suit the more recent Portuguese version of geography, it confirmed the idea that the macro-peninsula across the Atlantic was part of Asia. This concept was further enhanced by Marino Sanudo's map of 1320 that accompanied a book made for Crusaders. This map (Figure 8) has an extension of Asia with a macro-peninsula and islands reaching out into the Atlantic. All of these maps gave the impression that the shortest way to Asia was by sailing towards this macro-peninsula. Of course, there is no such macro-peninsula on the East Coast of Asia near the Tropic of Cancer; so we are either looking at a totally imaginary coastline for Asia or an early impression of the Americas that is surprisingly accurate.

King John II's prior knowledge of the western isles is betrayed by what occurred on the return voyage of Columbus in 1493; and it is also evident from a passage in the *Nuremberg Chronicle* for that same year. On his way back from the Caribbean, Columbus stopped first in Lisbon where he had an audience with King John II. Arthur Newton gives this summary of their encounter: "John was an expert cosmographer, as were many of his courtiers, who were thoroughly experienced in matters of oceanic navigation, and they do not appear to have been much impressed by Columbus's description of what he had found." Ruy de Pina, who wrote about the encounter, noted that the King summoned Columbus with repugnance due to prior experience with the mariner's rude manners. It is said that the King was unimpressed with the Columbus claim of reaching Cathay (China) and the Spice Islands; while the King informed Columbus that all the isles he had supposedly discovered belonged to Portugal. De Pina noted that these isles were known to the Portuguese as the Antilles. Before parting, the King informed Columbus that a continent was situated south of Hispaniola (Haiti).

The King's parting statement baffled Columbus because he hadn't seen any such "southern continent" on any contemporary maps. Of course, there is a southern continent on the Macrobius map. It is called the "Antipodes." According to the orthodox paradigm, this southern continent was simply a "Roman fantasy." And some writers suggest that this fantasy isle is what John II was thinking about when he met with Columbus. However, the King of England thought otherwise: he had a letter from his own spy in Lisbon, Robert Thorne, who said that the Portuguese already knew about mainland to the west of Africa that was called Brazil. This mainland is also shown on Bianco's second Atlantic chart of 1448 as the "authenticated isle." Thus, we can rest assured that King John II was not thinking about a "fantasy isle" when he advised Columbus of the southern continent.

According to the log of Columbus in 1498, he sailed far south of Hispaniola in order to ascertain what the King of Portugal had meant by a southern continent. So, it seems that even Columbus was convinced that the King was serious and not merely hallucinating about some legendary Roman isle. Columbus named the place where he finally reached mainland: "Paria." That name has caused modern historians great confusion due to its similarity to the name Amerigo Vespucci gave to the coast of Mexico (i.e., "Paria"). When a Spanish Pope accidentally shut out the Portuguese from access to this southern continent by a decree in 1493, John II threatened to go to war. The subsequent Treaty of Tordesillas with Spain settled the issue by assuring that Portugal would have access to Atlantic waters that included the coast of Brazil.

Martin Behaim, a German cartographer (whom King John had knighted for some important service), seems to have had played a vital role in Portuguese deception regarding the true nature of western isles. According to a passage in the *Nuremberg Chronicle* for 1493, he had at some time past accompanied
Jacobus Carnus of Portugal to the
“Antipodes” below the equinoctial
line. Bartholomew Colon identified
the Antipodes as the Mundus Novus.
This was the same land that Vespucci
described as a New World and that
was eventually renamed “South
America.” There was a time when
historians regarded the passage in the
Chronicle as a belated attempt by
Germans to cheat Columbus of his
glory as discoverer of the New
World.2 However, it makes sense
within the context of King John’s
knowledge of such a continent and
the great number of explorers who had
sailed west in Portuguese service.
Behaim’s failure to include any
information about this new, southern
continent on his 1492 Nuremberg
globe seems to confirm his role in the
conspiracy to deceive potential rivals
regarding the true geography of
Atlantic islands and the extent of
Portuguese discoveries.

The Cantino Map as a
Cartographical Bridge to America

While the assessment regarding
King John’s deception of Columbus is
somewhat conjectural, the role of the
Cantino map as a bridge from Bianco’s
Antillia to the land we call “America”
seems apparent from the evidence of
cartography. Figure 2 compares maps
by Nicolò Caveri (1504) and Martin
Waldseemüller (1507). The similarities
between the Cantino map and Caveri’s
map are well known. Coming only two
years after Cantino, the Caveri map
essentially shows a few extensions of
land areas in the region of the
Caribbean Sea. Directly west and
south of the region Cantino called
“terra incognita,” we see the distinct
shape of the Gulf of Mexico. At this
point in time, the macro-peninsula
(Florida) is shown too far north by
about 10° of latitude. By 1507,
Waldseemüller connected this northern
appendage of mainland with his
southern continent. Thus, the isle that
began as Antillia on Bianco’s map and
was identified as “terra incognita” in
the Antilhas group on Cantino’s map
finally merged with mainland identified
as “America.” The continuity of
Cantino’s macro-peninsula with the one
shown on Waldseemüller’s map is
confirmed by the fact that both have
the same names for numerous rivers
and promontories. Even
Waldseemüller’s latitude for Cuba
(Isabella) is off by about 5° although he
has improved over earlier maps.

Unlike Columbus, Vespucci actually
sailed in the service of King John II,
and he had access to the Padrao.
Columbus never escaped the false
geographical construct that was
represented in so many public
Portuguese maps. Whereas, Vespucci
was privy to the secrets of the King of
Portugal who already knew that the
overseas mainland was part of a new
continent—a “New World”—just as it
appears on the Padrao of 1502.

Subsequent maps in the Lusitano-
Germanic tradition built upon this
foundation of a separate mainland seen
on maps by Bianco, Caveri, and
Waldseemüller. Gradually, the efforts of
Verrazano, Carter, and Champlain
knitted together all the pieces of the
northern territory from Florida to
Labrador until it too was recognized as
a great continent. Finally, in 1538,
Gerard Mercator christened both
continents “America.” It was his way
of honoring the Renaissance scientist,

Amerigo Vespucci, who had dared to
abandon the antiquated
misconceptions of biblical geography
while embracing the vision of a “New
World.”

Endnotes

1 J. B. Harley, Maps & The Columbian
Encounter, Milwaukee: Golda Meir
2 Harley, 1990, 63.
3 The modern term “Antilles” refers to the
isles of the Caribbean Sea with Cuba and Haiti commonly called the
“Greater Antilles.” This term seems to
have included the macro-peninsula of
Florida prior to the 15th century.
4 Andrea Bianco’s 1436 Atlantic chart
has mainland including the macro-
peninsula identified as “Antillia.”
The term is variously spelled Antilia,
Antillia, Antillias, or Antillas. The
meaning is taken by some writers to
be “isle before” based on the Latin
word ante meaning “before.” It might
also refer to lands across from “Tile”
(a.k.a., Iceland) in a fashion parallel to
the Roman designation of the Arctic
being across from the Ant-arctic.
5 Kenneth Nebenzahl, Atlas of
Columbus and The Great Discovers,
34. Consult this source for information
concerning the debate whether or not Cantino’s map actually shows
Florida or some other territory.
6 Harley (1990, 63) acknowledges the
debate over this section of the
Cantino map. Some call this section
Yucatan, but that isn’t consistent with
Waldseemüller’s map of 1507 where
Yucatan is clearly indicated.
7 See for example the map in
Nebenzahl (1990, 61).
8 Nebenzahl (1990, 34).
9 Waldseemüller’s map of 1507 has
“Parias” in the region of the Yucatan
Peninsula.
10 Ian Wilson, The Columbus Myth,


The English Franciscan, Nicholas of Lynn, who wrote about his travels to faraway places in the Inventario Fortunatae, has also been suggested as an early surveyor of the Florida region. The friar's expeditions are said to have occurred between 1330 and 1360. The date 1330 is given in the Norfolk Biography as recounted in John Stacy's History of Norfolk County, Vol. 1, p. 450, Norfolk, 1829. See Gunnar Thompson, The Friar's Map, Seattle: Radio Bookstore Press, 1996.

13 The Bianco Atlantic chart of 1436 is in the Newberry Library Collection, Chicago. Henrieta Mertz discussed this map in her book on Atlantis, Chicago, 1976. While her concept of Atlantis seems far-fetched, she did correctly identify Florida on the Bianco chart.

Some might argue that navigators and cartographers had resolved all the difficulties in determining latitude by the mid-1400s, however an examination of the placement of the Antilles on most maps prior to the mid-1600s reveals that determining latitude in this region was particularly inaccurate. Two reasons come to mind: deliberate attempts to confuse contemporaries with inaccuracies inherent in using compass coordinates in a region of high magnetic variation.

For a thorough discussion of Portuguese Atlantic expeditions see Thompson, 1996, pp. 157-244.

Thompson (1996, pp. 208-210) provides maps showing the Paris Map and Bianco's 1448 Atlantic chart which accurately depict the locations of Newfoundland, or Seven Cities, and Brazil.


Newton (1932, p. 94) notes that King John II was concerned that the Spanish might interfere with Portuguese colonies down the west coast of Africa. The Treaty of Tordesillas settled this issue in favor of the Portuguese.

Argentine historian, Dick Ibarra Grassio, in a personal communication suggests that the Macrobius map was revised in the 15th century.

Newton (1932, p. 93).

Jack Beeching, Richard Hakluyt: Voyages and Discoveries, London: Penguin Books, 1972, p. 50, says that the letter from Robert Thorne to King Henry VIII was written in 1527. It specifies that John II knew about Brazil before 1492.

John B. Thatcher, Christopher Columbus: His Life, His Works, His Remains, New York: AMS Press, 1967 (Vol. II, 1973) assumed that this entry in the Chroniclet was an example of Germanic pride interfering with history, and he noted that his contemporary, Harrisse, himself a staunch isolationist, claimed that the entry was made "by a different hand" in the original Latin manuscript. John Fiske (1920, Vol. 1, 423) agreed: "A ridiculous story that he (Martin Behaim) anticipated Columbus in the discovery of America originated in the misunderstanding of an interpolated phrase in the Latin text of Schedel's Registrum. (a.k.a. Nuremberg Chronicle, 1493, p. 290)."
FIGURE 1

*Cantino Map of 1502*

This copy of the Portuguese Padrão shows that the King’s cosmographers had already determined that New World isles including Antilhas were separate from Asia. On this map, (A) is the subcontinent of India; (B) is the coast of Asia which lacks any significant macro-peninsula on the Tropic of Cancer (double line); (C) is terra incognita in the Antilhas island group with the arrow indicating the southeastern macro-peninsula; (D) is an island group, the Antilles, including “Isabella” and “Spagnola” which are identified as belonging to the King of Castile; (E) denotes the southern continent as yet unnamed; and (F) marks the vertical meridian established in the Treaty of Tordesillas to separate Spanish from Portuguese territories. Due to distortion caused by magnetic compass declination from True North, Terra de Baccalaos at “F” is shown as a Portuguese territory when in fact it was actually located west of the meridian. (After a photograph in Keussel Nebel塾l, *Atlas of Columbus and The Great Discoveries*, New York: 1990, 34.)
FIGURE 2
Portuguese Atlantic Chart, 1436
This map made for Portuguese Royalty by Venetian cartographer Andrea Bianco shows Antillia as a large island situated across from the Strait of Gibraltar somewhat west of the Canary Islands. The unique feature of this map is the southeastern peninsula in the approximate shape of Florida. (Facsimile after a photograph from the Newberry Library, Chicago, in Henrietta Mertz, *Atlantis*, 1976.)
FIGURE 3
Bianco’s Antillia & Cantino’s Antilha
A comparison of silhouettes of Bianco’s Antillia on his 1436 map and a terra incognita in the Antilhas island group shows striking similarities. Both were situated across from Portugal above the Tropic of Cancer so that the southern tip of the macro-peninsula was at the latitude of the Strait of Gibraltar. The Antilhas isles of Isabella (Cuba) and Spagnola (Haiti) are portrayed just as they were shown on the Juan de la Cosa map of 1500. (From a facsimile by A. and S. Pilinski in the British Museum, London, in Arthur F. Newcom, The Great Age of Discovery, Freeport, NY: 1932.)
**Florida: The Macro Peninsula of Asia**

A composite chart of world maps shows the geographical location of the Asian macro-peninsula relative to the actual location of Florida. It can be seen from this chart that, over time, cartographers moved the peninsula closer and closer to the geographical coordinates of Florida situated as it is just above the Tropic of Cancer about 4,000 miles west of Europe. Martin Behaim’s Nuremberg globe of 1492 (thick line) has the overseas peninsula, Zaiton, situated about 500 miles west of a large island that was variously thought to be Cipangu (or Japan), Antilia, or King Solomon’s Ophir.
FIGURE 5
Isle of Seven Cities on the Paris Map of 1490
This anonymous map sometimes attributed to Columbus has a group of North Atlantic isles indicated about 1800 miles west of Ireland. A caption in the text of the map refers to these as “Isle of Seven Cities.” A similar grouping of isles is sometimes designated “the Icelands.” On an anonymous Portuguese chart of 1549, isles in the same location can easily be identified as the Newfoundland archipelago. (After a photograph in the National Library, Paris.)

FIGURE 6
Brazil on Bianco’s 1448 Atlantic Chart
A secret map for the King of Portugal shows that Portuguese navigators identified the coast of Brazil sometime before it appeared on this chart by Andrea Bianco. The designation Isola ointicha 1500 mía next to the coast has been interpreted as “isle authenticated at 1500 miles.” (Source: redrawn from Ivan Van Sertima, *African Presence in Early America*, New Brunswick, Transaction Publishers, 1992, p. 177.) Johan Schoner’s map of 1515 shows a similar juxtaposition of Brazilian and African coastlines with the New World region identified as “Paria sive Brasilia.”
FIGURE 7
A Roman Map of Florida?
This 15th-century copy of the Macrobius map dating to Roman times (about 440 AD) has a huge gulf on the east coast of Asia as it would appear directly across the ocean from Europe. At the southeastern tip of the northern mainland above this gulf is a peculiar macro-peninsula which might be an early representation of Florida. Whether this was a feature of the original Roman map or an addition made by the 15th-century copyist is unknown. At any rate, the so-called "Asian" coastline has more in common with the East Coast of the Americas than it does with Asia. (Facsimile by the author after a manuscript map in the Huntington Library, San Marino, CA.)
FIGURE 8
Medieval Florida
FIGURE 9
Antillia: From Isle to Continent
Three charts in close temporal sequence reveal the transformation of Antillia the isle into a New World continent. On the 1502 Cantino map (left), the northwestern isle of has antilhas appears quite similar to Bianco's Antilia of 1436. In the second chart by Nicolo Caveri in 1504 (center), we notice a slight extension of the Gulf of Mexico region from the macro peninsula (Florida) southward. The Martin Waldseemüller map of 1507 shows the northern mainland connected to the southern continent that he has named 'America' for the first time.
Map Circulation – Libraries and Industry Cooperate

by

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Recently we were approached by a map company asking if we would loan them approximately 800 U.S. topographic maps to scan for a project. Since the images they had were not clear enough, they wanted to use the actual maps for approximately two weeks.

As our policy is to not circulate maps, I posted a query to the electronic discussion list, MAPS-L, for help in reviewing the options and choices of other libraries. I received a variety of responses which nicely fell into the categories: lend in accordance with existing map circulation policy; lend, but seek something in return if request falls outside the existing policy; do not lend; and concern about possible copyright infringement and unspecified mistrust of such requests. However, before we decided how we would handle it, the company withdrew its request stating they were not pursuing the project. A brief summary of the responses in each of these categories not only brings into focus the issues, but also offers opportunities for cooperation between libraries and industry.

The responses in support of loaning the maps referred to a library’s existing circulation policy that should indicate how the company could borrow materials. Since many libraries now post their circulation policy on the Web, a company may be able to discover a library’s policy before making a special request.

Parenthetically, libraries in the stage of developing or evaluating their circulation policy can readily use these sites for several library map circulation policies are listed in the bibliography.

The responses related to loaning but for a special consideration usually suggested that a free copy of the product being developed be given to the loaning library. Other suggestions were for a special fee if the borrowing extended in some manner beyond the stated circulation policy. In many cases it may be due to the number of maps loaned, format, their value or condition. The “do not loan” responses often suggested the already scanned images available on a number of sites including those of the U.S. Geological Survey and some companies. However, this option had already been eliminated due to the lack of visual clarity of such maps. In the “do not loan” category, the most unusual comment raised the issue of the liability a loaning library might risk related to outdated nautical charts being used for a new product. Specifically, a product created by a company using the DMA/NIMA (Defense Mapping Agency/National Imagery and Mapping Agency) nautical charts would have to be reviewed by those agencies to verify that neither a prior exclusive agreement with other hydrographic agencies had been violated, nor that obsolete data was being used for navigational purposes.
The final category involved a query from another map company which, although not very forthcoming or detailed, was clearly concerned with copyright infringement issues. Somewhat related were several responses expressing a general distrust of the intentions of the company.

Beyond our actual resolution of the request to loan the topographic maps and the more philosophical question of the appropriateness of loaning maps, for me this became an object lesson in the way the different cultures of the academic and business communities may create misunderstandings. Based solely upon the circumstances, I attributed the company’s withdrawal of its request to us to my public posting of their intent, albeit it very general, to the mapping community on the electronic discussion list. What seemed for me a very natural solicitation of help from colleagues may have been seen as betraying proprietary information.

Librarians are committed to open access to all while industry is understandably secretive and protective of its product until it reaches the marketplace. On the other hand, librarians do understand and are fierce champions of the confidentiality of users’ requests and use of the collections.

In conclusion, through other responses describing several excellent examples, I saw that such differing cultures need not prevent opportunities for cooperation. For instance, at the University of California, San Diego, a company borrowed topographic maps by first buying the standard library card and further agreeing to pull and refill the maps themselves. Another time, a company came to the library with their own equipment for downloading the non-circulating CD-ROM materials. Now at UC, San Diego, such requests are handled through a Corporate Programs office whose website is included in the bibliography at the end of this article. That office either charges standard fees or negotiates fees for non-standard services in which case the librarians’ services are billed at approximately $80 an hour.

From my own past experience at another institution, I know that many libraries make special loan arrangements for circulating a small amount of materials, including maps, to support local start-up companies and other members of their communities.

Finally, Diane Oswald created an arrangement by which selected libraries could have their original fire insurance maps microfilmed at the expense of a company. A copy of the film was provided to the library and the company could then sell the copies. Oswald indicated that the most crucial part of such cooperation is for the library to retain control not only over the vendor chosen, but also how and when the maps are picked up and dealt with throughout the process.

### Notes

Leverenz, P. (paul_leverenz@ucsdlibrary.ucsd.edu). (1999, July 10) Circulating Maps. E-mail to Johnson, L (linda@hopper.unh.edu) 

Cruse, L. (larry_cruse@ucsdlibrary.ucsd.edu) (1999, July 26) Circulating Maps. E-mail to Johnson, L (linda@hopper.unh.edu)

Oswald, D. (dianeoswald@juno.com) (1999, June 10 and 1999, July 28) Circulating Maps. E-mail to Johnson, L (linda@hopper.unh.edu)

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Cartographic Users Advisory Council
Meeting Minutes
May 1999

May 7, 1999, 9:00 a.m.

Government Printing Office (GPO)
Robin Haun-Mohamed

Our first speaker was Robin Haun-Mohamed, Chief of the Depository Administration Branch of GPO Library Program Service (LPS), who set the stage for CUAC's primary mission of getting maps and cartographic and spatial data into the depository program. Robin began with a synopsis of the Federal Depository Library Program (FDLP). Depository libraries date back to the formation of the Government Printing Office in 1895. There are 1350 depository libraries in the United States, and 50 of those libraries are Regional libraries that are mandated to receive all material distributed by the FDLP and keep it in perpetuity. The other libraries are selective in nature. They have the opportunity to select the items they wish to receive for the year, and they may deselect at any time. After material is 5 years old or older, they may discard this material by sending lists of these items through their Regional libraries. All depository libraries must be open to the public and provide free access to all government data. All government information must be processed and made accessible on whatever catalog or access tools the library provides.

Products distributed by the Depository Program include paper, microfiche, and tangible electronic formats. Dissemination to libraries in an online-only format has now also begun for some information products. The maps in the program include those from USGS (U.S. Geological Survey), BLM (Bureau of Land Management), Forest Service, National Park Service, NOAA (National Oceanic and Atmospheric Administration), FEMA (Federal Emergency Management Agency), and NIMA (National Imagery and Mapping Agency).

The services that the Program offers to federal agencies include paying for the distribution of the products through a very efficient distribution system. They can provide a list of libraries that receive agency products so that an agency can know who the likely users of their products are. GPO catalogs the products using the OCLC network. Long term access for users and for agency use is assured. The FDLP sponsors programs that include opportunities for federal agencies to speak to the librarians in attendance. When printing is done by GPO, printing of publications for the Depository Program comes out of the GPO budget and not the agency budget. When printing is obtained by the agency outside GPO, then printing of copies for the depository program must be paid for by the agency.

Robin talked about GPO's mandate under Title 44 of the U.S. Code that states that all government, publicly funded publications will be made available to GPO for the distribution to libraries in the FDLP. Exceptions are publications that are for internal
use only or documents that are classified.

