

Multimedia Visualization and Interactive Systems – Drawing Board Possibilities and Server Realities



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University of Miami, Digital Library Initiatives

Presented For Sparking Synergies: Bringing Research and Practice Together
Charlotte, North Carolina, 2005.

University of Miami Libraries

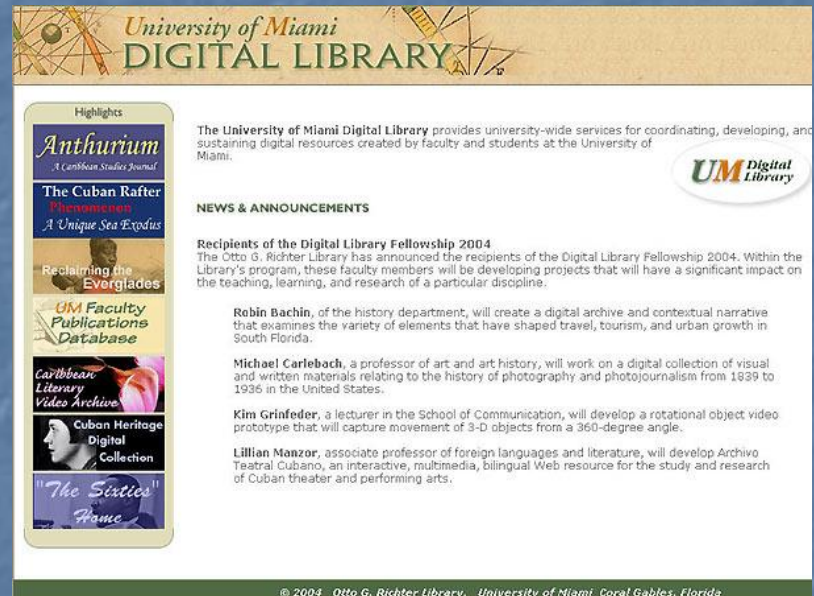
UM Digital Library Initiatives



<http://www.library.miami.edu>

10 Servers

500,000 visits/month



<http://digital.library.miami.edu>

3 Servers

Work with a range of research academics from Anthropology and Architecture to Cell Biology, Marine Science, Physics and Sociology building Digital Libraries

Paradigm Shift Case Study

Cuban Rafter Phenomenon: A Unique Sea Exodus (2005)

<http://balseiros.miami.edu>



Technical & Conceptual Deconstruction

What makes a Paradigm Shift Digital Library?

Introduction

Map

Part I Balseros: What is the Rafter Crisis?

A. Overview and Definition
B. Rafters and Rafts
C. Timeline of Key Events/Related Policy Documents
D. US Coast Guard
E. Bibliography of Existing Literature

Part II Interdicted: The Rafters Go to Guantánamo


A. Overview
B. Living Conditions
C. Creative Expression - Children
D. Creative Expression - Adults
E. Religious Expression
F. Communication - Rafter Newspapers
G. Daily Life in the Camps

Part III Crisis in the Wider Caribbean - The Case of the Cayman Islands

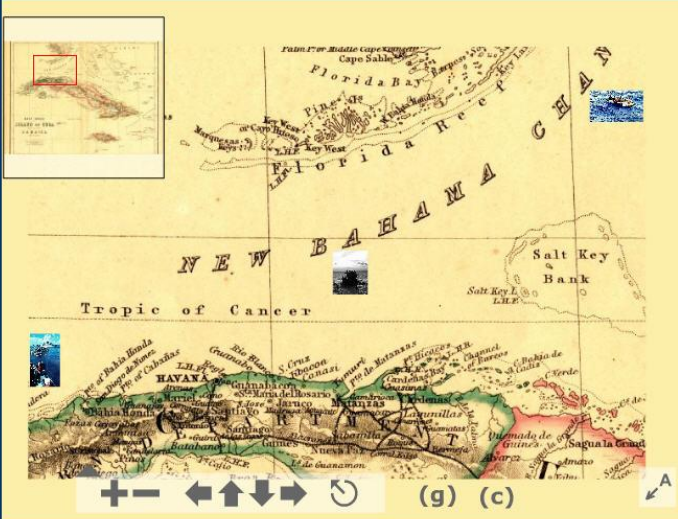
A. Overview
B. Timeline of Key Events/Related Policy Documents
C. Cayman Island Photos