Their biggest challenge is cooperative publications that depend upon sales for cost-recovery. These are publications that are done with endowment funds, private funds, and/or agreement with a second or third party. Although these are more of a challenge to obtain for the FDLP, GPO still will ask for them. Robin explained the technicalities of how orders are written from regional offices, like the Denver Regional Printing Office and how the cost to the agency works for different types of print orders. Pugitive documents—those that escape the distribution program—remain a constant challenge. The Library Program Service has a position devoted to contacting agencies to try to get an appropriate number of copies. If sufficient paper copies cannot be obtained, an order for fiche copies is made. This process is paid for by GPO.

Online-only products are new for them. In the electronic environment they refer to dissemination instead of distribution. For these products they ask the following questions: Does it fit the scope of the program, and does it look like it will be around long enough to make a permanent record for it? If so, they catalog the product and send information to the depository libraries via the online U.S. Government Publications Catalog or via some other locator service, such as the Browse Electronic Titles, which is an agency listing and then a list by title. The URL is put into the cataloging record.

To deal with constantly changing addresses on the Web for the online-only products they disseminate, they use the Persistent Uniform Resource Locator (PURL) which is software provided through OCLC that will allow an address to be found on the Web even if it changes from what it originally was when the record was created. They also still put in URLs. This project is about two years old now and is still in a developmental stage. Robin made this plea to the agencies: When a change is made to an agency web site, please notify GPO so appropriate changes can be made to the links to the site in the record. If a site or data at the site is being given up, GPO especially wants to be informed so that the material can perhaps continue to be made accessible through the GPO server or through a partnership with a depository library.

GPO and the FDLP serves at the direction of Congress. The FDLP’s budget is around $30 million, under the Superintendent of Documents, who also directs the sales program. There are around 150 people employed in this part of GPO.

Robin next addressed specific concerns with the distribution of depository map products. There are ongoing problems with the distribution of NIMA products. Previously NIMA maps were distributed directly from the agency, just as USGS maps are. About a year ago, the distribution responsibility was given to the Defense Logistics Agency, and there have been problems ever since. There have been no changes to the selection profiles for the last six years, and there are other problems as well. GPO now has brought the distribution of NIMA maps back into GPO. But now GPO is still having problems with getting accurate numbers of maps from NIMA. Most are arriving with insufficient copies to ship. They are still in negotiation with them to resolve the problems. Shipping lists will be separate for these maps, and they will be dropped into the depository boxes or a separate mailing to separate housing sites.

USGS

Robin and others from GPO have been working with USGS for the past couple of days on their distribution process, and updating this process. Through a new memorandum of understanding, shipping (or sending) lists for USGS maps will now come in depository boxes, or separately for separate housing sites.

The National Wetlands Inventory Maps have begun to arrive from NARA in Seattle where they are being produced. They are much improved, beautiful fiche. We probably have lots of duplicates, because some of them were very poorly filmed and many were redone. We just need to make sure that we have one complete set and treat others as duplicates. There is a problem with the new set from Seattle, however, and that is what is holding them up. They were filmed six to a set even if there were not enough to fill that many fiche, so there are lots of blank fiche. Robin will need to reformat them before she has all of the copies made for the libraries. The 1st generation silver master runs about $8/fiche and goes to NARA as part of the GPO collection every four years, while 2nd generation silver is used to reproduce from and then it goes to LC. If GPO needs it later, it can go to LC to get it. The diazo's, which are
what the depository copies are, cost just 6–10 cents each. Originals go to cataloging, but after they are cataloged they are boxed up and go on to NARA and LC.

**NOAA**

Print-on-demand of nautical charts was announced last year. The nautical charts are being printed under a CRADA (Cooperative Research and Development Agreement), that frequently means cost recovery and that the product will fall outside the program. NOAA did offer to send one copy of each chart to GPO, however. GPO negotiated for just one chart a year out of the six that were being produced. They will distribute to libraries. If a library needs the charts more often, GPO would facilitate that arrangement with NOAA.

**National Atlas**

This is a CRADA product and is available on the Web. There are three map sheets that have gone to the depositories that are part of the Atlas and these have been cataloged and are in NCLC.

**Census**

There is a new release of the TIGER line files. These should be in our libraries very soon.

**New Products**

There are two new products. GAP analysis data CD-ROMs and the RMP Submits. Depository libraries are being surveyed regarding these products. All libraries must respond, including Regional.

The USGS Biological Resources Division Gap Analysis Program (GAP) is the primary Federal program for mapping and assessing the status of biodiversity in the U.S. Data for each state will appear on 1 to 4 CDs depending on the size of the state and data complexity. The viewing software for the GAP Analysis data is on disc 1 only, which is the California disc. Anyone wanting to select their own state only should remember to also select the California disc in order to get the software.

Risk Management Program requires that chemical plants, power plants and all industrial facilities that are required to submit information to EPA submit a Risk Management Plan (RMP). RMP Submit is an EPA software package for facilities to use in submitting Risk Management Plans. This has been prepared under Congressional direction. The Plans were supposed to be a web product. However, a senator became concerned about putting this type information on the Web, especially with the danger of nuclear and/or terrorist attack, and stopped the plan for putting it on the Web. The part of the data that will not be on the Web is called the Offsite Cost Analysis, or OCA data. GPO is still hoping to get some of the data, minus the sensitive stuff. It is not certain at this point whether this information will become available. What is currently available, and being surveyed for is a CD-ROM product that will require the depository library to store the software and information for the user on their hard drive until the plan is copied. This is the reason that a survey is necessary.

**Questions**

Robin then posed some questions for CUAC. She has asked that we address these issues before the end of our meeting.

What is the role of physical maps in depository map libraries, especially in light of the transition to electronic data?

What is the role of shipping lists...is there a possibility that GPO could go to a shipping list posting on the Web?

What is the role of the availability records in the cataloging of maps? The availability records are the ones which identify the different editions of maps.

What is the trend between GIS collections and the paper map collection? What is the interrelation between the two? Are they existing together or separately? What impact do we see on the program?

**Forest Service**

**Steve Gregonis**

Our next speaker was Steve Gregonis, the Region II GIS Coordinator for the National Forest Service (NFS). The main points of his discussion were data dissemination and archiving data. Over the last few years, NFS has set priorities on assembling a GIS base for use in planning. This data, in turn, is made available for analysis. They are having a problem with standards—roads, vegetation, etc. Other problems are occurring with the texture of the data—how detailed the data is. Steve's group is attempting to raise their level of service so that it can be offered to NFS and the individual National Forests. For example, NFS is using GIS extensively in compiling each National Forest’s 5-year Service Plan. GIS is speeding the updating of those documents. The 5-year plans are public documents that come through the Depository Program.
Most digitizing for the base maps and many of the layers for Region II have been completed. The problem arises in archiving the data—whether it be in paper or digital format. As NFS tries to archive the data, they are having problems finding out where the data originated. In order to correct this, NFS is attempting to attach metadata to each data set using the Federal Geographic Data Committee standards. But the task of adding metadata is daunting. Currently, Steve’s Region has thousands of sets of data, but only a few have metadata.

The data is being made available. Several of the Service Plans will soon be released on CD-ROM. However, most of the data sets are only available through the agency that compiled it. In response to this, the Region is attempting to put together a library of regional data. NFS is working in cooperation with local authorities, including state and local governments, to establish data clearinghouses. On a national level, NFS is attempting to standardize its data so that information can be shared. They have set up three modules (infrastructure, vegetation, water), and hope the data will be able to fit into these categories. The project is very big and will take time to be completed.

Archiving GIS data has caused many problems for NFS. One of the biggest is that GIS data can change without notice. Steve explained that in the GIS field, most expect this. Currently, the whole way of archiving data is somewhat informal, but because of some recent Freedom of Information inquiries, it is becoming more formal. Steve pointed out that there is a big difference between archiving a map and archiving data.

**Forest Service**

**Dave Wolf**

Dave Wolf, Forest Service Geometronics Group Leader for the Rocky Mountain Region (Region 2), continued the discussion. He stressed that hard copy maps would still be available because that is the way the public wants them. In addition to the print, we will begin to see more products in electronic form. CDs, and on the Web. Mr. Wolf asked if libraries wanted print and electronic products, to which we answered yes.

The updating universe has changed. Where traditionally printed updates to maps were produced on a cyclic basis, electronic databases are under continuous revision. The question is when to produce a printed update. The Forest Service is partnering with USGS to produce updates of the quad maps for forest lands and visitor maps. Production of these updates is progressing.

Mr. Wolf described the lack of national coordination in the Forest Service to handle production and distribution questions. No standards are being adopted concerning new base map features identified in electronic products. What products will be produced, what will be archived, and will it be free? He gave the example of the National Forest maps that are produced on funds from sales receipts. The data producing the maps is integral to the mission of the agency, but the printed product is not. Does that meet the criteria for inclusion in the depository system?

Mr. Wolf left us much insightful information on the mapping efforts and practices of the Forest Service and many questions federal agencies producing maps and map librarians need to contemplate and answer.

**Bureau of Reclamation**

**Dave Eckhart (for Mike Pucherelli)**

Dave Eckhart works with the Remote Sensing and Geographic Information Group of the Bureau of Reclamation (BOR) at the Denver Federal Center. This Group builds spatial databases for the Bureau and for other agencies. The data comes from several sources:

1. paper maps;
2. models (for instance, there is a current project relating to modeling dam failure which uses DEM [digital elevation model] and TIGER data); and
3. remotely sensed data (this is the source of the bulk of their data).

Examples of some of the remotely sensed source data that BOR uses include: conventional and digital aerial photography; LIDAR (Laser Infrared Detection and Ranging) for high resolution DEM data; AVIRIS (Airborne Visible Infrared Imaging Spectrometer) from NASA; AVHRR (Advanced Very High Resolution Radiometer) meteorological satellite data; Landsat data (used mostly for crop imaging); data from the French SPOT satellite and from Indian satellites; radar data; and airborne video (mostly for river information).

Much of the work the Group does relates to crop mapping, using high resolution data to define boundaries and low resolution (Landsat) data to determine what’s growing on the land. Also, they’re involved with a lot of water quality mapping for large reservoirs.
Regarding the archiving of their data sets, metadata is part of final output. The Principal Investigator for a project is responsible for making sure the metadata is completed and that it meets Federal Geographic Data Committee (FGDC) standards. The metadata is made available on a Bureau server. The user must browse by project names—the metadata on the server is not searchable by keyword. Most of the digital data, however, are not available except by contacting the person listed in metadata. The Remote Sensing and Geographic Information Group does keep a digital copy of the data in its office, but the original is sent to the client. In general, final products from projects are not accessible except from the client, and it will probably have been updated from the time it was delivered to them by the Bureau’s Remote Sensing and Geographic Information Group.

In the next few months over one hundred clearinghouse servers containing metadata will become searchable from the FGDC Clearinghouse home page. These nodes will be hosted by many agencies dealing with spatial data, such as the BOR and the USGS. Due to the vast size of the data, however, actual data will probably not be online any time in the near future.

**Bureau of Reclamation**

**Debbie Fugal**

The creator of each record determines whether the record is permanent or temporary. Permanent records belong to the National Archives, which requires submission of records in paper, not electronic, format. The permanent record cutoff is the end of each calendar year. The records are transferred to the Federal Record Center 10 years after the cutoff. The FRC then transfers the records to Archives 30 years after the cutoff.

With the increased use of various electronic formats, submission of Bureau of Reclamation records to the National Archives has been at a standstill. GRS 20 (General Records Schedule, National Archives) will enable agencies to schedule electronic records by February 2000. If an agency’s electronic database is certified by DOD, Archives will approve records management in electronic format and transfer custodial responsibility of the electronic records to the agency. The Bureau of Reclamation will be using RIMS, which is one of the three databases approved by DOD. The other two are TRIM and FOREMOST.

Each agency will be responsible for maintaining their records in an electronic format that is continually accessible. It is the intention of the Bureau of Reclamation to migrate permanent electronic records, including e-mail and web site information, as necessary to maintain accessibility.

**National Park Service**

**Intermountain Support Office**

**Brian Carlstrom, GIS Specialist**

The Intermountain Region is comprised of 84 National Parks and Monuments. The GIS Program Office in Lakewood, CO, provides technical assistance to those units in providing GIS development, with GIS issues and needs, and with support to the units. Offices are located in Denver and Albuquerque and are staffed with six permanent employees, three temporary employees, and six students. Two cooperative agreements exist: the first with the University of New Mexico, Albuquerque and the second with the University of Denver. Three students from each institution gain experience through their work at NPS and with GIS.

Of the 84 Park Service units, 63 units utilize some level of GIS. Sixteen are staffed with full-time GIS personnel. ArcView 3.1 (ESRI) is the standard software used, and ARC/INFO is utilized at 16 park units.

During Fiscal Year 98, $90,000 was provided to distribute to the 84 units in the Intermountain Region.

Funding was used to support a GIS meeting on a biannual basis, hardware, software, and training salaries.

During Fiscal Year 99, $88,000 was provided to distribute and 47 proposals were submitted with 10 proposals chosen for funding. In addition, $15,500 was set aside for metadata training.

During Fiscal Year 2000, $88,000 will be available. A call for proposals and review is underway. Funds have been set aside for an Intermountain GIS conference and a metadata initiative involving training. Additional funding sources are also being pursued.

Forty-eight requests for GIS technical assistance have been received, some similar to earlier project proposals. They have involved data searches and assessments, global positioning system (GPS) data collection, scanning, digitizing, metadata, data conversion, and General Management Plan support. The General Management Plans operate on a 10-15 year cycle.
Specific projects have included: a cultural landscape inventory at Golden Spike NHS utilizing GPS to locate features; an ethnographic overview of Capitol Reef National Park; a wetlands assessment of Great Sand Dunes NM; National Historical Trails Mapping; a geological map of Fossil Butte NM; and a bighorn sheep habitat suitability analysis of Mesa Verde National Park.

The Intermountain Region of the NPS has embraced metadata and the development of standards as required by Executive Order 12906. The NPS has developed metadata collection guidelines and is in federal agency compliance.

Within the Intermountain Region, as of August 1998, 25 datasets were online, compliant and searchable. As of May 1999, 220 datasets are available online. Software evaluations have been completed, and training for GIS professionals is being provided. The Intermountain Region of NPS has provided three sessions and trained approximately 20 people in metadata collection utilizing “metamarker.”

They are currently trying to streamline the process by customizing to make “metamarker” easier to use. Projects involve inventory of data themes, identify and prioritize data, determine proprietary versus non-proprietary data, participate in the Colorado Ecosystem Project (which is a metadata library project), and develop an implementation plan for the 84 parks in the eight states. They are providing assistance for the parks and writing grants to help take care of metadata backlog.

Additional information may be obtained through the Internet. The National NPS GIS Programs web address is http://www.nps.gov/gis and the Intermountain GIS Program web address is http://129.24.219.53/gis/intro.htm.

A question and answer session followed and provided additional information.

- Regarding digital information: the Intermountain Regional Office maintains a core set of dataset themes while the individual park unit may contain the core and more.
- Regarding other regions having university cooperative programs:
  - Intermountain and Alaska regions are the two largest, with the Intermountain responsible for more parks than any other region. The cooperative program has existed 12 years with Albuquerque having the longer coop agreement. The University of Denver program just started that last October.
  - Recently a map showing congressional districts and parks in the region has been completed for the Intermountain Region Office.
    - The Office is developing digital line graphs (DLG) for parks, and is working with other agencies.
    - The Office is working with ESRI on vegetation of parks—very detailed—developing interim publications.
  - Through the FGDC, the Intermountain Region data are available via the Internet and are searchable. All tiles are in e00 format.

Colorado Federal GIS Users Group
Brian Carlstrom
Brian Carlstrom, GIS Specialist with the National Park Service Intermountain Support Office, gave a brief overview of the Colorado Federal GIS Users Group which meets periodically to share information on projects that are underway. The meetings are open to any federal agency with GIS functionality. Participants include the Bureau of Land Management, Bureau of Reclamation, Federal Emergency Management Agency, Bureau of the Census, and the National Park Service. Ingrid Landgraf is the point person for the Users Group, which has been meeting for about 2 1/2 years. Members of the Users Group share information on an FTP server maintained by the National Park Service.

U.S. Geological Survey
Craig Skale. Chief of the Information Services Branch
In his presentation, Craig Skale. gave a brief, general overview of what USGS is and described some of the changes that have occurred in the Agency. He discussed the National Mapping Program and its products. He put special emphasis on the Rocky Mountain Mapping Center and its efforts to improve the promotion and delivery of map products. He also provided a historical view and update of the Landsat Earth Remote Sensing Satellite Program.

USGS Overview:
The USGS has undergone a number of changes under the leadership of its recent directors - Dr. Gordon Eaton.
Information Council deals with the information infrastructure, seeking to provide a mechanism for consistent communication and to facilitate communication across the Bureaus. Projects such as the Ohio National Atlas and the Gateway to the Earth are examples of what can be accomplished in this new integrated environment across the divisions. The main goal is to provide information on the Internet in a cohesive manner—that is, where the customer can get to a list of all types of information (hazards, water quality assessment, the basic data sources, the basic cartographic data) about a particular piece of territory.

In spite of the issues and concerns that come with an attempt to bring four very different divisions of the USGS together with their separate funding, USGS will continue to create an environment conducive to integrated science, cooperative efforts and interdisciplinary science goals. More programs that focus on end-user partnerships and partnering with the private sector also can be expected.

**National Mapping Program Division**

The Division has five operational centers with the overall mission "to ensure that the nation's needs for fundamental geospatial data and information are met." This Division is broken up into three main programmatic areas: production, research, and Earth Science management and delivery. The five operational centers are located across the country: (1) Western Mapping Center—working in the digital orthophoto area; (2) the Rocky Mountain Mapping Center— a production and distribution center for traditional products; (3) Mid-Continent Mapping Center—a production center; (4) EROS Data Center—working in satellite imagery area and remote sensing; (5) Headquarters and Mapping Applications Center—provides the civilian and federal community access to classified material, and also serves as the headquarters for the USGS. Programs address the areas of mapping data collection and integration, earth science information management and delivery and geographic research and applications. Of the three programs, Earth Science management and delivery is the main focus of the Rocky Mountain Mapping branch and operation, of which Craig Skalaet is the chief. This center is involved in the area of managing scientific data and delivering it to the customers—whether delivery is by the Internet, by the business partners network, or clearinghouses. The programmatic scope of this program includes six main areas: outreach, information dissemination network, information management system, archive, distribution and inventory management, and reproduction and replication. Outreach encompasses press releases, the K-12 educational programs, conference attendance, trade shows, and legislative education. The Information dissemination network is the nine earth science information centers. Information management centers are any of the software networks that make up the systems that help do the job of information dissemination. Archives for the programmatic data is called the operational database. Distribution and inventory management is the maintenance and retrieval of map products from the
warehouse to the appropriate customers. Reproduction and replication is use of the photo lab and doing the “as is” and minor revisions processes.

The discussion of the graphics program – the paper map products – looked briefly at some of the following areas: at the increased use of alternate and varied “best available” sources, the current views on restructuring the maintenance of the graphics, the proposals to focus on the best selling maps and funded partnerships and the place-based programs liaisons. A lengthy discussion followed on the topic of the distribution, revision, and current status of updating the map products.

In the area of distribution, the emphasis is on the customer and enhancing services provided to them and the maintenance support for these products. Progress has been made in delivery of products in that the turnaround time is about 4-5 days for map orders. To date, the business partners are subsidizing the retail customers. The price of a map ordered from USGS today is $4.00; the operation is not profitable. USGS does not wish to continue the present level of retailing in the area of map product.

The current process of map distribution is being looked at so that it can be revamped. USGS would prefer to be more of a wholesaler in this area than a retailer – thus not competing with their business partners (retailers) for sales. Maps sold now at $4.00 actually cost the agency $23.00, which covers receiving orders, pulling, preparing for shipment and distributing. The business partners now subsidize the retail customers. In the future, USGS would like to bulk distribute to business partners, give them a discount, and have them set the price for sale to the public.

The development of the web catalog is one effort to encourage and increase the use of business partners, by providing them with a tool to promote some of the most popular products to customers. The goal would be to have the business partners handle most of the retail orders. The catalog is now in the very early stages, but a demonstration was given. The catalog will probably consist of the thirty best sellers. It would allow the customers to see a list of maps, what the map looks like in some shape or form, and where the map dealer is within the vicinity of the customer. Input from the business partners is being sought over the next two months in the development of the catalog; and in September 1999, the catalog should be ready for testing.

**Map Products**

Craig began this discussion by stating that the issues and concerns of the graphics program - mapping information and its production – are being addressed. The huge amount of funds which have been invested in these 30,000 map products was noted as well as the need to ensure that this investment is valued as a national asset that should be continued. Each topographical map costs about $40,000 – $50,000 and there are 56,000 maps. In discussing the sales history, it was pointed out that annually 2.7 million maps are sold, bringing in about 5.6 million dollars. Then about one-half million maps are distributed free. Sales are decreasing and the agency is not doing a great job in maintaining the quality and accuracy of the 1:24,000 topos. Monies allocated for graphics products have become less and less during the last twenty years due to the addition of new and important products like the DOQ, DEM and others. But the biggest promotional item of USGS is its 1:24,000 topographic maps because they are what the public associates most with the USGS agency. Thus, to ensure that this national asset continues will require the division to restructure the production, revision, and maintenance associated with these products.

At present, funding is needed to do map revisions. This will probably involve looking at recovering some of the cost from the sales price, and there is also a push for funding initiatives to address new monies from Congress. Money that is collected for sales can go back into the distribution and sales operation of these maps, but monies which are collected can not be used to do actual revisions of the maps, which would cost about five to six dollars. Some feel that at least the reprint process should be recoverable. The reprint process costs about a quarter a map and the minor revision process costs about seventy-five cents a map. All revisions would involve about 2,000-2,500 maps per year. 15 million dollars annually would be needed to do all revisions. But at this time, appropriated funds can not be used to pay for map revisions and monies collected from sales can not go back into the revision.

Currently, USGS and the Forest Service are doing map revisions, with
the Forest Service doing about 600-700 and the USGS about 800-900. This cooperative arrangement with the Forest Service should take care of updating about 10%. The goal in the map maintenance area is to have a toponymic maintenance strategy in place by 2000 that will increase map revisions by a factor of three from the FY 1996 level - from 300 to 400 a year to 1,000. The strategy is to look at all maps and build a five-tier classification for maps which will determine their cycle of revision based on sales statistics. There would be about 1,000 maps at the top tier - those where at least 15 are sold each month. Revision for these will be on a 5-7 year revision cycle. The next level (level 2) might be on an 8 year cycle; level 3 might be on a ten year cycle and level 5 would be those maps where 0.1 per month are sold and that is a large percentage of the total. There would also be a similar tier to establish the type of revision done minor, or basic revisions or “as is”.

Other factors concerning the maps are also being looked at: Which are the maps that are being sold in higher numbers? Where are the mapping priorities for the country? Why would the consumer buy a new map?

Currently, topos will continue to be distributed in paper format and the cooperative program with the Forest Service will take care of about 10% of the revisions. The focus at USGS will be on revision of the maps that are high selling (about 1,000).

Other topics discussed: (1) There is some talk about reprinting the 100-150 of the high selling 15-minute quads and (2) One more Topographic Users Conference is planned. Information gathered from the two Topographic Users Conferences (held in Reston/D.C. area and Denver) was useful in redirecting and planning the USGS programs.

NMP Array of Products
Attendees were also given a packet, which described the array of products offered through the National Mapping Program. Databases and products mentioned or discussed were:

1. The National Hydrography Database (NHD) which is a cooperative venture with EPA and the Water Resource Division of USGS and derived from hydro digital line graphs and EPA RF 3 data.
2. The National Elevation Database (NED) derived from the digital elevation models (DEM).
3. The digital orthophoto quad (DOQ) and the digital elevation models (DEM). Completion time frame for national coverage is 1-2 years.
4. The digital raster graphics (DRG) and the digital line graphs (DLG). Provision of access to this data will be through an arrangement/agreement with Microsoft and the TerraServer. This would provide a mechanism for direct feed-in. This data can already be looked at and obtained through the EROS Data Center. It is expected that there would be a fee for the cost of distribution, even though this information would be available online only.
5. Satellite Imagery product lines— the main line satellite offerings of earth observation for the last three decades:
   a) Declassified Intelligence Photos (1960-1972)
   b) Landsat Multispectral Scanner (1972-1992)
   c) Landsat thematic Mapper (1982-1996)
   d) AVHRR LAC/HRPT (1986-1996)
   e) Landsat 7 (1999- )

LANDSAT 7
(Additional historical information has been added from the USGS website.)

The program started as a USGS initiative in 1966. The idea for the mission came from USGS scientists who recognized the successful use of remote sensing technology in previous manned space missions. A number of agencies have been involved since the inception of the program. The agreement was for NASA to build, launch, and operate the satellite, while USGS would receive, archive, process, and distribute the resulting products. EROS Data Center would handle the data products, and international ground stations would handle the products for local applications. During this period the Department of Agriculture and the Department of Commerce joined efforts to develop this program. In 1972, NASA launched the first satellite (TIRS 1 or Landsat 1). In 1975, NASA changed the name of the program from ERTS to Landsat. In 1979 after the launch of Landsat 3, efforts to commercialize the program began. The Landsat operations were to be transferred from NASA to NOAA. The goal was to transfer Landsat to the private sector. In 1984, a contract was signed with NOAA to commercialize the Landsat system. Then in 1985, the commercial operator (EOSAT, a partnership of Hughes and RCA) was named to operate the system under a ten-year contract.
EOSAT
- operates Landsat 4 and 5
- will build two new spacecrafts (Landsat 6 and 7)
- has exclusive rights to market Landsat data collected prior to date of contract (9/27/85) until expiration date (7/16/94)
- has exclusive right to market data collected after 9/27/85 for ten years from date of acquisition
- will receive all foreign ground station fees

In 1988, EOSAT's contract with NOAA was renegotiated to incorporate changes requested by Congress and EOSAT. In 1989, NOAA funds for the Landsat operations were exhausted, and EOSAT was directed to turn off satellites. This was the beginning of funding problems and interim solutions, which lasted through 1992. During 1992, the National Space Policy Directive #5 outlined a strategy to ensure the operations of Landsat missions 4 and 5 and to prepare for the launch of Landsat 6. DOC (Department of Commerce) was instructed to ensure the operation of Landsat 4 and 5 until Landsat 6 was launched and operational. DoD (Department of Defense) and NASA were instructed to develop and launch Landsat 7 and define the continuity requirements after Landsat 7. A management plan for the Landsat program was developed, which assigned responsibility for the space segment to DoD and the ground segment to NASA. DoD signed a contract with General Electric to construct and launch Landsat 7. In 1993, Landsat 6 was launched. With the loss of Landsat 6, international confidence in the program was damaged, and this increased the probability of the loss of data continuity. In 1994, NASA, DoD, and NOAA worked to develop a successful implementation and strategy for the program. Later that year, NASA, NOAA, and USGS met about Landsat ground system and signed a "Management Plan for the Landsat Program," which described the program objectives and the agency responsibilities. In 1999, Landsat 7 was launched. There is no plan for Landsat 8. USGS has stepped in to take over the ground operations. Today, Landsat 7 is a USGS/NASA operation. Together the agencies will work on executing assessments of user requirements and what is next after Landsat 7. It is anticipated that any future ventures will be a USGS/NASA effort. USGS has taken two to three million dollars out of the production budget to support Landsat 7. A technical working group has been formed, and USGS has some responsibility for the data management and the ground stations operation. There are production rates of 250 scenes per day. 140 coming into the EROS Data Center, 40 going to Alaska, and 70 going to Norway. The plan is to produce and distribute the user's product at the cost of reproduction. That accounts for why the price is where it is. USGS will assume full responsibility for the Landsat 7 operations in 2001.

FROS Data Center will be pricing the data. Pricing today: $475 a scene for the level zero, which is raw data not analyzed or manipulated. If you go up to 1R and 1G, it's $600 a scene. They have not set a price on the next level of data. The turnaround time for delivery:

when raw data comes in it can probably come out the next day. But if it's got to be manipulated, it takes another day, and level 1P takes three days. All Landsat data is copyright free. The pricing history of the Landsat data was if it was ten years or older the cost was $450 per scene. Otherwise, it was $4,500 per scene and not many products were sold until they were ten years old. The sales history of Landsat data is being reviewed and in the future, the older data will have varied pricing based on a mixed scale variable. Since the government will own the data, the pricing will be more reasonable.

Digital data will not be distributed free to libraries. One idea is to distribute the data with some kind of subscription service charges. Regional consortium being formed such as the one in California, another in the Northern Plains (the Dakotas, Kansas, and Wyoming) and another in Virginia were mentioned as possible sites to pipe Landsat data and other digital products. This idea is being investigated, and the problem to be dealt with is how to price the data.

In general, the National Mapping Program has to continue to focus on its data and information maintenance. It must provide a national approach for availability and access to this data. It must play a robust cooperator role in seeing that standards are defined and also establishing boundaries for database quality and content.

Issues raised with questions during and after the presentation:

Q: What was GPR?
A: Government Performance Results Act.
Q: GNIS – Why is getting connected to the web site a problem?
A: The Agency had not expected the popularity of the web service and had not anticipated such high usage. The web site will be going to a distributed cluster configuration of several platforms using a Sun server with the design moving on an upgraded Oracle base to correct the access problem. The new design will be completed within a two-month time frame. (It was also noted that the data did exist on a CD and that the 1998 CD is a DOS base software).

Q: Where are you on updating of those best selling maps?
A: Our plan is to focus on the high selling 1,000.

Q: Can you not make the argument that you could maintain the updating by recovering cost from the sale price, if you don’t get other funds?
A: Yes, that’s a piece of it, too, because I am arguing that let’s make that $15 million, $12 million and I will take the “as is” parts and minor revision parts, change the pricing of the maps, and try to market maps better, to get more map sales and cover that piece.

Q: Are you going to hold a third Topographic Users Conference like the one held here (Denver) about a year and a half ago? (One was also held in Reston/D.C. area). What became of the results from those conferences?
A: Mark took that information and fed it into the program plan. I didn’t actually participate in that, but my assumption is that the information was applied to standards, changes or modification, program redirection, those sorts of things. I think a third one is planned.

Q: Can we get a list of the map dealers that offer overnight map delivery?
A: List will be sent to attendees. Dealers that offer overnight map delivery are:
Map Link
30 S. La Patera Ln, Unit #5
Santa Barbara, CA 93117
(805) 692-6777

Omni Resources Inc.
1004 S. Mebane St.
Burlington, NC 27216
(336) 227-8300

Allied Services
966 N. Main St.
Orange, CA 92867
(714) 532-4337

Timely Discount Topos Inc.
9769 W. 119th Dr., Ste. 12
Broomfield, CO 80020
(303) 469-8488

Powers Elevation
13900 E. Harvard Ave.
Aurora, CO 80044
(303) 321-2217

Map Express/Speedy Topo
441 Wadsworth Blvd., Ste. 124
Lakewood, CO 80226
(303) 274-4440

Carolina Global Maps, Inc.
PO Box 5012
Greenville, NC 27835
(800) 248-6227

Quick Maps Co.
PO Box 150123
Lakewood, CO 80215
(303) 238-5427

Fast Maps
PO Box 260879
Lakewood, CO 80226
(800) 426-8676

National Oceanic and Atmospheric Administration (NOAA)

Dan Seldin for Fred Anderson
Fred Anderson was not able to attend this year’s meeting in Denver. Dan Seldin, NOAA liaison, interviewed Mr. Anderson via phone before our meeting, and submits the following report:

New Products
There were no specifics on new aeronautical products, but if new Terminal Area Charts or Helicopter Charts are released, they will automatically go into the depository program.

New NOAA/NIMA catalogs have recently been produced and should have been sent to depository libraries.

Transfer of Department of Transportation
Aeronautical Charting will stay with NOAA for the rest of the fiscal year.

Federal Aviation Administration (FAA) must be re-authorized by the end of May. It is normally re-authorized at the beginning of the fiscal year, but problems with Aeronautical Charting caused Congress to re-authorize for only 6 months at the beginning of the fiscal year. When the problems were not solved at the end of 6 months, the authorization was extended 2 more months. Secretary Slater is working with the Senate. The FAA and DOT want Aeronautical Charting in TASC,
but 2 major interest groups, Aircraft Owners and Pilots Association (AOPA) and National Business Aviation Association (NBAA), want it in the FAA. They are afraid that a fee for service organization like TASC will raise prices. Jane Garvey, the FAA Administrator, does not want AC&C as part of the FAA.

With all the disagreements, no one knows where Aeronautical Charting will go; it could even stay in NOAA.

**Nautical Charts - Print on Demand**

The nautical charts are produced by the NOAA Office of the Coast Survey. They are proposing that the nautical charts be printed by a contractor, using a large format raster plotter on electronic request from the public or chart agents under a CRADA. 3M Company has been selected as the contractor, with a subcontractor named Voemela in St. Paul, MN to do the actual printing and distributing. If this plan is adopted, these might not be government products that would be in the depository program. Fred Anderson spoke to the Director of the Coast Survey, who said that it has not been decided whether the nautical charts would be CRADA or NOAA products. There are questions about liability and laws that require NOAA to reimburse the U.S. Treasury with funds from chart sales.

3M is undertaking market testing of print-on-demand nautical charts through chart agents in New York, San Francisco, and South Florida. If the market testing is successful, the program will go nationwide and NOAA would phase out producing the charts through lithography. These print on demand charts would cost more, estimated at $20 each, be of poorer quality, but be more up to date.

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Maps and Map Reading:
A Class Outline
Part 2 of 3
by
Tom Edwards

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[Editor’s note: Tom Edwards taught a pass/fail course entitled “Maps and Map Reading” for the University of Washington’s Certificate Program in GIS during the summer of 1998 and fall of 1999. The final segment of course outlines and exercises will appear in the next issue of the Information Bulletin.]

Week 3:
Levels of Measurement (Discrete/Continuous)
Cartographic Design
Direction & Distance

Levels of Measurement
Resources:

- S. S. Stevens, noted scientist and psychologist, said that measurement is “the assignment of numerals to things so as to represent facts and conventions about them.”
- Geographers “scale” the Real World data in an attempt to structure observations about reality
- A scaling system is absolutely necessary for cartography, it is the most efficient means of describing observed characteristics for mapping
- The method of cartographic symbolization relates very closely to the level of measurement employed
Four Levels of Measurement

• These are also referred to as “scales”, first described by Stevens
• Each level is more progressive than the previous in its ability to effectively describe the data

Nominal

• Also called “categorical”
• Identification is the key word
• Data is compared solely on the basis of type
• Permitted operations: equivalence (it either is or is not a certain type)
• Examples: Alive, Dead, Male, Female, Apples, Oranges, Blue, Green, etc.

Ordinal

• Rank is the key word
• Data based on the basis of a loose rank, without indication of magnitude
• Permitted operations: equivalence, greater than/less than
• Examples: High-Medium-Low, Hot-Warm-Cold, etc.

Interval

• Standard unit of interval is the key idea
• Data is observed on a scale which has regular intervals
• Permitted operations: equivalence, greater than/less than, addition, subtraction
• Examples: Celsius scale, Fahrenheit, GPA, Time

Ratio

• Absolute zero is the key idea
• Data is observed with an indication of magnitude - as related to an absolute zero point on the scale
• Permitted operations: equivalence, greater than/less than, addition, subtraction, multiplication, division, etc.
• Examples: Kelvin temp. scale, population density, money, physical measurements (g, km, etc.)

Note: From a cartographic symbology standpoint, interval and ratio data are treated the same.

Discrete vs. Continuous Phenomena

• Recall that Real World entities exist as a point, line, area, volume, or space-time objects
• Real World entities can be measured using the four levels/scales mentioned (nominal, ordinal, interval, ratio)
• In addition, entities can be classed as being discrete, sequential, or continuous

Discrete

• Entities which do not occur between observations
• Occurrences are individually distinguishable from place to place
• Examples: telephone poles, spot elevations, a building, etc.

Sequential

• Applies to linear features only, not as prevalent
• Occurrences are continuous only along a linear path
• Examples: roads, pipelines, etc.

Continuous

• Also called “smooth phenomena”
• Two- or three-dimensional entities which exist between observations; they are continuous and can be observed anywhere
• Examples: elevation, temperature, air pressure, etc.

Nominal and Ordinal measurements are generally discrete
Interval and Ratio measurements are continuous
Cartographic Design

Overall goal: To present geographic information using graphic media in such a manner as to communicate the message effectively and efficiently.

The Model: *Elements of Cartography* describes map design as a type of visual interaction. **Graphic elements** are the visual variables that can be manipulated to achieve the **graphic components** within the bounds of the graphic controls.

**Primary Graphic Elements** (aka “symbol dimensions” in Dent’s text)

**Hue**
- Commonly called “color”
- Spectral variations perceived by the human visual system as categories (red, green, blue, yellow, etc.)
- Communicates nominal categories
- Dent also includes Color Intensity (aka “saturation” as a distinct dimension - we include it with Hue)

**Value**
- Related to lightness or darkness, also called “tone”
- Communicates order or magnitude (interval and ratio categories)

**Size**
- Dimensions of graphic symbols (diameter, area, width, height, etc.)
- Communicates magnitude (and sometimes ordinal order)

**Shape**
- Distinct visual recognition based on regular/irregular shape, smoothness/sharpness
- Geometric characteristics
- Communicates nominal categories

**Spacing**
- Distance of marks in symbols (no. of lines per inch, kerning, etc.)
- Communicates nominal distinctions (Dent calls this “pattern texture”)
- When spacing is close and objects are small, readers perceive value, not spacing

**Orientation**
- Directional arrangement of elongated individual marks
- Oriented to frame of reference, but can be affected by geometry of cartographic objects
- Communicates nominal distinctions (Dent calls this “pattern orientation” with a separate dimension for pattern arrangement)

**Location**
- Position of the object in the visual field of reference
- Constrained by geographic facts (i.e., where things really are in the Real World)
- Communicates nominal facts

**Graphic Components**
These are the elements of cartographic design that are considered most visually significant to the overall goal of representing mapped data

**Clarity and Legibility**
- Derived from the proper choice of lines, shapes, colors and their proper orientation
- Presenting the visual elements in a way that is clear and meaningful
- Use of familiar cartographic techniques and symbols adds to legibility

**Visual Contrast**
- One of the most important components to consider
- This is the need for each element on the map to be differentiated from its background, towards the goal of enhancing visibility
Visual Balance
- Predetermined decisions which pertain to how the primary map elements interact visually
- The positioning of visual components to present a logical relationship; i.e., nothing seems unbalanced or out of place

Figure-Ground
- A complex phenomenon of the human visual system, an automatic process
- The separation of the visual field into object/background relationship
- Involves many interacting variables: closed/open forms, brightness, contours, areal size and shape, etc.

Hierarchy
- The variation of elements in terms of significance to the overall design
- Various kinds of hierarchy exist, but are constrained by the reality of the objects being mapped

Graphic Controls
- These elements put limitations on what is possible in cartographic design

Objective
- Relates to the purpose of the map
- Maps can be multi-purpose (and often are): more purposes = more difficulty

Reality
- Reality presents certain problems to the cartographer that cannot be changed
- Real World constraints can affect the map; e.g., Chile will always be long and skinny. Some mountains ranges will always be in the way of labels, etc.

Scale
- The map is forced to conform to a certain size and thus certain generalization based on the scale
- Scale limits the amount of information possible in a given presentation, even if more information exists on the ground

Technical Limits
- This relates to the methods of construction and production of the final map product
- Capabilities of hardware, software, output devices, personnel, etc. are all important

Audience
- General and thematic maps are made for a specific audience
- The final placement, intended use, educational/professional background of the people, and other related factors

Direction
- Direction is the angle between a particular line (defined by some pair of points) and a reference line
- Direction on a spherical object is entirely arbitrary (since it has no edge, beginning or end)
- The spatial properties of a map start with direction
- Direction on the earth is also called: bearing, course, heading, azimuth (all the same basically)
- Most people are familiar with named directions: North, South, East, West, Northwest, etc.

Units of Angle Measurement
- 360 degrees, each degree divided into 60 minutes, each minute divided into 60 seconds (from Babylonian base 60 system)
- Alternative units: radians \((2\pi \text{ radians} = 360^\circ)\), mils \((1/6400 \text{ of } 360^\circ)\), grads \((1/400 \text{ of } 360^\circ)\)

Types of Direction

True Direction (aka True North/True South)
- The direction to a real place on the earth’s surface - the axis of rotation is most convenient
- This can often be found without the aid of instruments (sun, stars, animal/plant behavior)
- The North Star (Polaris) is a good indicator in the northern hemisphere
- All directions are based on the relationship to this True North fixed point
- Most valuable to cartographers working in the office

Magnetic Direction (aka Magnetic North)
- The direction relative to a magnetic focal point on the earth’s surface - magnetic North
This can be found with the aid of a magnetic compass (many types exist) which detects the geomagnetic field of the earth.

- Magnetic North is not the same real location as True North, therefore the problem of magnetic declination must be considered.
- Magnetic declination is the deviation from True North at any given point - it varies.
- Magnetic deviation is caused by local magnetic attractions such as buildings, ore bodies.
- Seattle is 22° 3' east of True North.

**Grid Direction**
- The direction relative to the projected grid employed on a map.
- The grid is purely artificial thus the direction is relevant only within that projection system for that particular map.
- This problem is more pronounced on smaller scale maps (e.g. world maps, etc.).

**Rhumb Lines (aka Loxodromes)**
- The shortest distance between two points on the earth is a Great Circle route.
- Great Circle routes can be difficult to plot, and navigate against in real travel.
- Rhumb lines: a line that intersects meridians at a constant angle (i.e., constant compass direction), thus approximating a Great Circle route.
- A rhumb line creates a loxodromic spiral path.
- Usually plotted on a cylindrical (Mercator) type projection.