2004 Conference

Credits & Acknowledgments

Sound  (On/Off)

Use the control panel and arrows below to explore the balseros journey between Cuba, the U.S., the Cayman Islands and wider Caribbean. Keypoints in the rafters' journey included Guantánamo, Key West, Miami, Havana and the Caymans. See if you can navigate to them. The smaller contextual window (top left) gives a larger overview of the entire map if you get lost. Drag around the red box with your mouse or explore the map with the hand icon that appears when over the map.



The Cuban Rafter Phenomenon: A Unique Sea Exodus

- Fertile new territory to debate Conceptual Theory vs. Digital Implementation (Drawing Board Possibilities and Server Realities)

- Application brings hopes of research and challenges of praxis together in fundamentally different remix than before

- Site acts as a fulcrum for larger shift ground to a new emphasis and balance

In our case a traditional open source text heavy (Php/MySQL/database silo shop to one that has begun to think seriously about new media/multimedia interactive digital library possibilities

Problem: How do you build a New Millennia Digital Library?

Background



Spring 2003 Dr. Holly Ackerman, Latin American Studies Specialist and Fulbright Scholar Approaches Dept.

Ford Foundation Grant between University of Miami, St. Thomas Centre for Human Rights, Florida International University Cuban American Studies Program

Three Goals

- 1) Produce Conference on 10th Anniversary of Cuban Rafter Phenomenon
Assembling existing global experts on transatlantic Migration
(Between 1959 -2005 approximately 100,000 citizens left Cuba by sea in small vessels and reached the states alive.)
- 2) Produce New Media Digital Library to codify this recent history expanding the range of academic research possibilities (Experimental with Capital "E")
- 3) Codify, aggregate and present current state of this body of knowledge (aid to Disaster Preparedness, Next Ten Years, Lessons Learned)

What are the characteristics of this digital library?

- Should contain a wide range of existing documents pertaining to this history
- Traverse an expanded range of academically non traditional media types (i.e. audio interviews, video footage, maps, statistical data, images, video, archivally intact gov. documents)
- Expand notion of traditional academic text/database search retrieval information system
- Maintain Ph.D. level historiographic depth structure and integrity of archival sources (unedited interviews, footage)



Transgressing Traditional Digital Library Boundaries

- Dr. Ackerman was very open to expanding digital library boundaries (experimentation).
- did not want to use grant to produce traditional front end text box search/backend Database (Php/MySQL, Content DM, DSpace) Digital library that department previously specialized in producing Google type lists



The Old and the New



BIBLIOGRAPHY ON MODERATE CUBAN POLITICS, 1952-1965

Compiled and annotated by Holly Ackerman, Otto. G. Richter Library, University of Miami

The **Bibliography on Moderate Cuban Politics, 1952-1965** includes 271 annotated primary and secondary resources related to events, groups and individuals that advocated the return to democratic process during the three periods described in this essay:

► [The Historical Context of the Literature](#)

Author

Title & Abstract

Search

Author: Enter last or first & last name

Title/Abstract: Find results with All of the terms

Author, Title & Abstract: Find results with All of the terms

► [Archives](#) ► [Magazines/Journals](#) ► [Memoirs & Biographies](#)

► [Microfilm](#) ► [Monographs](#)

► [Newspapers, Periodicals & Pamphlets](#) ► [Reference](#)

CHC Digital
UM Digital Library
University of Miami
[Acknowledgements](#)
[Comments & Suggestions](#)