**Calculation of Direction**
- The direction, \( \alpha \), between two points \((x_1, y_1)\) and \((x_2, y_2)\) is given by the following formula:
  \[ \tan \alpha = \frac{(y_1-y_2)}{(x_1-x_2)} \]

**Distance**
- Distance is defined as the spatial separation between points, measured in equal units.
- Distance is always measured in a straight line ("as the crow flies"), which means along arcs of Great Circles.
- Issues related to distance: locational reference systems and projections (in next lectures).

**Types of Distance**

**Physical Distance**
- SI (metric) system: meters (kilometers, millimeters).
- English: feet, inches (39.37"/meter), Miles: statute (5280 feet), nautical mile (6076.1') [1 angular minute on spheroid].
- Speed measures: km/hour, mile/hour, knot = n. mile/hour.

**Functional Distance**
- Elapsed time at varying speeds (isochrones).
- Cost $ basis of locational analysis (economic geography).
- Percentual distances (mental maps).

**Distance Issues**
- Map Reading usually involves measuring distance on flat surface (recall Exercise 1).
- Overland distance will be more than straight line distance (when compensating for slope).
- Projections may distort distances, but most do it predictably.
- Distances on the spheroid and ellipsoid are more complicated, but feasible by computer.
- Making the assumption that the map is a flat plane helps in measurements.

**Calculation of Distance**
- The distance, \( d \), between two points in a plane is given by the following formula where \((x_1, y_1)\) and \((x_2, y_2)\) are locations of two points in a Cartesian plane:
  \[ d = \sqrt{(x_1-x_2)^2 + (y_1-y_2)^2} \]
Exercise 2: Mental Maps

Take-Home Exercise

This exercise is intended to show you the process of delineating a mental map and see how a mental representation of space compares to the "real world". The exercise should not take more than an hour to complete, but generally there is no time limit.

Mental maps develop in our minds over time by the accumulation of many sensory inputs, including printed/digital maps. They represent our understanding of geographic and perceptual space and often times, they are more useful to us than a printed map. This is due to the fact that the mental maps in our minds are devoid of high levels of symbolic abstraction – they make sense to us because we are the sole builders and users of them. However, more often than not, the mental map is a subconscious creation – it lies beneath the surface of our actions and exists to guide our navigation and sense of place. It is usually not something we visually or consciously refer to when trying to move through space.

In this exercise, you will attempt to “draw out” your mental map of a couple of geographic areas. It is very important to follow these rules when making your mental maps:

1. Do NOT use any printed map, chart, or other geographic references (unless asked to do so)
2. Do NOT use any rulers, protractors, or other measurement devices!
3. Draw the map in pencil, but try to minimize the amount of corrections to your map
4. You can use colors and other embellishments as you desire.

Mental Map #1: Puget Sound

On an 8.5x11" piece of blank paper, draw your mental map of the Puget Sound region. Include whatever features you feel are relevant to the image – there is no right or wrong answer. You can add as much as or little detail as you wish, but try to make it as complete as you feel comfortable with.

When your map is finished, find a printed map of the Puget Sound area and then answer these questions:

1. What are your overall impressions when comparing your map to the printed map? Is there anything significant on your map that shows up – any patterns, emphasized features, etc.?

Mental Map #2: Your World

On an 8.5x11" piece of blank paper, draw a mental map of your world, meaning, the places that you typically occupy from day to day, or week to week, etc. It can be as simple as including home and work, or add as much as is relevant, such as golf courses, health clubs, entertainment, relatives, schools, favorite vacation spots etc., etc. The scale is entirely dependent on what you feel is appropriate to describe your geographic existence.
Week 4
Geographic Reference Systems and Projections
Geographical Data
Sources of Geographic Data
Air Photography & Remote Sensing

Geographic Reference Systems

Resources:
- Flattening the Earth, John P. Snyder, University of Chicago Press, 1993.

- Geographic (aka locational) reference systems assist in map reading and map analysis
- Different systems have different purposes and permit different tasks
- The concept of Distance and Direction are important for locations
- Geographic reference systems have some fundamental differences
- All reference systems must have some starting point. On earth, it’s the axis of rotation (N/S poles) and the measured movement of the earth around the sun
- The occurrence of the solstices and equinoxes relate to reference systems

Two basic concepts of locational reference:
1. Concrete: topological, based on place names and relative motion
2. Abstract: based on mathematical coordinates (i.e. grid)

Two basic systems of abstract reference:
1. Geographical “Grid”: older system, uses latitude and longitude, based on spherical model, uses natural reference points
2. Plane coordinates: uses Cartesian coordinates on a plane, useful for military/civil engineering

We will primarily consider the use of Geographic Grid coordinates (Latitude and Longitude)
- Advantages: connected to the true shape of earth
- Disadvantages: requires non-trivial trigonometry for calculations

Geographic Coordinate System

Latitude
- Location in a north-south position: the angle North (or South) of Equator along a meridian
- Discovered in ancient times, measuring angle to the star Polaris in northern hemisphere
- Lines of latitude are also known as “parallels” - because they are parallel to one another
- Measurement: Equator is 0°
  North pole is 90° North
  South pole is 90° South
- Degrees of latitude are roughly the same distance apart (60 miles), but changes occur due to irregular shape of the earth (68.7 mi. at equator, 69.4 mi. near poles)
- Special lines of latitude:
  Equator: Bisects the earth into two equal parts, 90°angle sunlight on the equinox
  Tropic of Cancer: Northernmost extent of 90° sunlight (on June solstice)
  Tropic of Capricorn: Southernmost extent of 90° sunlight (on December solstice)
Longitude

- Location in an east-west position: the angle East (or West) of the Prime Meridian
- Measured relatively recently through the invention of accurate chronometers (Harrison)
- Lines of longitude are also known as “meridians”; an infinite number of Great Circles
- Measurement: Prime Meridian is 0°
  International Date Line is 180° (with deviations)
- Distance between degrees of longitude decreases towards the poles (69.1 miles at the equator, 53 miles at 50° N/S, 12 miles at 80° N/S)
- Special lines of longitude:
  - Prime Meridian: Runs through Greenwich, UK (due to 1884 agreement)
  - International Date Line: opposite of Prime Meridian, deviates for political reasons

Plane Coordinate Systems

- These are based on local projections, on a mathematical plane with no reference points
- Analytical measures (distance, direction, area) are calculated from simple formulas based on a plane - not a sphere
- Adequate for local (not global) usage

Universal Transverse Mercator (UTM)

- A widely adopted projection system for military and topographic maps, satellite imagery, and other fields requiring precise positioning
- Earth is divided up between 84° N and 80° S latitude into 6° of longitude wide columns

State Plane Systems

- An adaptation of the UTM or conic projections to a local area
- U.S. Coast and Geodetic Survey (now the National Ocean Survey) worked out a system of baselines and meridians, a patchwork of local zones
- Public Land Survey System (PLSS) is a widely adopted system in the US, first introduced by Thomas Jefferson in 1785.
- In PLSS, land sections are described in reference to the regional baseline and meridian, tiers and ranges, and townships

Other Systems

- Individual states maintain their own coordinate systems as well, but usually based on PLSS system
- Individual countries often establish a similar plane coordinate system

Map Projections

A projection is a geometric transformation from a spherical surface to a planar (flat) surface

- A globe provides the most accurate representation of the earth, but is not practical for many purposes (although pocket globes existed in the 17th and 18th centuries)
- Projections come in many different types, all with different forms of distortion
- The primary distinction among projections: type of developable surface employed
- The type of projection chosen is closely tied to the overall purpose of the map

Types of Distortions

- Regardless of the system used, geometrical relationships on the sphere cannot be completely duplicated on a plane
- Angles, areas, and directions on the sphere will be distorted to some degree, depending on the type of projection (i.e., the sphere is squashed flat - the goal is to direct how the squashing is done)
- A projected map can show one or more - but not all - of the following: true shape, true area, true distance, and true direction
Conformal
- Means that angular relationships have been maintained
- This achieves true shape in geographic features

Equal-area (aka Equivalent)
- Means that area relationships have been maintained
- This achieves true area for an accurate comparison

Equidistant
- Means that accurate distances can be measured
- This achieves true distance - but only along certain lines or radiating from certain points

Azimuthal
- Means that proper direction from one point to another point is maintained
- This achieves true direction but only in limited areas or radiating from one or two points (maximum)

Types of Developable Surfaces
There are generally three geometric, "developable" surfaces which are employed in map projections: cylinder, cone, and a plane. There is also one non-geometric - the pseudo-cylinder.

Cylinder (Cylindrical)
- Cylinder is tangent to the globe along a Great Circle
- Distortion increases away from the tangent line(s)
- Examples: Mercator, UTM, Miller

Cone (Conic)
- Cone is tangent to the globe along a circle smaller than a Great Circle
- Distortion increases away from the tangent line(s)
- Examples: Albers Equal-Area, Lambert Conformal

Plane (Azimuthal)
- Plane is tangent to the globe at a single point, or at a circle smaller than a Great Circle
- Distortion increases away from the tangent point and line
- Examples: Orthographic, Azimuthal Equidistant, Gnomonic

Pseudo Cylindrical
- These are cylindrical-like but are not based on a true geometric surface
- These are often mathematically produced with complex calculations
- Distortion is not uniform or predictable - varies across the surface
- Examples: Robinson, Sinusoidal Equal Area

These developable surfaces can be oriented in various ways:
1. Regular (perpendicular to the plane of the equator)
2. Transverse (perpendicular to any meridian's Great Circle plane)
3. Oblique (non-90° angle to either axis)

Geographical Data and Sources
Fundamental questions:
- Where did the information come from? Which country? State? Organization?
- What methods were used to gather the information? Process it? Disseminate it?
- What sources are more reliable than others?
Many maps are compiled from other maps
- Some maps are completely new, but the act of compiling from other map sources goes back many centuries (e.g., Ptolemy’s Geography was copied many times over for over a millennium)
- Compilation is generally accepted, much like doing a research paper, but issues of copyright and proprietary data come into play

**Forms of Acquisition**

**Ground Survey**
- Surveying is an ancient art (“the world’s second oldest profession”)
- Based on trigonometry, decomposition of space into triangles (traverses)
- Dead Reckoning (transect): using simple bearing and distance
  - Errors can accumulate, no redundancy to cross-check
- Measures the path followed (up and down)
- Triangulation: measures angles
  - Requires one baseline distance
- Must take care to get horizontal angles, not vertical
- Trilateration: measures distances (using laser ranging)
  - Increased accuracy, but more complicated for vertical angles
- Modern “total station” surveying measures angles and distances in full three dimensions – basically it’s a computer on a tripod
- Global Positioning Satellites (GPS)
  - NavStar GPS array has revolutionized ground surveying techniques
  - Consists of 24 satellites providing global coverage, 24 hours/7 days
  - “Select Availability” prevents public from using full accuracy of GPS - reserved for military use
  - Check out this link for a Jim Lehrer report on GPS:

**Remote Sensing**
- Refers to any remote data collection system: aircraft, spacecraft, etc.
- Air Photography
  - Camera and film carried by some type of airborne craft
  - Earliest form was photographs taken from balloons
  - Captures an image with many angles and distances
  - Must be carefully measured to account for camera distortions and effects of relief of ground
  - Also must be interpreted to detect objects of interest, or to measure the phenomenon of interest (air photo interpretation is a big field)
- Digital Imagery
  - Usually from spacecraft such as satellites (Eosat, Landsat, etc.) or special probes (e.g., Mars Pathfinder, Galileo, etc.)
  - Captures images by measuring different parts of the electromagnetic spectrum - including visible. This provides a tremendous amount of information
  - Requires a lot of interpretation (often automated or semi-automated)
  - Methods of acquisition and interpretation of satellite data have also revolutionized cartography in the past 5-10 years
Week 5
Interpreting Physical Geography
Landform Portrayal
Topographic Interpretation

Landform Portrayal

Resources: Maps for America, 3rd edition, USGS Publication.

- Direction and Distance, along with Coordinate Systems, help show the horizontal dimensions on a map, but equally important is the third dimension: vertical.
- Depiction of a continuous surface presents a special challenge, and a special case is landforms.
- Continuous attribute: there is a value of elevation for every spot on the ground. It is tangible. Each value (elevation) is usually (except for overhanging cliffs) closely related to the nearby elevations.
- Planimetric maps ignore the need for vertical information; are useful in flat areas or when relief is not important. Topographic maps (aka landform maps) include vertical information.

History of Relief Methods
- Older maps concentrated on extremes - showing only the main ridges, etc. (caterpillar type)
- Relief was highly stylized as basic hills and mountains: oblique perspective
- As techniques and knowledge improved in the 15th-18th centuries, cartographers had factual information to use for their relief representation - not just estimates
- Topographic representation moved from oblique to plan views
- The hachure technique was introduced in the 19th century
- Hill shading and the use of contour lines came later and are the primary methods used

Two Basic Methods of Showing Relief
- Relative: concerned with local range of elevation for practical uses; basic “up-down” concept
- Absolute: concerned with precise elevations measured from a datum for engineering and scientific uses

Exaggeration: The factor by which the scale in the vertical direction is greater than the scale in the horizontal direction.

1X  
2X  
3X  

Relative Relief Methods
Relief Globes
- The globe provides the most accurate representation of the horizontal features
- However, due to disparity in earth size (7900 mile diameter) and maximum vertical displacement on earth (12 miles), the vertical dimension is greatly exaggerated
- Typical exaggeration is 20:1 on relief globes

Relief Models
- Exaggeration can be minimized by using a portion of the globe, a local model - thus relief is more accurate
- Discrete relief model: uses stepped elevations, a layered effect
- Continuous relief model: a smooth surface - provides the best representation
Raised relief model: start with an ordinary flat map (plastic) and mold it into a 3-D model
Disadvantages of raised relief: thermally molded plastic, can’t respond to all elevation changes, also hard to store, is rigid, and expensive to produce

Photographs
Properly lighted aerial photographs can provide realistic relief (but they’re not ‘maps’)
The drawback is that it is a flat perspective - if the captured shadows are not right, depth is hard to perceive
Stereophotos are the most effective relief method (using a stereopair)
Stereovision drawback is that it must be used with small areas

Block Diagrams
Usually applied to smaller areas of the earth
Analogous to the 3-D relief models, but these are drawn - they are 2-D
Blocks can be discrete or continuous; vertical scale is exaggerated 3:1 or more
This is widely-used technique; common in geology, emphasizes structure

Stylized Drawings
This is the oldest relief portrayal technique
Employ styilized relief elements such as hills, caterpillars, etc.
Profile and oblique views are more intuitive and appealing than plan views

Hachures
This was a refinement of the caterpillar technique; a symbolism for direction and magnitude of slope
When done properly, hachures can show degree of slope, manipulating orientation and thickness
Generally, the hachure thickness increases when slope is greater; or - hachures are closer together and more numerous in steep slopes

Shading (aka Hill Shading)
Shading is the most widely-used technique today
Two primary types:
1. Step surface shading (hypsometric tints)
2. Continuous shading
Oblique illumination: typical illusion of light from the Northwest (unnatural, but it works)
Hypsomeric tints: classify height, hue or value by classes with certain interval

Composites
This is the combination of two or more of the techniques above
Most common is a form of hill shading with hachures

Absolute Relief Methods
Methods requiring absolute measurements make use of defined, measured reference surfaces
Datum: Any level, surface, line, or point used as a reference for measurement of another quantity. For elevation, it’s the 0 elevation base level
Many kinds of datums. Example: Mean Sea Level (MSL), Mean Low Water (MLW). MSL is typically favored.

Relief Models
These are possible but highly impractical for measuring absolute relief, due to imprecision, etc.

Spot Heights
A very straightforward approach: print known elevations at their location
Spot heights are used on land, soundings (spot depths) for underwater
Drawback is that spot heights are a discrete representation for a continuous phenomenon
Contour Lines
- By far the most widely-used relief method used by surveys worldwide
- The ideal representation would show elevation as continuous; contours can do that
- Contour lines represent a line of equal elevation
- Contour interval: the difference of elevation between adjacent contour lines - very important to how relief is perceived
- Special contour lines exist for other purposes: depressions, indexing, etc.

Composites
- Various methods above are often combined
- Spot heights used along with contour lines is very common; also with hill shading

Interpreting Physical Geography
- Maps provide graphic demonstration of the processes that shape the landscape
- When properly trained, cartographers can emphasize or de-emphasize a particular aspect of the physical geography

Topographic maps show variations in relief caused by:
- Geological processes
- Plate tectonics and continental drift
  - Orogeny (mountain building), faults, folds
  - Glaciers, melt waters
- Atmospheric processes
  - Precipitation patterns (e.g. rain shadow effects of Olympics and Cascades)
- Hydrological processes
  - Stream types (perennial, seasonal, braided, desert washes)
  - Drainage patterns: dendritic, parallel, trellis, rectangular, radial, meandering, karst,glacial
- Ocean currents
  - Gulf Stream (warm), Japan Current (cold); (great impact on ocean temperature and climate)

Other physical geography portrayed on maps:
- Flora (Vegetation)
  - general plant hardiness maps
  - specific forest stand maps, wetlands, land cover
- Fauna
  - Animal distributions, migrations, home ranges
- Soil
  - A combination of geology, climate and vegetation
Exercise 3: Map Design and Composition
In-Class Exercise

The following exercise is designed to require no more than 60 minutes for completion. You are a cartographer and have been handed a certain set of information that needs to be turned into a final map product. Consider the information below, answer the questions appropriately, and then try your hand at a map composition on the reverse. Please turn in to the instructor when finished (by the end of class).

Map Request: The ChopTech corporation wants to propose the construction of their new ChopTech lumber mills to the Government of Canada. The company wants a map of Canada showing the distribution of timber forests in 1997 across province boundaries and their relationship to the 8 existing timber mills and the 5 planned ChopTech mills. Four of the existing timber mills are high capacity mills, the other four are low capacity. The 5 ChopTech mills are a special multi-capacity mill. In addition, they would like to show the current road and rail network near the existing and planned mills and the major cities.

1. Identify the cartographic elements, based on the above request:

<table>
<thead>
<tr>
<th>Object Type</th>
<th>Data Type</th>
<th>Discrete/Cont.?</th>
<th>Basic Description</th>
</tr>
</thead>
</table>

2. Using the Sinton space, theme, time concept (6/30/98 lecture):

What is being Fixed?  

What is being Controlled?  

What is being Measured?
3. Circle the basemap that would be most appropriate for your map:

4. Using the cartographic elements you identified in question #1, describe the symbology you might employ for each element:

<table>
<thead>
<tr>
<th>Carto. Element</th>
<th>Symbol Type</th>
<th>Main Graphic Element(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. What would be an appropriate **title** for this map?
Reference Maps (to be used for compilation)

Timber Forests (1997)
Source: Natural Resources Canada

Timber Mills
Source: ChopTec
- □ = Low Capacity
- ○ = ChopTec mills
- △ = High capacity
6. Using the information from the previous questions, and the provided reference maps, roughly sketch out your proposed map design. Make sure to include the following elements: Title, Scale, Orientation, Legend, Author, and Source(s). This does NOT have to be a perfect drawing - the main idea is to place all the proper cartographic elements into a visually balanced presentation. Make a thumbnail sketch - you're not being graded on artistic ability only on your choice of placement and visual balance. You can orient the map any way you wish inside the frame below. [Editor's note: in the actual assignment, this frame was a full blank page]

The long awaited, at least for us in the Islands, third edition of the *Atlas of Hawai‘i* appeared just before Christmas; what a wonderful gift from Santa and his *menehunes*. It is more than a new edition, there was a major overhaul, made possible in large part by the advancements of computerized cartography since the appearance of the second edition in 1983. The atlas is significantly larger and heavier, actually square instead of landscape format which allows for some larger scale maps.

The users of this atlas had been spoiled into assuming that new editions would appear soon after new census data were released every decade. After the 1990 census data appeared I was disappointed to hear that the University of Hawai‘i at Manoa Geography Department and the atlas’s editor Dr. Warwick Armstrong were not interested in working up a new edition. Thankfully, the Geography Department of the Hilo campus took steps to lead to the development of the third edition. The new team of eighty contributors draws on many of the same experts from previous editions, mostly affiliated with the University of Hawai‘i system. While this obviously expands the breadth of expertise, it does allow for some individual biases to influence the presentation of various topics.

There are 39 chapters arranged in five themes: reference maps, the physical environment, the biotic environment, the cultural environment, and the social environment, with four important appendices: statistical tables, references, sources, and gazetteer. Each chapter is signed by one or more contributors and presents a succinct description of the topic with text and illustrations as well as maps, including relevant sidebars. There is more verbal description than in most state atlases, almost like a geography text, and the information is often more technical that usually seen in state atlases. In this regard the *Atlas of Hawai‘i* is much more than just a bound collection of maps but is an encyclopedia of Hawaiian geography. It takes my other favorite geographical works on Hawai‘i, *Islands In a Far Sea* by John Culliney, Sierra Club Books, 1988, and *Hawai‘i: a Unique Geography* by Joseph Morgan, Bess Press, 1996, and adds lots of neat maps and graphics.

In the preface the Juvik’s state that changes in the format and content of the atlas were influenced by the results of seven hundred questionnaires sent out to users. One of the first noticeable changes is in the reference maps. I felt the commercial cartography of Hawai‘i needed to be judged against the standard of James Bier of the University of Illinois at Urbana-Champaign, who was the cartographer for the earlier editions and publisher of the most popular general maps of the Islands. One of the most admirable features of his maps was the plethora of place names using the diacritics of proper Hawaiian pronunciation based on Place...
Names of Hawai‘i by Mary Pukui, Samuel Elbert, and Esther Mo‘okini, University of Hawai‘i Press, 1974. Thomas Paradise has wisely maintained this feature while switching the design of the maps from the familiar green with white contours to light gray shaded relief. The urban insets appear based on USGS 100k mapping. Bier and Paradise always choose to include an inset of affluent East Honolulu but not of the more populous, but relatively plebeian Ewa district. And they fail to include again one of my favorite towns, Waiau (ICamuela) on the Big Island, which is much larger and easier to make a significant wrong turn in than Na‘alehu and Pahala. They also slight my village, La‘ie, on page 8 by giving it a population smaller than it deserves and giving the residential neighborhood of Pupukea one larger than it warrants.

The index of topographic maps on page 31 fails to show the switch made in using five quadrangles to cover Moloka‘i in 1968 to two large sheets in 1983. A few sections do not even include a single map to show distributions of their topic. The section on libraries could at least show where libraries were located and grade them by size and purpose. It would have helped to answer reference questions I’ve had recently to see the distributions of income and crime by district. And surely there were relevant maps that would help illustrate the history of Hawai‘i such as traditional use of land in the pre-contact period, the distribution of lands in the mahele or the historical extent of plantation agriculture with railroads and ports.

I’m sure the list of minor oversights could go on, but this should in no way overshadow the monumental effort made to compile into one beautiful volume information on basically almost anything you ever wanted to know about Hawai‘i.

Hawai‘i has an aura and perception throughout the world that sets it apart. This atlas is a significant description of a unique isolated island environment and the human impacts that have changed and molded it for good and ill. It belongs in every collection as the core source of information on Hawai‘i.

Riley Moffat
Head of Reference
Brigham Young University - Hawai‘i
Laie, Hawai‘i


In 1984 the University of New Mexico Press released a landmark study by James C. Martin & Robert Sidney Martin called Maps of Texas and the Southwest, 1513-1900. Though having a “coffe table book” look, it was far from it. Each of their fifty selected maps was accompanied by a scholarly facing-page description that placed the map in its historical context, noted the gains in geographic understanding that the map represents, and told us something about its creator and/or publisher. These profiles have stood the test of time and consequently the demand for the book has lasted beyond its initial printing. So influential has this pioneering work become that “Martin & Martin” is now a standard citation for map dealers the world over.

After being out of print for fifteen years, Maps of Texas and the Southwest has been reissued by the Texas State Historical Association (TSHA) in a handsome edition that actually is better and more attractive than the first printing. It has eight new color plates in addition to the nine in the first edition. The fifty black and white images are darker in the new edition—in most cases an improvement as the legends and place names on the maps are now easier to read. The text for the introductory chapters and plate section is unchanged; no corrections were made or updated information added. This includes the final chapter “Suggestions for Further Reading.”

Instead, Martin & Martin have written a new preface in which some of the important developments and cartographic studies released since 1984 are mentioned. The authors also explain the reason why revisions were not made to their text, mainly the cost involved in resetting type. Considering the affordable price for such a beautiful book, one cannot quibble with this decision. What we have is the reissue of an out-of-print classic, its information still highly useful to students of Texas mapping, with the bonus of eight new color plates. These include the maps of Münster (1550), Coronelli (1688), Robinson (1819), Bradford (1835), Arrowsmith (1841), and Colton (1854).

For anyone interested in the cartography of Texas and the Southwest, this volume is the place to start. It represents an indispensable
guide to the subject by two of the most respected scholars in the field. The TSHA is to be commended for the design and production of the book, comparable in all ways to the lavish initial printing. While Mexico in recent years has issued a number of beautiful books devoted to its cartographic history, few states in North America are fortunate enough to have such a price-accessible and comprehensive volume to their credit as *Maps of Texas and the Southwest*.

It is highly recommended by this reviewer; no library, public or personal, should be without a copy.

Jack Jackson
Austin, Texas


*The Myth of Continents: A Critique of Metageography* is a historical examination of the various schemes that we use to divide the World into regions. In six chapters, the authors describe the history behind the various geographical regions that we have learned about through our education and experience, including continental divisions, ideological divisions (East and West, Orient and Occident and First, Second, and Third World), as well as the various world regions that are predominant in area studies, which were developed after World War II by a committee that did not include a geographer. In many cases the criteria used to define these basic regions are inconsistent; some of the familiar regions are based on physical geography, while others exist because of an inherited, historical view of the world. In some cases, the world divisions we use are no longer valid because of political events, such as the break up of the Soviet Union, that have occurred during the last 10 years. One chapter discusses our world view, which is decidedly Eurocentric, how it developed, and alternatives to this view. In addition, the authors develop their own, alternative, view of how the world should be divided. Finally, the book concludes with a list of ten issues that must be confronted by cartographers, educators and librarians who deal with world divisions.

This book is meant to be a survey of the various concepts that are used to divide the World. As such, it presents a considerable amount of material on world regions and their development. It is primarily text and deals with geography and geographical concepts rather than maps. Only 11 illustrations, mostly maps of world regions, are included.

*The Myth of Continents* would be useful to both geography and map librarians, who must sometimes answer questions about world divisions, such as the concept of continents and our definition of Europe and Asia as two continents, which is part of our inherited world view. It also contains over 120 pages of references on the topic of metageography and world regions. This book should be read by map librarians and catalogers, because it will help them understand the history behind the familiar regions in the Library of Congress G classification schedule and world regions in general. If and when the G schedule is finally revised, the people working on the revision should spend some time reading and contemplating the ideas presented in this book, as they will find some useful information that can be used to develop alternative ideas on how to divide the world, not to mention continents and countries. This book is recommended for college and university libraries, especially those supporting geography, area studies and history programs.

Linda Zellmer
Arizona State University Libraries' Map Collection


Presented at the Newberry Library in Chicago in 1991, these six lectures originated as the tenth series of the Kenneth J. Nebenzahl, Jr. Lectures in the History of Cartography. *Envisioning the City* consists of distinct essays exploring how the urban view has been expressed in city plans from various times and places. While a “map” can be defined as a “representation of a totality (p. xxii),” town plans actually include vertical, bird’s-eye, profile, and model views, many of which are works of art. The drawing of these maps not only served a planning role, but was also used to represent the ideal view of the city, to visualize potential military fortifications, and to show the power and status of a ruler.

The academic and scholarly essays feature urban cartography in a
number of geographic areas, easily seen in the titles of the chapters: “Mapping the Chinese City: The Image and the Reality” by Nancy Shatzman Steinhardt; “Mapping the City: Ptolemy’s Geography in the Renaissance” by Naomi Miller; “Urbs and Civitas in Sixteenth- and Seventeenth-Century Spain” by Richard L. Kagan; “Military Architecture and Cartography in the Design of the Early Modern City” by Martha Pollak; “Modeling Cities in Early Modern Europe” by David Buisseret; and “The Plan of Chicago” by Daniel H. Burnham and Edward H. Bennett. Cartographic and Historical Perspectives” by Gerald A. Danzer. An attempt has been made in each selection to tie the city plans to the history and cultural development of the area. The studies, which generally consist of 30-40 pages of text, are accompanied by numerous black and white reproductions of maps, city plans, and line drawings. The sizes of the illustrations have been reduced so that much of the detail and beauty of the originals has been lost. Each lecture concludes with an extensive list of useful bibliographical references. There is a five-page index to the entire volume. In addition, brief biographical information on the six contributors is provided.

Taken collectively these essays are in-depth studies of city plans on a topic rarely covered by cartographers. The audience for the lectures is historians of cartography, architects, urban planners, and map connoisseurs. The studies are well researched, and the overall content is excellent. However, the esoteric nature of the topic, which primarily covers the development of ancient city plans, limits the book’s audience to specialists in the field. The only presentation with broad appeal is the Gerald A. Danzer piece on the Plan of Chicago. This small and expensive book is best suited for a history of cartography, geography, architecture, or urban planning collection not necessarily a general collection on mapping.

Yvonne Wilson
Government Information Dept.
University of California, Irvine

Cullius, Mary Rose. The Aerial Photo Sourcebook.
197 p. $45.00. LC: 98-30428
ISBN: 0-8108-3519-3

The goal of this book is to “be a centralized clearinghouse of information about and sources of U.S. aerial photography and a handy reference tool for the novice as well as the veteran aerial photo analyst.” It focuses on U.S. aerial photography but does make occasional note of foreign sources. Of the 197 pages, the first 39 are text and figures, and the remainder is comprised of lists of sources for aerial photography and appendices.

The book is divided into five chapters followed by an extensive bibliography of aerial photography. The bibliography includes over “800 citations of books, articles, pamphlets, and documents in forty subject areas.” With the exception of 3 citations, all are prior to 1995. The publication also includes a glossary, list of acronyms, and list of journals.

The first chapter defines aerial photography, describes the value of it, and provides examples of aerial photography applications. The examples are divided by subject; i.e. Agriculture, Banking, Environment, Insurance, etc. Chapter 2 provides thirteen pages of “basics” for interpreting aerial photography. The basics include information on types of photos, format, scale, principles of interpretation, tools, map skills, and stereo viewing. Chapter 3 takes a closer look at acquiring aerial photographs from the U.S. Government. Agencies included are: U.S. Geological Survey, U.S. Department of Agriculture, Tennessee Valley Authority, National Ocean Service, National Archives and Records Administration, and the Library of Congress. Chapter 4 provides names, addresses, phone numbers, fax numbers, and numbers of photo holdings of non-commercial State and Regional Aerial Photo Sources. Some of the sources listed are federal agencies. And finally, Chapter 5 lists commercial sources of Aerial Photography.

The book fills a need for a current publication on aerial photo sources. It is an admirable effort and the lists of agencies and bibliography are particularly useful. The book is relevant to all map librarians, neatly organized, and useful. The lack of indexing does not detract from the publication. The quality of printing and binding is good.

The author nicely demonstrates many potential applications of aerial photography and her enthusiasm for the medium is apparent. I appreciated the comments at the beginning of Chapter 4, especially the one that “Libraries usually do not sell copies of their aerial photographs.” How-
ever, in our Map Library, we are allowing patrons to scan the images (unless they are copyrighted), which is a nice alternative to purchasing the photos. (It is recognized that scanning images also presents problems for the user, with file formats and applications).

There are significant weaknesses in the book. Two of the weakest components are the text and the graphics in both Chapters 2 and 3. There are some troublesome problems with the graphics and examples used in Chapter 2. Figures are not listed separately or necessarily referred to in the text. Figures 2.1 and 2.2 are mislabeled; the vertical photograph is identified as oblique and the oblique as a vertical. In Figures 2.5 and 2.6, examples are provided of different scale photos of West Lafayette, Indiana. It would have been helpful to identify or outline a particular area on the air photos for easier comparison.

In addition, images are reduced to the point where they are sometimes ineffective in displaying what the author intended. Figures 2.10 and 2.11 showing an orthophotoquad and land use/land cover map are difficult to compare due to their reduced scale for publication. Presenting them at a larger scale and including a smaller area might have been more effective in comparing photo detail/content to map detail/content. Figure 2.12 shows a stereo pair illustrated in one continuous image, making it difficult for a novice to understand. Other books that illustrate stereo viewing have a line or white space separating the two images making it much easier for the user to comprehend.

I also had problems with the definition of scale as provided on page 10. “The map with a small scale of 1:600...” and “...if you have a large scale of 1:20,000...” are confusing when we consider that 1:600 is actually a larger scale than 1:20,000. On page 16, the author notes that “the best map to use with an aerial photo is one that matches the scale of the aerial photo” and indicates the value of the 7.5 minute topographic maps for most aerial photography. The author continues with “but if your photo’s scale is 1:68,000 you may need a larger-scale map.” The statement should have read “smaller-scale map”. On page 25, the author states that “NAPP photography is generally the most recent aerial photography the government has to offer.” That may be true of the federal government but not necessarily of state governments.

On page 16, the author recommends making an overlay using acetate and a felt tip pen. Some map librarians might not like their aerial photos used as a base for making overlays – even with a felt tip pen. Indentations on the photos occur easily. In this day and age of technology, the preferred method might be to scan the photo then make an overlay using various software packages or use a print of the scanned image to make an overlay.

On page 17, the author refers to U.S.G.S. orthophotoquads but does not define them. Figure 3.9 provides an example of a Department of Agriculture county index (a graphic photo index) that would have been better depicted at a larger scale so that the reader could discern individual photo numbers and flight identification information.

The author might have expanded on the value of historical aerial photos in temporal studies. Our collection of aerial photos is heavily used, primarily for studying changes over time. The sequence of older photos is especially invaluable.

The Internet is virtually ignored as a source for aerial photographs, yet many are available to download free of charge. It should have been mentioned with at least a few pointers to get folks started.

Depth and currency of the publication might be improved. I felt that much more detail could have been provided on interpretation within Chapter 2. Within Chapter 3, major U.S. government agencies that hold aerial photographs are identified. Although ordering and purchasing information is provided for U.S.G.S. and NOS, nowhere does it indicate that it is possible to order aerial photography from National Archives.

[Reviewer note: In recent years, National Archives has switched to contracting out the reproduction of their historical photos. As part of that, there has been a significant increase in cost per photo from approximately $6.00 per photo to $15.00 - $25.00 per photo.]

Two of the most difficult areas to keep current in publications are addresses and phone numbers, which is certainly true for this publication. The collection I am in charge of is listed as being under the Department of Geography and Regional Planning which hasn’t been the case since 1993. And thanks to cell phones and modems, area codes seem to be changing with increasing frequency, so that many in the book are out of date.
Another area that might have been included is that of the challenges and problems associated with using aerial photographs. An example being distortion issues and the need to rectify air photos for use in geographic information systems. A source I’ve found that does a nice job explaining some of the challenges, problems, and solutions is Phillip and Juliana Muehrcke’s 4th edition of Map Use.

It might have been helpful for the author to identify sources of information used in the book. Under commercial sources, I was unable to discern why significant ones were not listed and insignificant ones were. For example, in Seattle, Walker and Associates, a major source of aerial photography was not listed. None of the companies listed in the Bellingham yellow pages of the phone book under Photography – Aerial were listed. The author listed a company in Bellingham that is not in the yellow pages and no one I know has dealt with. I tried to contact that company via phone and never received a response.

In conclusion, the book is a start but needs significant revision. It is recommended for the bibliography and source addresses. For those who have limited budgets, I would recommend waiting for the next edition.

Janet Collins
Map Librarian
Hexley Map Library
Western Washington University
Bellingham W A 98225-0085

[PS. The author and I aren’t related.]

New Publications


This book is being produced as part of the Sesquicentennial Celebration of our Golden State. Large images of 49 important maps present 500 years of California’s history, showing the role mapping has played in publicizing discoveries and chronicling the impact of regional growth. Included is the first map to show the Baja California peninsula, along with the first English map to show California as an island.

Canadiana: The National Bibliography

Covering the years 1973 to 1997, Canadiana includes records for monographs, serials, theses, microforms, government documents, sheet music and scores, sound recordings, video recordings, CD-ROMs and much more. In addition, Canadiana lists titles published outside Canada that are of special interest because they are about Canadian topics or are written by Canadian authors. Cat. No. SN2-2-1997-MRC ISSN 1480-7378


“Index diagrams are the main source of reference for anyone using Ordnance Survey maps. This volume brings together diagrams for all small-scale maps published since 1801. The text and diagrams identify which sheets were or were not published, guiding the reader through the complexities of incomplete series and changes of sheet lines or specification.”—Book jacket. This is the first time indexes for all Ordnance Survey small-scale maps have been brought together in a single volume. Some have never been published before and some have been drawn for this book. Roger Hellyer is a leading author and authority on Ordnance Survey maps. Review copies are not available outside the UK.

Order from: David Archer, The Pentre, Kerry, Newton, Montgomeryshire SY16 4PD, United Kingdom. Tel: 01686 670548, Fax: 01686 670551, International fax: +44 1686 670551


Although this book was published early last year, there has not been much publicity about it up until now. It is an annotated, illustrated guide to more than 230 literary maps in the collections of the Library’s Geography and Map Division. This is the culmination of a three-year education and reading promotion project funded by a grant to the Center for the Book in the Library of Congress from the Lila Wallace-Reader’s Digest Fund and was inspired by an exhibit of the same name. The book is divided into eight chapters: World literature; Individual regions and countries; Britain; United States; Regions of the United States; Individual states and...
cities; Specific books and authors; and imaginary worlds, folklore, myths, fairy tales, and nursery rhymes. This book includes maps for Ian Fleming's James Bond series, detailed maps of J.R.R. Tolkien's Middle Earth series, and a map of Mark Twain's St. Petersburg, home of Tom Sawyer. The book was compiled by Martha Hopkins of LC's Interpretive Programs Office and Michael Buscher of the Geography and Map Division.

Order from either the Library of Congress Sales Shop or from the Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954; fax 202-512-2250. The GPO stock number is 030-001-00178-4. Credit card orders may be placed with the Library of Congress Sales Shop by calling (202)707-0204.

Index to Cartographic Journal
The British Cartographic Society has published its Index to Volumes 1 to 33 of the Cartographic Journal, covering 1964-96. The 160 pages include a comprehensive subject index and lists of authors and articles. It is not available electronically.

Gizemap. Central Asia map: showing Kazakhstan (South), Kyrgyzstan, Tajikistan, Turkmenistan (East), Uzbekistan. Scale 1:1,750,000. 1999. Printed in Hungary.

ESRI Map Book, Volume 14
The new ESRI Map Book. Volume 14 is available. 1999 ESRI User Conference attendees received a free copy at the conference. Users can purchase a copy from ESRI at the GIS Store http://www.esri.com/gisstore. Users outside the United States should contact their local distributor for information on how to obtain a copy.


Proceedings of the seminar: Free accessibility of geo-information in the Netherlands, the United States and the European Community held on October 2, 1998 at http://www.euronet.nl/users/ravi/proceed210.html

Geolibraries workshop report.
This report was just made available on the Web. It is a summary of a workshop on Geolibraries which was organized last year in Washington, by the Mapping Science Committee of the National Academy of Science. See http://www.map cutting/html/geolibraries/GIS for Everyone
ESRI Press recently published a new book, *GIS for Everyone*, which is intended to introduce people to the many possibilities of GIS technology. The book includes a CD with ArcExplorer, ESRI's free GIS data viewer, and more than 500 MB of data. The book also includes a code to download valuable GIS data for your neighborhood from the companion GIS for Everyone web site. The book may be purchased from the GIS Store at http://www.esri.com/gisstore.

Metadata Primer for Map Librarians available online
The MAGERT “Metadata Primer for Map Librarians” has been updated to reflect new developments in this fast moving field. A link has been added to the OCLC CORC Project, which displays records in both MARC and Dublin Core formats. Also added is a link to Adam Chandler and Dan Foley’s paper discussing a proposed mapping of FGDC into Dublin Core and USMARC.

The URL is http://www.sunysb.edu/libmap/metadata.html


Native Networking: Telecommunications and Information Technology in Indian Country
This spring, the Benton Foundation published its latest report, “Native Networking: Telecommunications and Information Technology in Indian Country,” to provide government policymakers and tribal leaders with essential resources and analysis of important issues facing tribes in the Digital Age. The report addresses critical telecommunications and information technology policy issues, focusing on the interaction between Indian sovereignty and federal and state regulation in a quickly changing policy and practice arena. To see the report online, go to http://www.benton.org/Library/Native/.

Project Drum and Green City Project. San Francisco Green Map: A Guide to Environmentally Responsible Living in the City by the Bay.
[1st ed.] [San Francisco, Calif.: The Project, 1998] Scale [ca. 1:36,000] Free. Send a legal size SASE (33 cents for 1 copy, more for 2 copies) to Project Drum, P.O. Box 31251, San Francisco, CA 94131.

Scenic Byways
A free map entitled Scenic Byways is available from the Federal Highway Administration. You can request a
Periodicals

Arizona Geographic Information Council Newsletter.

Cartographic Journal
v. 36(1); June 1, 1999
Entire issue

Cartographica
v. 35(1&2); Spring 1998
"Foreword: Maps as Mediated Seeing," p. xi.
"What Is It That Is Represented on a Topographical Map?", p. 13
"Relief Representation," p. 55.
"What Kind of Thing is a Map? Not a Globe; Maybe a Picture," p. 25.
"Process as the Subject of Thematic Maps," p. 73.
"Relationships of Thematic Map Signage to the Topographical Base," p. 81.
"Kinds of Thematic Map," p. 89.
"Pictures and Other Non-map Graphics Combined with Maps," p. 113.

Cartography and Geographic Information Science
v. 26(3); July 1, 1999
Entire issue

Current Geographical Publications
The May and June 1999 issues of Current Geographical Publications are now available at http://leardo.lib.uwm.edu/egg

Denver Rocky Mountain News
June 13, 1999
Carley, Nora. "Map Makers Find Shortcut: Computer cuts drafting time in half for local cartographers," p. 9G.

EOM
v. 8(5); June 1, 1999.

Geo World
v. 11(11); November 1, 1998.
"Quick-Take Reviews," p. 70.
v. 11(12); December 1, 1998.
"Quick-Take Reviews," p. 92.
v. 12(1); January 1, 1999.
Strand, Eric J. "Nuts and Bolts - It Takes a Wizard to Create Seamless Air Photo Mosaics," p. 28.
v. 12(3); March 1, 1999.
"The 'G' in GIS - The Quest Continues for Nationwide Land Cover Data," p. 28.
v. 12(5); May 1, 1999.
v. 12(6); June 1, 1999.
v. 12(7); July 1, 1999.

v. 12(8); August 1, 1999.

The Globe
#47; 1998
The entire issue

Information Outlook
v. 3(6); June 1, 1999

International Journal of Geographical Information
v.13(4); June 1, 1999.
Cartwright, W. "Extending the map metaphor using web delivered multimedia," p. 335.

Journal of Geography in Higher Education
July 1999
Parry, Bob. "Finding out about Maps."

Library of Congress Information Bulletin
v. 58(6); June 1, 1999
"Mapmaker, Mapmaker," p. 122.

MappaMundi Magazine
There is a new online monthly magazine called Mappa.Mundi
The Reference Librarian
#64; 1999.

Science
July 30, 1999
“Indian Scientists Question Government Grip on Data”

University of Washington’s
University Week
“Smart Trek Shows You the Way To Go Home”
The Smart Trek web site contains tools for commuters at http://www.smarttrek.org. Real-time freeway speeds, incidents, and traffic e-mail are available, as are transit schedules, ferry queue updates and options on how best to plan your commute to and from work. If the traffic on your normal route is too congested, the site shows alternatives. Within the next several months, real-time traffic information will be available on cell phones, pagers, in your car, as well as on most handheld organizers and computers.

Articles from the European Working Group for Map Curatorship
With permission from K.G. Saur Verlag, Munich, Germany the following articles are published on the homepage of the European Working group for Map curatorship at the address: http://www.konbib.nl/KB/SD/LIBER/intro.htm#art
Three New USGS Fact Sheets Available

Below are some edited USGS fact sheets that are available online in both .pdf and .html formats. These are examples of the USGS fact sheets on many topics found at http://mapping.usgs.gov/msb/isb/pubs/pubslists/index.html

Digital Raster Graphics
Fact sheet 070-99, February 1999

A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey (USGS) topographic map. The scanned image includes all map collateral information. The image inside the map neatline is georeferenced to the surface of the Earth. The DRG can be used to collect, review, and revise other digital data, especially digital line graphs (DLG). When the DRG is combined with other digital products, such as digital orthophoto quadrangles (DOQ) or digital elevation models (DEM), the resulting image provides additional visual detail for the extraction and revision of base cartographic information. The USGS is producing DRG’s of the 1:24,000-, 1:24,000/1:25,000-, 1:63,360- (Alaska), 1:100,000-, and 1:250,000-scale topographic map series.

Most of the DRG’s for the State of California have been produced, in cooperation with the USGS, by Teale Data Center in California. A status map, production specifications, ordering information, and current Teale prices are available by going to the Teale Web site, http://www.gislab.teale.ca.gov/, and clicking on “Digital Raster Graphics.” You can e-mail the list of quadrangles that you are interested in to quads@gislab.teale.ca.gov, or call 916-263-1767 for more information.

DRG’s for parts of Arkansas, Tennessee, North Carolina, South Carolina, Alabama, and Mississippi are being produced by the Tennessee Valley Authority (TVA). Ordering information and current TVA prices are available through the TVA web site: http://www.tva.gov/orgs/gie/maphome.htm.

Specifications
The standard USGS 7.5-minute DRG has the following specifications:
• The source material for a DRG is a USGS topographic paper map.
• The USGS DRG’s are in TIFF 6.0 and use GeoTIFF 0.2 specifications to define a set of TIFF tags. These tags describe all cartographic information associated with the file.
• The map is scanned at a minimum resolution of 250 dots per inch (dpi).
• The digital image is georeferenced to the true ground coordinates of the 2.5-minute grid ticks and projected to the Universal Transverse Mercator (UTM) for projection consistency with USGS DOQ’s and DLG’s. The datum of the source materials is preserved in the DRG.
• If scanned at a finer resolution, the image is resampled to 250 dpi. The image is converted to an 8-bit color image in a compressed TIFF file.
• Color values are standard between DRG quadrangles. The USGS uses up to 13 colors on each DRG. Color values are contained in each TIFF file.

The digital image is accompanied by a metadata file that complies with the Federal Geographic Data Committee’s Content Standards for Digital Geospatial Metadata (June 8, 1994).

Obtaining DRG’s from the USGS
The USGS distributes DRG’s on Compact Disc-Recordable (CD-R) medium. DRG orders are filled on demand, and any combination of quadrangles may be ordered. There is a base charge of $45.00 per order, plus $3.50 for shipping, and $1.00 for each DRG quadrangle purchased. Sale of DRG’s in fixed 1-degree blocks was discontinued on October 1, 1998.

Producing a DRG
Four items are needed to produce a DRG of a 7.5-minute topographic map:
1 - a USGS topographic map,
2 - the UTM coordinates of the sixteen 2.5-minute grid ticks for georeferencing and rectification,
3 - a digital image produced by scanning a USGS map on a high-resolution scanner, and
4 - software to correct distortion and reference the scanned raster image to ground coordinates.
At the USGS, the first step in the process is to scan a 7.5-minute topographic paper map at 250 dpi. The position of each of the sixteen 2.5-minute grid ticks on the image is collected. Software uses these coordinates to rectify and georeference the image to the UTM ground coordinates. A bilinear transformation completes the georeferencing. The image is compressed using lossless compression to reduce the size of the data set. The final result is a compressed TIFF 6.0 file. The file size ranges from 5 to 15 megabytes.

**Attribute and Positional Accuracy Requirements**

The DRG uses a standard palette to ensure uniform color throughout a particular map series. The red-green-blue values for a particular color, therefore, will remain consistent throughout that DRG series. Although the color values of the DRG may sometimes match those of the paper source map, a user will usually notice small differences between the colors on the digital image and on the paper map. Also, the quality of the user’s monitor affects the DRG color displayed. Although the DRG generally contains the complete content of the source map, features may occasionally be blurred because of substandard source materials. The DRG also may contain misclassified pixels (color noise).

The horizontal positional accuracy of the DRG matches the accuracy of the published source map. To be consistent with other USGS digital data, the image is cast on the UTM projection and will, therefore, not always be consistent with the credit note on the image collar. Only the area inside the map neatline is georeferenced, so minor distortion of the text may occur in the map collar.

The distributed 1:24,000-scale DRG at 250 dpi will have a ground sample distance of 2.4 meters (8 feet).

**Uses of a DRG**

The DRG is useful as a backdrop onto which other digital data can be overlaid. At the USGS, the DRG is used for validating DLG’s and for DLG data collection. The DRG can help assess the completeness of digital data from other mapping agencies. It can also be used to produce “hybrid” products. These include combined DRG’s and DOQ’s for revising and collecting digital data, DRG’s and DEM’s for creating shaded-relief DRG’s, and combinations of DRG, DOQ, and DLG data. Although a standard DRG is an effective mapping tool, its full potential for digital production is realized in combination with other digital data.

**Information**

Detailed information about DRG’s, including technical standards for DRG’s and GeoTIFF, DRG viewing software, status and availability, and the DRG program, is available on the World Wide Web at: http://mcmcweb.er.usgs.gov/drg

For technical information specific to the use of the DRG data on CD-R, contact:

Rolla-ESIC

U.S. Geological Survey
1400 Independence Rd., MS 231
Rolla, MO 65401-2602
Telephone 573-308-3500
Fax 573-308-3615
E-mail: mcmc2esic@usgs.gov

For information about cost-sharing with the USGS, contact:

DRG Program Manager

U.S. Geological Survey
1400 Independence Rd., MS 234
Rolla, MO 65401-2602
Telephone 573-308-3702
Fax 573-308-3652
E-mail: drg_pm@usgs.gov

For information on other USGS products and services, call 1-888-ASK-USGS, or use the EARTHFAAX fax-on-demand system, which is available 24 hours a day at 703-648-4888.

Please visit the USGS home page at http://www.usgs.gov.
Educational Materials from the U.S. Geological Survey
Fact sheet 068-99, March 1999

Introduction
As the Nation’s largest water, earth, biological science and civilian mapping agency, the U.S. Geological Survey (USGS) provides some of this science information as educational material. The product line includes a variety of teaching packets, booklets, posters, fact sheets, and CD-ROM's. Described below are products designed for K-12 teachers.

Unless otherwise noted, all of the following publications are available from:
USGS Information Services, Box 25286, Denver, CO 80225 Fax: 303-202-4693

Orders for sales items are accepted by fax with a Visa or MasterCard number. When ordering, please include the ordering identification number that follows each publication description.

When applicable, World Wide Web addresses are given for those publications that can be downloaded. Both Hypertext Markup Language (HTML) and Adobe System, Inc., Portable Document Format (PDF) are given, when available.

Customers with access to fax machines or to personal computers with fax reception software can retrieve some of these publications, primarily fact sheets, by using the USGS Fax-on-Demand System. To access the system, users can call from a fax machine’s handset or from a touch-tone telephone. Dial 703-648-4888 and press “2” on your telephone keypad for publication information. Then after selecting “2” again, you can key in the EARTHFAX number of the publication you want. You can request up to three documents per phone call.

Some publications are currently out of print. They may still be available through the Web or EARTHFAX. Such publications will be noted as “Web Only” or “EARTHFAX Only.”

Teaching Packets with Activities
The following teaching packets are available in limited quantities. We request that teachers note the age appropriate packet for their use and request one packet per classroom. Materials within the packets have been designed to be reproducible. We also request that teachers and homeschoolers consider sharing packets. Please also note that the lesson plans and teaching guides for all of the teaching packets are available on the World Wide Web at <http://www.usgs.gov/education/>.

Map Adventures—This packet is appropriate for grades K-3. Students will learn basic concepts for visualizing objects from different perspectives and how to understand and use maps. It includes a two-sided color poster, teacher information, seven lesson plans, and two activity sheets. 97-0300*<http://www.usgs.gov/education/learnweb/MA/>

What Do Maps Show?—This packet for middle school includes a two-sided color poster with four accompanying lessons for learning geography and developing map reading skills. It also includes three maps and four activity sheets. 97-0250*<http://www.usgs.gov/education/teacher/what-do-maps-show/index.html>

Exploring Maps—This interdisciplinary set of materials on mapping for grades 7-12 is designed to aid in teaching basic mapmaking and map-reading skills. It includes a teaching guide, four activity sheets, and two double-sided posters. 97-0150*<http://www.usgs.gov/education/learnweb/Maps.html>

Paper Models
The following reports are three-dimensional, cut-and-paste paper models and computer animations illustrating geologic processes and other geologic phenomena. Both paper copies and electronic diskette versions are available. Both versions have the same patterns and text, although the diskette version may have animations that describe geologic processes.
Requirements for using the diskette version are Apple Computer, Inc.; HyperCard 2.2 software and an Apple Macintosh computer with an internal disk drive. If you are using System 7, we recommend having at least 8 Mb of physical RAM with 4.5 Mb of memory available for HyperCard. Most of the model animations are available to view on the World Wide Web at <http://www.usgs.gov/education/animations/>.

[Editor's note: see web site for full list of Posters/Maps]

**Posters/Maps**

[Editor's note: see web site for full list of Posters/Maps. Some map-related titles are listed below.]

**Map Projections**—A two-sided poster showing the frontispiece to Gerardus Mercator's *Atlas sive Cosmographicae* on one side and properties, characteristics, and preferred uses of many historically important projections and of those frequently used today on the reverse side. #96-0201 (folded version)

**Planetary Maps**—A two-sided poster showing a part of a geologic map of the near side of the Moon on one side and, on the other side, the variety of maps available of the Moon and Mars and some of Earth's other neighboring planets and their satellites. #96-0275 (folded version)

**This Dynamic Planet**—A world map of volcanoes, earthquakes, and plate tectonics. (Complements “This Dynamic Earth: The Story of Plate Tectonics” booklet.) $4.00 "GIA0023T (flat version)"GIA0022D (folded version)"<http://pubs.usgs.gov/pdf/planet.html>

**Landforms of the Conterminous United States — A Digital Shaded-Relief Portraival**—A large, digitally produced map illustrating geomorphic and tectonic phenomena of the United States in vivid detail. A 16-page booklet describing the map accompanies it. $4.00, GI2206

**Digital Shaded-Relief Image of Alaska**—A large map illustrating the physiographic features of Alaska from the artificial rendering of a digital elevation model. An 11-page booklet describing the map accompanies it. $4.00, GI2585

**Mapping the Solar System**—A two-sided poster with colorful airbrush illustrations of the planets and their satellites on one side and statistical information and geographic feature information on the reverse side. $4.00, GI 2447T

**Geology of the Solar System**—A two-sided poster with colorful geologic mapping and low-resolution, shaded-relief airbrush mapping of the terrestrial planets and outer satellites shown on one side and textual geologic information given on the reverse side. $4.00, GI 2596T

The USGS is publishing new ecoregion maps of areas of the United States. On one side, these colorful maps show levels I and IV ecoregions of a specific area and provide descriptions and photographs of each ecoregion. The reverse side contains a summary table of the characteristics of the ecoregions and a bibliography. Ecoregions denote areas of general similarity in ecosystems and in the type, quality, and quantity of environmental resources. The following ecoregion maps have been published so far:

- **Ecoregions of North Dakota and South Dakota** $4.00, EC0001
- **Ecoregions of Western Washington and Oregon** $4.00, EC0002
- **Ecoregions of Indiana and Ohio** $4.00, EC0003
- **Ecoregions of Tennessee** $4.00, EC0004

The USGS and its partners began work on *The National Atlas of the United States of America* in 1997. The *National Atlas* is designed to promote greater geographic awareness through products that provide easy-to-use, map-like views of our natural and sociocultural landscapes. It will include products designed to stimulate children and adults to visualize, comprehend, and even marvel at the complex relationships among environments, places, and people. Three published maps are now available. They can also be viewed at the following Web site: <http://www.usgs.gov/atlas/atlasmap.html>.

**Hydrologic Units**—This map, published at a scale of 1:3,500,000, depicts a hydrologic system that divides and subdivides the United States into successively smaller river basin units. These subdivisions, or hydrologic units, are used for collecting and organizing hydrologic data. They represent natural and manmade stream-drainage areas. $4.00, TUS5681
Federal and Indian Lands—This map, published at a scale of 1:7,500,000, is color-coded to represent the lands of the Bureau of Indian Affairs, Bureau of Land Management, Bureau of Reclamation, Department of Defense, Fish and Wildlife Service, Forest Service, National Park Service, Tennessee Valley Authority, Agricultural Research Service, Department of Energy, and Department of Transportation in the United States and Puerto Rico. $4.00, TUS1445

Principal Aquifers of the United States—This map, published at a scale of 1:5,000,000, shows the distribution of the major aquifers that supply ground water to the United States, Puerto Rico, and the U.S. Virgin Islands. Each aquifer is classified as one of six types of permeable geologic material. $4.00, TUS5680

Booklets
[Editor’s note: see web site for full list of Booklets.]

Helping Your Child Learn Geography—This 32-page booklet, published in cooperation with the U.S. Department of Education and the National Geographic Society, is designed to help parents stir children’s curiosity about geography. The activities can also be used in the classroom. The activities are designed for children 3-10 years of age. 94-0130 <http://www.ed.gov/pubs/parents/Geography/index.html>


Web Only

Topographic Mapping—This 20-page booklet introduces the elements of topographic mapping, including principal map series, scale, control surveys, national standards, procedures, symbols, revisions, and digital mapping. 94-0190 "<http://mapping.usgs.gov/mac/isb/pubs/booklets/topo/topo.html>

USGS Maps—This 28-page booklet illustrates and describes types of USGS maps and gives ordering information. 93-0581 "<http://mapping.usgs.gov/mac/isb/pubs/booklets/usgsmaps/usgsmaps.html>

Aerial Photographs and Satellite Images—This 21-page booklet illustrates various USGS aerial photographs and remotely sensed products. 96-0011 "<http://mapping.usgs.gov/mac/isb/pubs/booklets/aerial/aerial.html>

Fact Sheets
[Editor’s note: edited from the web site]


World Wide Web Site Information Sources

Shown below is a sampling of USGS and USGS Partner World Wide Web sites that offer you additional education resources:

<http://www.usgs.gov/education/>—USGS Learning Web Site. This site points to a variety of resources for the K-12 and life-long learning audiences. It focuses on living, learning, and exploring the web of life. It is an online source of most USGS teaching packets and includes Web-only teaching materials, such as “Mud Fossils” and “Geologic Age”.

<http://www.usgs.gov/nationalatlas/>—National Atlas of the United States Web Site. This interactive site allows students to select and display map layers, roam across America and zoom in to reveal more detail, point at map features to learn more about them, and locate and map more than 2,000,000 geographic names in the United States. All data are documented and available for downloading.

<http://pittsford.monroe.edu/Schools/Jefferson/Maps&Globes/MapsGlobesFrame.html>—Maps and Globes Web Site. This Web site helps students learn about maps and globes. Topics include the Earth, water forms, land forms, climate, and time.

<http://www.terraserver.microsoft.com/>—The Microsoft TerraServer Web Site. This site provides the general public with access to USGS digital orthophoto quadrangle (DOQ) images. A DOQ is a computer image of an aerial photograph with distortions caused by the shape of the ground surface and camera angle removed. It combines the details of a photograph with the geometric qualities of a map.
Fact sheet 072-99, February 1999

Introduction
In May 1997, the U.S. Geological Survey (USGS) and the Microsoft Corporation of Redmond, Wash., entered into a cooperative research and development agreement (CRADA) to make vast amounts of geospatial data available to the general public through the Internet. The CRADA is a 36-month joint effort to develop a general, public-oriented browsing and retrieval site for geospatial data on the Internet. Specifically, Microsoft plans to (1) modify a large volume of USGS geospatial data so the images can be displayed quickly and easily over the Internet, (2) implement an easy-to-use interface for low-speed connections, and (3) develop an Internet Web site capable of servicing millions of users per day.

Major Milestone
The Microsoft Terraserver Web site (www.terraserver.microsoft.com) opened to the public in June 1998 serving more than 1 terabyte (1,000,000,000,000 bytes) of geospatial data from a user-friendly interface. Terraserver is a mutually beneficial research effort where the Federal Government and private industry have come together to provide the general public access to USGS geospatial data while allowing Microsoft and its partners to promote their database systems that can scale to very large sizes.

Initially the CRADA focused on storing and displaying more than 3 terabytes of USGS digital orthophoto quadrangle (DOQ) images. A DOQ is a digital image of an aerial photograph with distortions caused by the shape of the ground surface and camera angle removed. A DOQ combines the details of a photograph with the geometric qualities of a map.

Microsoft has made millions of resampled, compressed, browsable images of the entire USGS DOQ archive available on the Internet and is serving these online as JPEG image files for a testing period of at least 18 months. After viewing the resampled images on the Internet site, users are able to download the image they see to their own computer. With the user's permission, a Java software program will write the image to a file on the user's computer hard disk at no charge. Those wishing to purchase full-resolution, uncompressed DOQ images will be linked to the USGS web site. Building on user feedback, Microsoft and the USGS will continue to improve the Internet site.

Benefits of the CRADA
This joint research effort increases the visibility of USGS geospatial data with the general public because these images are prominently displayed on the Microsoft Internet site, which already receives millions of inquiries per day. This is an opportunity for the USGS to inform new user communities about USGS geospatial data.

Microsoft and its partners have extensive data display and storage technologies for handling terabytes of information on the Internet. The Terraserver Web site will show information technology managers that by using off-the-shelf software products from Microsoft and web server storage solutions from its partners, they can easily manage and serve large databases on Internet sites.
Future Plans
The Terraserver site will be updated frequently as more USGS DOQ's are produced. Plans call for having 50 percent of
the DOQ's for the conterminous United States online by the summer of 1999. There are also plans to add USGS digital
raster graphics to the TerraServer at the same time.

After launching the initial display of resampled DOQ images on the Internet, the USGS and Microsoft will pursue
additional research activities under the CRADA. The Terraserver Web site may be augmented with other USGS digital data
products, such as digital line graphs, digital elevation models, and aerial or satellite images. In addition, linking other types
of USGS data will be considered.

Information
For more information on this CRADA with Microsoft, contact:
Beth Duff
U.S. Geological Survey
508 National Center
Reston, VA 20192
Phone: 703-648-4621
Fax: 703-648-5939
E-mail: bduff@usgs.gov

More information about DOQ’s can be found at:
http://mapping.usgs.gov/mag/ish/pubs/factsheets/fs12996.html

For further information on CRADA opportunities with the USGS National Mapping Division, please contact:
Ernest B. Brunson
U.S. Geological Survey
500 National Center
Reston, VA 20192
Phone: 703-648-4643
Fax: 703-648-5542
E-mail: ebrunson@usgs.gov

Additional Information
For information on other USGS products and services, call 1-888-ASK-USGS, use the EARTHFAK fax-on-demand
system, which is available 24 hours a day at 703-648-4888, or visit the general interest publications web site at http://

Please visit the USGS home page at http://www.usgs.gov/.
New Mapping of Western North America

compiled by

Ken Rockwell

Alaska

Alaska Division of Geological and Geophysical Surveys. 4200 Hz coplanar resistivity contours for the northeastern portion of the Koyukuk mining district, eastern Brooks Range, Alaska. 1 map on 2 sheets, scale 1:63,360. The Division's Report of Investigations no. 98-10, pub. 1999. OCLC #41965085

Alaska Division of Geological and Geophysical Surveys. 7200 Hz coplanar resistivity of part of the Fortymile Mining District, Alaska: southern Eagle and northern Tanacross quadrangles. 1 map on 2 sheets, scale 1:63,360. The Division's Report of Investigations no. 99-3, pub. 1999. OCLC #41668221


Alaska Division of Geological and Geophysical Surveys. 900 Hz coplanar resistivity of part of the Fortymile Mining District, Alaska: southern Eagle and northern Tanacross quadrangles. 1 map on 2 sheets, scale 1:63,360. The Division's Report of Investigations no. 99-2, pub. 1999. OCLC #41668255


Alaska Division of Geological and Geophysical Surveys. Color scheme variations of the total field magnetics for part of the Fortymile Mining District. 4 maps on 1 sheet, scale 1:250,000. Alaska Division of Geological and Geophysical Surveys Miscellaneous publications no. 35, pub. 1999. OCLC #41325239

Alaska Division of Geological and Geophysical Surveys. Different coplanar resistivities and color schemes for part of the Fortymile Mining District. 4 maps on 1 sheet, scale 1:250,000. Alaska Division of Geological & Geophysical Surveys, Miscellaneous publications no. 36, pub. 1999. OCLC #41325184

Alaska Division of Geological and Geophysical Surveys. Total field magnetics of part of the Fortymile Mining District, Alaska: southern Eagle and northern Tanacross quadrangles. 1 map on 2 sheets, scale 1:63,360. The Division's Report of Investigations no. 99-4, pub. 1999. OCLC #41668224


Szumigala, David J. Map of prospective mineral areas and significant mineral resources of Alaska. Scale 1:2,500,000. Alaska Division of Geological and Geophysical Surveys, Miscellaneous publication no. 38, pub. 1999. OCLC #42085742

Szumigala, David J., and Swainbank, Richard C. Map of selected mines, coalfields, and significant mineral resources of Alaska. Scale 1:2,500,000. Alaska Division of Geological and Geophysical Surveys, Miscellaneous publication no. 33, pub. 1998. OCLC #42085544


Winkler, Gary R. Maps showing areas of potential for metallic mineral resources in the Valdez 1-degree x 3-degree quadrangle, Alaska. 2 maps on 1 sheet, scale 1:250,000. USGS Geologic investigations series no. I-2652, pub. 1999. OCLC #42078666

Alberta

International Travel Maps. Canada's Prairie Provinces. Scale 1:1,600,000. 1st ed. Vancouver, B.C.: International Travel Maps, 1998. OCLC #41417298

Arizona


Spangler, Lawrence E. Hydrology and water quality of the Ojato alluvial aquifer, Monument Valley area, Utah and Arizona. 2 maps, scale 1:159,000. USGS Water-resources investigations report no. 99-4074, pub. 1999. OCLC #42017424

British Columbia


California


Fletcher & Bossett. California, 1850. Scale ca. 1:2,500,000. [San Antonio, Tex.]: Fletcher & Bossett, 1998. OCLC #41309294


Stephan P. Teale Data Center. California digital raster graphics. 88 computer laser optical discs, original scales 1:24,000 and 1:25,000. Sacramento, CA: Teale Data Center, GIS Solutions Group, 1998. USGS 7.5 x 7.5 minute 1:24,000 or 1:25,000 scale quad sheets for California for use with geographic information systems software. OCLC #42196293


Walter, Stephen R. Seismicity maps of the San Francisco and San Jose 1-degree x 2-degree quadrangles, California, for the period 1967–1993. 2 maps, scale 1:250,000 and


**Montana**


**Nevada**


Shawe, Daniel R. *Geologic map of the Jefferson quadrangle, Nye County, Nevada*. Scale 1:24,000. USGS Geologic investigations series no. 1-2670, pub. 1999. OCLC #42265762

**New Mexico**


**Oregon**


Evans, James George, and Binger, G. Benjamin. *Geologic map of the Shumway Reservoir quadrangle, Malheur County, Oregon*. Scale 1:24,000. USGS Open-file report no. 99-138, pub. 1999. OCLC #41319795

Evans, James George, and Binger, G. Benjamin. *Preliminary geologic map of the Skull Springs quadrangle, Malheur County, Oregon*. Scale 1:24,000. USGS Open-file report no. 99-331, pub. 1999. OCLC #41946561

Pacific Northwest

Virtual Atlas of the Pacific Northwest. "An organized collection of maps that describe geographic conditions within the Pacific Northwest region in the United States. ... This project originates at The Evergreen State College, Olympia, Washington. Comments can be directed to Dr. Martha Henderson. http://www.evergreen.edu/user/virtatpnw/"

Utah

Higgins, Janice M. Interim geologic map of the White Hills quadrangle, Washington County, Utah. Scale 1:24,000. Utah Geological Survey Open-file report no. 352, pub. 1998. OCLC #41883253


McDonald, Greg N. Known and potential sand, gravel, and crushed stone resources of Grand County, Utah. Utah Geological Survey Open-file report no. 369, pub. 1999. OCLC #41335238

Morgan, Craig D. Petroleum geology of Claro Dome area, Grand County, Utah. 4 sheets of maps and charts. Utah Geological Survey Oil and gas fields study no. 19, pub. 1999. OCLC #41670807

Salt Lake Convention and Visitors Bureau. Utah public lands, recreation opportunities. Scale 1:1,000,000. Salt Lake City, UT: The Bureau, 1999. OCLC #42248786

Spangler, Lawrence E., and Johnson, M. S. Hydrology and water quality of the Ojato alluvial aquifer, Monument Valley area, Utah and Arizona. 2 maps, scale ca. 1:59,000. USGS Water-resources investigations report no. 99-4074, pub. 1999. OCLC #42017424

Washington State
Bolting, Maureen; Frazier, B. E.; Busacca, A. J., Generat sort map Washington, 1 sheet, scale 1:760,000. Pullman, WA: Department of Crop and Soil Sciences, Washington State University, c1998. OCLC #42750283


Western States

Wyoming


**U.S. Agency News**

**U.S. Geological Survey**

- **Keep your old editions of USGS topos!**

A message from Ross Togashi alerts us all about how much all of the revised USGS topographical quadrangle maps of the each state through the Federal Depository Library Program (FDLP) have changed. The 7.5 minute quadrangles are being recast from the North American Datum of 1927 (NAD27) to the more accurate North American Datum of 1983 (NAD83). With this change in datum, the sheet boundaries will shift slightly. These new maps (the new DLGs and DRGs) will therefore not match up with the older map boundaries.

If your map library is withdrawing older editions as the newer sheets are received and added, a common practice among many FDLP map libraries, you may be losing map data (at least temporarily) until adjacent sheets are later received in future depository shipments.

Victi Lukas of the USGS has been very kind in providing a web page that describes the Hawai’i Revision Project and among other very interesting things, addresses this concern regarding the datum shift.

If you are interested, please take a look at ftp://pokey.wr.usgs.gov/pub/avaughn/CR_DATA/revision/index.html

- **Landsat 7**

Landsat 7 was launched successfully from Vandenberg Air Force Base at 11:32 am (PDT), Thursday, April 15, 1999. Visit http://landsat7.usgs.gov/, the USGS’s new Landsat 7 web site. It includes information about the satellite, its mission, data and products.

- **USGS topographic symbols online**

The USGS topo symbols are available online via Wide World of Maps web site. Visit the “Mapping Reference Guide” at http://www.maps4u.com/ref/default.htm

- **USGS Geologic Division map database online**

The Geologic Division of the USGS is currently building a National Geologic Map database which is available on the Web. http://ngmdb.usgs.gov. This is a searchable catalog of paper and digital geologic maps. It can be searched by geologic theme, geographic area, author, title and map number. When complete, the database will contain information about geologic maps produced by the USGS as well as by other Federal agencies, tribal governments, State geological surveys, local governments, academic institutions, and the private sector.

- **USGS Maps Now Include Forest Service Information**

GPO Depository Libraries are receiving increasing numbers of USGS topographic quadrangles with Forest Service information on them. These maps are a result of a USGS/Forest Service joint mapping program designed to reduce duplication of effort by the agencies and to provide more frequent revision of quadrangles containing national forests. The Forest Service has assumed responsibility for maintaining primary series 7.5-minute quads that cover the national forests, while the USGS remains responsible for printing and distributing them.

Single-edition maps remain part of the traditional 7.5-minute series, showing contours and other surface features while adding about 25 features used by the Forest Service to manage the national forests. The Forest Service plans to revise 600 to 700 of these quads in the next fiscal year. For more information about single-edition maps an online fact sheet is available at http://mapping.usgs.gov/mac/iosb/pubs/factsheets/fs09498.pdf or at http://mapping.usgs.gov/mac/iosb/pubs/factsheets/fs09498.html.

**Federal Geographic Data Committee**

- **FGDC Geospatial Standards**

The Federal Geographic Data Committee coordinates the development of the National Spatial Data Infrastructure (NSDI) which enables organizations to cooperatively produce and share geographic data. The FGDC is developing geospatial data standards for implementing the...
NSDI, in consultation and cooperation with State, local, and tribal governments, the private sector and academic community, and, to the extent feasible, the international community. A list of the FGDC geospatial data standards can now be found on the FGDC web site: http://www.fgdc.gov/standards/standards.html

You can download the standards from http://www.fgdc.gov/publications/publications.html

*Looking for transportation data?*
Learn who is producing transportation data in your area, approximately how much they are spending, and whether they share data.

Data from the recent survey of framework data sets conducted by the National States Geographic Information Council in cooperation with the Federal Geographic Data Committee are now being made available for individual states. Framework data include the themes of elevation, hydrography, geodetic control, cadastral, transportation, governmental units and orthoimagery. The survey, conducted by state coordinators in 1997-8, produced over 5200 responses from individual organizations throughout the nation who are creating, maintaining and updating data in one of those themes. The survey provides detailed information on the who, what, when, where and why of framework data.

Data from seventeen states are currently available in several database formats along with a report on the sampling frame used by individual state coordinators, and useful tables that are by products of the data analysis. The data from more states will be posted as they are processed.

State data can be accessed at http://www.fgdc.gov/framework/survey_results/samples/index.html

**Library of Congress**
- New Online maps from the Library of Congress, Geography & Maps Division
- New Maps Added to American Memory Collections:
  - Mapping the National Parks: http://memory.loc.gov/ammem/gmdhtml/nphome.html
  - 1562 Map of America by Diego Gutiérrez: http://memory.loc.gov/ammem/gmdhtml/axphome.html
  - 1570 Theatrum Orbis Terrarum by Abraham Ortelius: http://memory.loc.gov/ammem/gmdhtml/gnrthome.html

**National Imagery and Mapping Agency**
- NIMA online catalog
  The USGS is the distributor of public sales of National Imagery and Mapping Agency (NIMA) topographic maps, publications, and digital products. A catalog of NIMA maps and products is now available online. This is a revised version of the Defense Mapping Agency catalog which was last printed in 1996. See: http://mapping.usgs.gov/mac/isb/pubs/publists/plotfprl.html

**State and Province News**

**Arizona**
- Online Arizona Topo Index & Catalog

**Idaho**
- Idaho Geospatial Data Center
  The Idaho Geospatial Data Center is a digital library for public-domain geographic data of Idaho that is accessible free of charge to any group or person in or outside of the state. This central data repository is shared over the Internet to save time, money, and computer resources. Check the site at http://geolibrary.uidaho.edu/

**International News**
- Announcement from Canada

**Geological Survey**
As of April 1, 1999 there will be a subscription charge of $25.00 per year ($32.50 outside Canada) if you wish to continue receiving a paper copy of the Geological Survey of Canada Information Circular.

The Information Circular is available at http://www.nrcan.gc.ca/gsc/gicd/pubs/

It you wish to continue receiving the paper version of the Information Circular, please contact Tom Lagroix, GSC Bookstore, 601 Booth Street, Ottawa, ON K1A 0E8 or email gsc_bookstore@gsc.NRCan.gc.ca Also, available at http://maps.nrcan.gc.ca/newsletter/ This is a newsletter for map distributors and dealers. These are PDF files.

**Georeferenced Population Data Sets of Mexico**
For GIS data of Mexican states, municipalities, and islands, 1990, in ARC/INFO export format. In this dataset, the boundaries of the Mexican states and municipalities that share borders with the United States are consistent with those from
Conferences and Classes

• **ESRI Virtual Campus: Introduction to ARC/INFO Course Now Online**
  Now available at the ESRI Virtual Campus, this self-paced online course gives you the skills you need to create, convert, manipulate, and maintain geographic data; construct a GIS database; create maps; and query and analyze a GIS database using ARC/INFO. Visit the Campus to learn more about this course and our growing GIS community on the Web. Visit http://campus.esri.com/arcinfo.


• **1999 Meeting of the Social Science History Association.** Fort Worth, Texas, November 11-14, 1999. The meeting will include several sessions on historical GIS.


• **National Geographic Society.** The Association of American Geographers (AAG), and Environmental Systems Research Institute, Inc. (ESRI) are announcing the first annual GIS Day, to be held November 19, 1999. GIS Day will be a global event where users of GIS technology open their doors to schools, businesses, and the general public to showcase real-world applications of this exciting technology that uses geography.

• **Maps and Society (Warburg Institute, London) Ninth Series Programme for 1999-2000**
  - December 9, 1999, Professor Bruce Lenman (Department of Modern History, University of St. Andrews). War a Catalyst for Cartography: The Cases for Cartagena de Indias and Havana, 1600-1622.
  - January 20, 2000, Dr. Yolande Hodson, F.S.A. Maps and Society in Twentieth-Century Britain.
  - February 17, 2000, Professor Charles Withers (Department of Geography, University of Edinburgh). The Social Nature of Map-Making in the Enlightenment.
  - March 30, 2000, Ian Mumford (Department of Typography and Graphic Communication, University of Reading). Lithographed Maps - Art or Artifact? A Round-Table Discussion.

• **May 4, 2000, Sarah Tyacke (Keeper, Public Record Office). Charting the East Indies before Amboyna (1621).**

• **May 18, 2000, Dr. Jim Egan (Department of English, Brown University, Providence). From India’s Savage Plain: Maps from Eighteenth-Century Georgia and the Colonial American South.**

  Meetings are held at the University of London, Warburg Institute, Woburn Square, London WC1H OAB at 5.00 pm on a Thursday.

Exhibits

• For examples of cartographic exhibitions on the Web, visit http://www.usm.main.edu/~maps/web.exhibit.html. This is Osher Map Library and Smith Center for Cartographic Education (University of Southern Maine, Portland) exhibitions on the Web. The currently mounted exhibition is “Celebrating the Portuguese Communities in America: A Cartographic Perspective.”

TIGER95.

Attributes include selected demographic and socioeconomic variables from INEGI. Files are available through ftp. See http://sedac.ciesin.org/home-page/mexico.html

• **Russian Federation Digital Boundary Data for GIS**
  For digital boundary files of the Russian Federation, go to http://wagda.lib.washington.edu/data/russianfd/ at the University of Washington Libraries Map Collection's Washington Geospatial Data Archive. The digital spatial data includes the subjects of the Russian Federation: 21 republics, 6 krasy, 49 oblasts, 2 cities of federal significance (Moscow and St. Petersburg), 3 autonomous oblasts, and 10 autonomous districts that are the subjects of the Russian Federation. The data includes locations of 1858 rayons, 6 ethnic administrative rayons, and 441 gorsovets. The data is freely downloadable.
**Pecora 14 Land Satellite Information III: Demonstrating the value of satellite imagery.** Doubletree Hotel, Denver, Colorado, December 6-10, 1999. The imaging and geospatial society, ASPRS is the organizer. For more information, see http://www.asprs.org.


**Association of American Geographers, Pittsburgh, PA. April 4-8, 2000.** There will be several sessions related to historical GIS at the annual conference.

The initial proposal is for four sessions, entitled as follows:
- Historical GIS I: The City
- Historical GIS II: New Approaches to the Analysis of Change
- Historical GIS III: Poster Session
- Visualising History: Paper and Electronic Atlases


**Special Libraries Association 91st Annual Conference.** June 10-15, 2000, Philadelphia, PA

**ESRI Twentieth Annual International User Conference** will be one month earlier next year, so mark your calendars and reserve the dates today! June 26-30, 2000, San Diego Convention Center and The San Diego Marriott Hotel and Marina.

**LIBER 12th Conference:** Copenhagen, Denmark, June 27 – July 1, 2000. Theme: Caught in the WEB or spinning it? : the role of Map Curators in building WWW-sources of cartographic information. Place: The Royal Library, Copenhagen. Inscription to be sent before December 1, 1999 to Chris Fleet, Map Library, National Library of Scotland, 33 Salisbury Place, Edinburgh EH9 1SL, United Kingdom E-mail: c.fleet@als.uk

**Historical GIS Workshop: Mapping Europe”s Boundaries and Borders, Florence, Italy, June, 2000.** For more information, see the site http://www.esf.org/hp/calif99.htm.


**40th Annual Conference of the Western History Association.** San Antonio, TX, October 11-14, 2000.

**Benchmarks**

**Stanford University GIS Specialist**

At Branner Library, we’d like to welcome Meredith Williams as our new GIS (Geographic Information Systems) specialist, a position vacated by Heather Murapa. Meredith will be playing a role in helping enhance the GIS program and providing training and support to GIS users. She started work on July 12, 1999.

Prior to coming to Stanford, Meredith was a GIS assistant at CalTrans (California Department of Transportation) where she helped develop GIS applications, review GIS operations and needs, and train users. Meredith holds a degree in geography/environmental studies and has a teaching credential and a GIS certificate. We expect that her knowledge and work experience will come in very handy in both her public and technical service duties here in Branner Library. You can reach Meredith at (650) 725-9179 or mjwilliams@stanford.edu.

**University of Oregon Map Library Staff Changes**

Peter Stark, long the Head of the Map and Aerial Photography Library at the University of Oregon Library in Eugene, Oregon has resigned from that position. He will move with his wife to Washington, D.C. to pursue their careers in that city.

The University of Oregon Library System’s Map and Aerial Photography Library is pleased to announce that Larry W. Laliberte will begin as the Map/GIS librarian on September 1, 1999. Larry will be responsible for the Library’s GIS program so ably begun by Terry Reese.

Larry graduated with an MLIS from the University of Western Ontario May, 1999 and holds a B.A. in geography from the University of Guelph. He has experience as a lecturer in the Department of Geography at the University of Manitoba, was the sole proprietor of a business specializing in GIS, and managed a retail map store in Winnipeg, Manitoba. Larry brings to the University of Oregon a strong background in public service, instruction, and GIS. You can reach Larry by calling (541) 346-4565.

Terry Reese, Library Assistant in the Map and Aerial Photography Library has accepted a full-time permanent position with Oregon State University Library in Corvallis as
Map and Government Documents Cataloger. Terry will start at OSU on September 13, 1999.

- **University of Saskatchewan**
  Victor Wiebe, reference librarian in Government Publications, Maps & Microforms at the University of Saskatchewan Libraries, has assumed direct responsibility for maps and atlases in our collections. Victor has been with the U of S for some 23 years and has served the libraries in a variety of functions over the years, including reference librarian in the Reference Department, reference librarian in Health Sciences, and Head of Reference.

- **Barbara Cox moving on to other things**
  From Barbara in her own words to maps-l list:
  I'd like the indulgence of other readers of Maps-l to use this medium for giving a personal sign-off to the many North American map librarians I've worked with over the past twenty-five years. I have accepted a three year reassignment to our collection development area, where I'll be co-ordinating the activities of the library selectors and working on various library- and consortia-wide projects. I'll count on Ken Rockwell to keep me up on any exciting Maps-l news.

- **Ed Dahl Honours Award 1998**
  [Editor's note: It doesn't appear that this related information ever appeared in the Information Bulletin. It is included here, although late, to honor a distinguished gentleman and his career.]
  The Awards Committee of the Association of Canadian Map Libraries and Archives is pleased to announce that the recipient of the Association's 1998 Honours Award is Edward H. Dahl. The Award was conferred at the recent annual meeting of the Association at the University of Western Ontario, London, Ontario. The text of the citation follows.
  
  **HONOURS AWARD 1998 - EDWARD H. DAHL**

  Edward H. Dahl has been unanimously selected as the 1998 recipient of the ACMLA Honours Award by the ACMLA Awards Committee in recognition of his many contributions to the field of map librarianship as well as to ACMLA. The ACMLA Board unanimously approved the recommendation that he be given this award.

  Ed graduated from the University of British Columbia with a B.A. in History and English in 1967 and an Honours equivalent in Canadian History in 1968, and from Carleton University with an M.A. in Canadian History in 1969. In 1970, he joined the Public Archives of Canada as Head of the Reference Unit in the National Map Collection. After serving in that capacity for four years, he became Head of the Canadian Section, where he served for two years prior to becoming Chief of the Early Canadian Cartography Section upon reorganization of the NMC. In 1987 there was another reorganization during which he was named the Early Cartography Specialist in the Cartographic and Architectural Archives Division. He retired at the end of March from this position, with the division now being named the Visual and Sound Archives Division.

  For most of his 28 years with the National Archives, Ed has been active in our Association. He has chaired sessions, served on committees (especially the Historical Maps Committee), presented papers, contributed regularly to our *Bulletin*, and edited several of the Annual Conference Proceedings, which preceded the *Bulletin*. From 1975 to 1985 he was a member of the Historical Maps Committee and from 1985 to 1991, he was the compiler, editor, publisher and distributor for the ACMLA Map Facsimile Series. He also served as the Association Archivist from 1985 to 1993. Memorable sessions that he organized included one on professional ethics which considered questions such as "Is it a conflict of interest when a map librarian is married to a member of the geography faculty at the same institution?"?"?!?! This one struck home for me! His other professional activities were of significance, as well. He was deeply involved, and still is, with the Canadian Cartographic Association. He served as the Secretary of the History of Cartography Interest Group from 1976 to 1978 and as Chair from 1970 to 1981. As Associate Editor of *Cartographica*, the quarterly journal published by the University of Toronto Press and endorsed by the Canadian Cartographic Association, from 1981 to 1994, he contributed greatly to the scholarly literature in the cartographic field, especially of a historical nature. For *Cartographica* also, he was the Reviews Editor from 1980 to 1994 and has been a member of their editorial board since 1994.

  He was a co-founder and co-chair of the Ottawa Map Society from 1980 to 1987. He has several publications to his credit, such as *Winnipeg in Maps, 1816-1972* with Alan F. J.
Artibase (Ottawa: Public Archives of Canada, 1975) and Treasures of the National Map Collection ... Exhibition of 100 Original Maps, Atlases, Globes and Architectural Plans, 1490-1982 (Ottawa: Public Archives of Canada, 1982), as well as numerous articles on early cartographic items or map librarianship related topics. He has also served on the editorial boards of The Map Collector, Meridian, and Archivaria.

Another contribution of significance was founding, chairing and co-editing the newsletter for the International Society of Curators of Early Maps from 1983 to 1995. Other societies contributed to include the International Cartographic Association, International Map Collectors' Society, Society for the History of Discoveries, International Conference on the History of Cartography, Congress of Cartographic Information Specialists Associations, and Pan-American Institute of Geography and History.

Throughout Ed's career in the National Archives he showed an unwavering devotion to the study of early maps; he furthered the knowledge of early Canadian maps both by his own research and by his encouragement of the work of others and has always encouraged high standards of research. Even in retirement, this activity will continue with editing projects galore already lined up, as well as participating in the History of Cartography Project and professional society activities. The Association of Canadian Map Libraries and Archives is fortunate to be able to count Ed as one of our most distinguished members, as well as, in the words of Louis Cardinal "the brilliant, dynamic, funny, dedicated and friendly person we all know." The presentation of the certificate was on May 29, 1998.

Prepared by Alberta Auringer Wood and Barbara Farrell for the Awards Committee (Barbara Farrell, Chair, Shirley Harmer, Richard Pinnell, Joan Winears, Alberta Auringer Wood).

• Appointments of Canadian National Archivist and Librarian

In Ottawa, the Minister of Canadian Heritage Sheila Copps, announced the appointments of Ian Wilson to the position of National Archivist of Canada and Roch Carrier as National Librarian of Canada. Mr. Carrier will replace the current National Librarian, Marianne Scott, who has held the position since 1984. Internationally renowned author and Officer of the Order of Canada, Mr. Carrier has been active in various cultural organizations such as the Theatre du Nouveau Monde and the Canada Council for the Arts, where he served as president from 1979 to 1981 and as Director from 1994 to 1997. Mr. Carrier will assume his new position in the fall.

Mr. Wilson has been the Archivist of Ontario since 1986. He has served as Adjunct Associate Professor, Faculties of Information Studies and Graduate Studies at the University of Toronto and is currently a member of the Ontario Government’s Information and Information Technology Management Committee.

Cataloging News

• A message from Kathryn Womble.
University of Washington, to maps-l, October 1999
We're just beginning to look at catalog maintenance around the issue of changes in road map & zoning map subject headings. I thought I'd share this nicely written summary from our Principal Cataloger, Adam Schiff, in case it's of use to others out there in map cataloging land.

"In June, the subject headings Road maps and Zoning maps ceased to be valid LCSH terms. The replacements for these are Roads[vMaps and Zoning[vMaps. Road maps and Zoning maps are no longer valid as form subdivisions either. Instead of |xRoad maps or |xZoning maps (or |vRoad maps or |vZoning maps), the correct form of a subject heading should be Roads[z|geographic place]|vMaps or Zoning[z|geographic place]|vMaps.

All of our records that have |vRoad maps or |xRoad maps or |vZoning maps or |xZoning maps need to be corrected to the approved form. This will have to be done very carefully, because the change involves changing a field from 651 to 650 and often means that the geographic term must be rearranged into two |z fields with elements rearranged. Staff cannot simply add Roads or Zoning in front of the geographic term and change Road maps or Zoning maps to Maps except for simple cases. For example:

651 0 Washington (State)|xRoad maps
becomes
0 Roads|zWashington (State)|vMaps
651 0 Australia\v Road maps becomes 650 0 Roads\z Australia\v Maps BUT: 651 0 Alameda County (Calif.)\x Road maps becomes 650 0 Roads\z California\z Alameda County\v Maps 651 0 Alicante (Spain\:\ Province)\x Road maps becomes 650 0 Roads\z Spain\z Alicante (Province)\v Maps 651 0 Bellevue (Wash.)\x Zoning maps becomes 650 0 Zoning\z Washington (State)\z Bellevue\v Maps” The changes to the authority records for Road maps and Zoning maps appeared on 1999 Weekly List 22: http://lcweb.loc.gov/catdir/cpdso/awls9922.html The dropping of $v Road maps and $v Zoning maps from the list of free-floating subject subdivisions was announced on 1999 Weekly List 23 (at the very bottom of the list): http://lcweb.loc.gov/catdir/cpdso/awls9923.html

*Guidelines for the use of Field 856

The Network Development and MARC Standards Office of the Library of Congress has revised the document Guidelines for the Use of Field 856. The document includes guidance on all changes to the field up through July 1999 and includes among other changes, a new section on usage of the field in bibliographic or holdings records.

The document is available at http://lcweb.loc.gov/marc/856guide.html.

*LCCS Numbers for Nunavut

The Library of Congress has approved the following atlas and map classification numbers for Nunavut. Atlas numbers: G1184.3-34 Map numbers: G3535-G3539 The National Archives of Canada will be reclassifying their material in the near future.

cARTe/
cARTography/
cARTe-deco

*Geographic Ties

-- Ties with various cities are available from Montreal-based Microsoie. They offer more than 70 places on a tie. Telephone them at (514) 272-9516.

-- A silk tie with an “old world exploration map” on it. From FLAX Art & Design. Telephone them at 1-888-352-9278 or check their site at “http:\www.flaxart.com.”

Digital News

*Trying to make APSRS work with Windows NT?

This answer is from Mark Thomas at Duke University on making USGS Aerial Photography Summary Record System CD-ROM work on a Windows NT system.

There’s a configuration file called _dw.cfg

Use a plain text editor like Notepad or Wordpad to open this file and edit a single line in it. The line for “Driver” points to a default drive that we think was some sort of DOS environment variable. This needs to be changed to point to the real CD-ROM drive (in our case, the E: drive):

Driver = “E:\”

This allowed the program to run on an NT workstation.

*New list for GIS in Libraries

If you want to subscribe to the new list GIS in Libraries, here are the instructions:

To subscribe to the list, send email to listproc@u.washington.edu and in the body of your message include subscribe gis4lib Firstname Lastname

To submit any questions or other materials to the group, send e-mail to gis4lib@u.washington.edu

To remove your name from the discussion list, send e-mail to listproc@u.washington.edu and in the body of your message include only signoff gis4lib

*Collarless USGS DRG’s

If you are looking for low cost Collarless USGS DRGs, the ChartTiff Geo web site www.charttiff.com has coverage of the western US and is moving east. DRG’s can be purchased by degree, state or county.

*iSITE (Software)

For impressions of this software visit the web site http://www.geoinfsystems.com/0699/ 0699column.html.

“...iSITE (Geonomics, 44 Bromfield Street, Suite 408, Boston, MA 02108. [617] 451-2520, fax [617] 482-3066, WWW URL: http://www.geonomicsinc.com.) is a GIS desktop business application intended for users who evaluate alternative locations for such facilities as retail outlets, corporate offices, and warehouses...”
New extension for ArcView's Spatial Analyst

This extension makes importing USGS 1:24k DEMs in SDTS easier. This is the URL http://www.engineering.usu.edu/cee/faculty/dtarb/SDTSext.html.

MAPublisher 3.5

MAPublisher 3.5 for Adobe Illustrator 8.0.1 for the both Microsoft Windows 95/98/NT and Apple Macintoch OS platforms is now available.

MAPublisher is a suite of GIS and cartographic plug-in tools that allows the import of top GIS and CAD file formats into high-end graphics and illustration environments with all the attribute databases intact and ready to use.

Included in this suite of powerful mapping filters are import tools, projection editors, legend tools, labeling tools, database management tools and many others comprising a complete cartographic solution for Adobe Illustrator.


Map Sheets Express

MapSheets Express is the free viewing and mapping tool from ERDAS, for working with imagery and vector map data.

Bringing data from ERDAS IMAGINE, ESRI's ArcView and ARC/INFO, TIFF and JPEG, as well as imagery web sites like Microsoft TerraServer. Multiple view support — have multiple windows open at once — Explore the data with easy-to-use viewing tools, such as dynamic zoom, pan and measure.

Map Sheets Express — free download including sample data from http://www.erdas.com/msx/.

TIGER/Line 1997 Database from Blue Marble Geographics

TIGER/Line 1997 Database CD-ROMs by Blue Marble Geographics — detailed street and polygon database for GIS applications. You get exact digital copies of the six U.S. Bureau TIGER/Line® 97 CDs.

The TIGER/Line® 97 Map Kit product includes a versatile TIGER to Shape or TIGER to MIF translator and a royalty free copy of the six TIGER/Line® 97 CD's. for only $299.


TopoUSA 2.0

DeLorme TopoUSA 2.0 software is digital topographic map software. It includes 20-foot contour intervals based on the new USGS DEM (digital elevation model) database, more than 300,000 miles of trails, new drawing tools, GPS (global positioning system) interface. 3D viewer to see terrain from almost any angle and printing capabilities.

There are regional discs also available: See http://www.maps4u.com for more information.

New version of Wessex Streets

Wessex is pleased to announce a new version of Wessex Streets. 6.0, that incorporates new line straightening technology to offer you more appealing maps and to correct irregularities in the original TIGER data.

Thanks to line straightening, maps made with Streets 6.0 will no longer contain the inappropriate bends in grid-pattern streets characteristic of TIGER-based maps. That means that Streets 6.0 delivers the best looking graphics of any TIGER-based product. Even better,

Wessex Streets 6.0 - ready to use in popular GIS formats with built-in loading software - is available from Wessex at the same price as raw TIGER street data from the Census Bureau.

For more information on Streets 6.0 and line straightening - complete with sample maps - please visit their web site at http://www.wessex.com

Web Sites

Map Libraries and Organizations

There is a meta-index of map libraries and map library organizations at http://www-map.lib.umn.edu/map_libraries.html.

Another is found at the WAML web site at http://gort.ucsd.edu/mw/waml/waml.html.

New web site for ACMLA


Center for International Earth Science Information Network


Classical Atlas Project revised

The American Philological Association's Classical Atlas Project announces a major revision of the project's web site at http://www.princeton.edu/classical_atlas.

This revision coincides with announcement of firm publication availability for *The Durrington Atlas of the Greek and Roman World*. Richard J.A. Talbert, ed. by Princeton University Press in September 2000. The revised web site provides all-new samples of maps and accompanying materials, as well as a complete list of the atlas contents.
• Compass Rose


• ETAK launches Traffic Touch

ETAK, a leading publisher of digital map databases, software technology and traveler information services announced a real-time traffic information service "Traffic Touch" for users of the Palm VII connected organizer, a new and wireless handheld computing product shipped from Palm Computing, a Compaq company.

Designed especially for the innovative Palm VII connected organizer, Traffic Touch allows users to simply tap a traffic button on the Palm VII organizer to receive information on the obstructions, construction delays, accidents, road closures and rush-hour congestion that may affect their commutes.

For more information, visit the website at http://www.etak.com/News/traffictouch.html.

• Free Geographic Clip Art

At absolutely no-charge, all clip art featured can be used without our written approval on any website, an intranet site, worldwide. Our only restriction is that it cannot be resold under any condition. If feasible on your site, we would very much appreciate a link (of any kind) back to our site.


• GIS choropleth maps available on Web


GIS choropleth maps are available for selected variables in the USA Counties Database. Select "AREA COMPARISONS - GRAPHICAL OPTIONS" from the USA Counties start page to view a graphical representation of the data on a county-by-county comparison.

• GIS Discussion Groups & Lists

There's a web page entitled "GIS Discussion Groups & Lists." It includes more general lists too (such as MAPH11ST) and is annotated with a scope note and instructions on subscribing.

http://home.earthlink.net/~rpminfonet/gislist.html

• GIS Education Programs online

Mike Phoenix of ESRI has recently placed online a searchable database of GIS education programs. It is brand new with only a few entries, but any school or department may enter their own information.

The purpose of the database is to have a place online where students or potential students may search for educational programs to meet their needs.

ESRI invites UCGIS (University Consortium for Geographic Information Science) institutions to enter information about their programs, and to test the search capabilities and make recommendations to ESRI as to how to improve the site. The URL is http://gis.esri.com/university/onlinedb.cfm.

• Preserving the Whole: A Two-Track Approach to Rescuing Social Science Data and Metadata


Other articles of interest on digitizing collections are presented there too.

• GIS Solutions for Livable Communities

The Southern California Association of Governments funded the development of the NMT (non-motorized transportation plan) for Los Angeles, Ventura and San Bernardino Counties, prepared by a team led by Marc A. Futterman and Associates. The purpose of the plan is to establish a regional framework for developing walkable neighborhoods linked to transit, bicycles and motorized transportation. The goal is to reduce vehicle miles traveled and increase environmental benefits such as reduced air pollution and traffic congestion.

See http://www.scag.ca.gov/livable/research.htm

• International Map Collectors' Society

The site gives comprehensive coverage of the Society and its events at http://www.harvey27.demon.co.uk/imcos/

• London Topographical Society

The London Topographical Society has a website at http://www.topsoc.org/

• Odden's Bookmarks Redesigned and Updated

Update your bookmark for the amazing Odden's Bookmarks site for cartographic information. The site has been redesigned too. At http://odden.geog.uu.nl/index.html

• The Serious Collector Web Site

Join the new Maps & Globes community of The Serious Collector at http://www.seriouscollector.com
The Serious Collector is a new,
The database will tell a user what coverage is available for a 1:50,000 map sheet without the user having to visit the Airphoto Collection. However, the flight line indexes must still be consulted at the Airphoto Collection before the user can determine the coverage for a particular location within the 1:50,000 map sheet.

A set of instructions on how to find airphotos, is available at http://www.ucalgary.ca/library/maps/airphotos/index.html and includes access to the database and the map index.

• Unusual Maps on the Web
  At http://www.ctm.gis.net/gisnet/notebook/unusual.htm

• Visual Resources Association (VRA)
  The VRA is a professional association devoted to the study of visual materials - their history, production, conservation, and accessibility. Our international membership includes slide and photograph curators; electronic media professionals; film and video librarians; photo archivists; slide, microform, and digital image producers; rights and reproduction officials; photographers; art historians; and others concerned with visual materials. We are dedicated to informing our members of developments in our field. The VRA sponsors an electronic listserv, VRA-L. To subscribe, send the message: Subscribe VRA-L your full name (e.g.: SUBSCRIBE VRA-L Jane Doe) to: LISTSERV@iufsysb.uark.edu.
  The VRA web site is at http://www.vra.oberlin.edu. For additional information and membership application, please contact Arlene Arzigian, VRA Membership Director, at: arzigian@acs.edu

General News

• Calcutta renamed to Kolkata
  From the Associated Press, July 21, 1999.

  "Calcutta will soon join a rising number of Indian cities trying to shrug off their colonial legacy by reverting to its indigenous name. The capital of India's West Bengal state will be known by the Bengali version of its name, Kolkata, as of next month when it celebrates its 309th birthday, the state legislature decided Tuesday."

• National Geographic Society sending a US map to every school
  The Arizona Republic (from 9/15/98, p.A6) had a short notice that the National Geographic Society will send every school in the U.S. a laminated, 4x6-foot map of the world this month. One side of the map shows political boundaries current as of June 1998, the other side "a picture of the physical world" based on satellite imagery. Creating and distributing the maps will cost $1,000,000.

• Volunteers to Help Map Roads in the San Francisco Peaks Area
  "The Grand Canyon Trust and the U.S. Forest Service are asking for volunteers to help map all existing roads in the San Francisco Peaks area. That's about 270 square miles. Roads often affect wildlife and the natural habitat of animals and plants."

  "Volunteers will collect information with Global Positioning System units, record detailed information on each road, and take photographs for documentation. Maps will then be made and the information will be used to manage roads in a more systematic..."
and thoughtful way in the area, according to the Trust.” from Arizona Daily Sun 7/30/99 p.1

Industry/Dealer News

• New Internet Map Store
  LANDINFO.com, the Internet’s destination for digital map products, unveiled its new 1000+ page Online Map Store. The new Internet outlet, developed by LAND INFO International, the leading digital map producer, will offer exclusive high-resolution, georeferenced map products at below-market prices. The database includes over 2 million georeferenced, high-resolution products, including topographic maps, parcel tax maps, contour maps, and digital elevation models (DEM) for over 60 countries. Visit them at http://www.landinfo.com

• Spatial News and Spatial Graphics merges with GISDataDepot
  SpatialNews.com and Spatial Graphics of Victoria, B.C. have now officially merged with the GISDataDepot at http://www.gisdata depot.com. The staff of GeoComm International has built a new web site which brings together the GISDataDepot and SpatialNews into one GISP ortal site known as “The GeoCommunity”. You can find the GeoCommunity at http://www.geocomm.com

• Digital Sanborn Files
  The company that bought Sanborn provides digital files on demand. The contact person is Tina Thomas, Vice President, E. Data Resources, 3530 Post Road, Southport, CT 06490.

• Environmental Risk Information & Imaging Services provides digital Sanborns - they may be limited to those maps that are in the public domain. ERIIS is at 505 Huntmar Park Drive, Suite 200, Herndon, VA 22070. Phone 800-989-0402.

  By late fall, E. Data Resources and the Library of Congress should have digital Sanborns available for one or two select cities on the Web.

• Government-Commercial venture creates US National Atlas
  A company called Lexon Technologies has been selected to help develop the Atlas. For more information about this venture, visit http://www.lexontech.com/atlas/
Western Association of Map Libraries

Microform Publications

Occasional Papers


Information Bulletin


Microform Sets

*Specialkarte der Oesterreichisch-Ungarischen Monarchie* [Austro-Hungarian Empire], 1873-1889. 1:75,000. Complete set of all editions. ISBN 0-939112-25-6. 3665 fiche. $1,200.00

First editions only. 1037 fiche. $300.00

*Maps and Charts of North America and the Caribbean, 1750-1789.* Phase I, Titles 3-1551. 335 fiche $110.00

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[Poland] Wojanskiy Instytut Geograficzny. 1:100,000. 193-.. 53 fiche $500.00

Reichsamt fur Landesaufnahme. *Karte des Deutschen Reiches.* [Germany]. 1:100,000. Berlin, 1867-194?. 4,100 fiche $1,500.00

*Cassini & Carte de France, French Revolutionary Era Surveys.* 214 fiche $85.00

*U.S. Navy Nautical Charts of Melanesia.* 1917-1975. 251 fiche $100.00

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*Bernice Bishop Museum Air Photos of Melanesia.* ca. 64,000 photos on 70 reels of 35mm film $35/roll


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<td>1973</td>
<td><em>Catalogue of Sanborn Atlases at California State University, Northridge</em></td>
<td>Gary W. Rees and Mary Hoeber. OP1. LC #73-5773 ISBN 0-939112-01-9</td>
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<td>1978</td>
<td><em>Index to Early Twentieth-Century City Plans Appearing in Guidebooks: Baedeker, Muirhead-Blue Guides, Murray, I.J.G.R., etc., Plus Selected Other Works to Provide Worldwide Coverage of over 2,000 Plans to over 1,200 Communities, Found in 74 Guidebooks</em></td>
<td>Harold M. Otness. OP4. LC #78-15094 ISBN 0-939112-05-1</td>
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<td>1986</td>
<td><em>Map Index to Topographic Quadrangles of the United States, 1882-1940</em></td>
<td>Riley Moore Moffat. OP10. LC #84-21984 ISBN 0-939112-12-4</td>
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