HTML
Front End

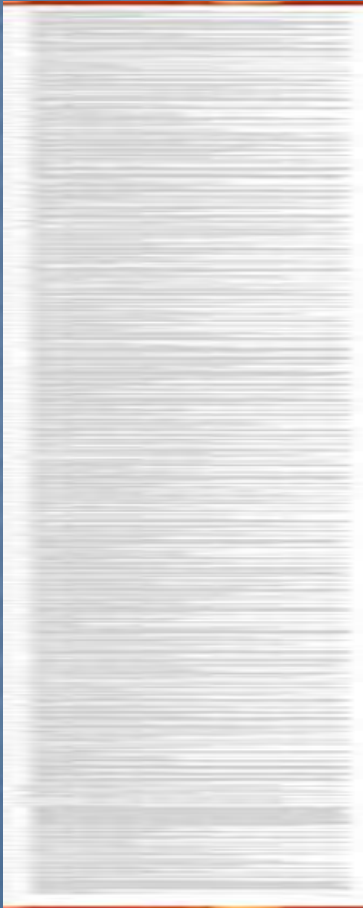
PHP
Middleware

MySQL
Database
Search/
Retrieval
Document
List
Backend

Text Box
Search
Author
Keyword
Material Type

Long Scrolling List Syndrome

Information Blur

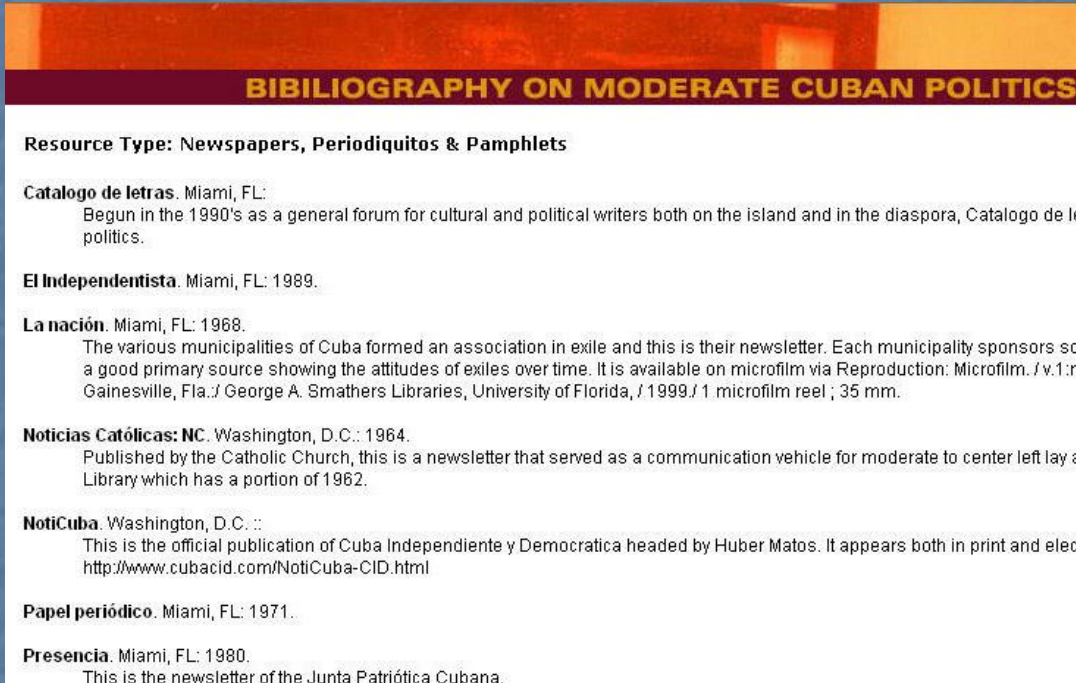


Increasingly our 'academic clients and users' were unhappy with these types of applications.

Variety of Reasons

even though this was robust and exhaustive, policy decision makers and others coming to this body of information could not see woods from trees to begin to see and make decisions regarding larger pictures

Human Users, Scrolling Lists, Server Possibilities



BIBLIOGRAPHY ON MODERATE CUBAN POLITICS

Resource Type: Newspapers, Periodiquitos & Pamphlets

Catalogo de letras. Miami, FL:
Begun in the 1990's as a general forum for cultural and political writers both on the island and in the diaspora, Catalogo de letras is a general forum for cultural and political writers both on the island and in the diaspora, Catalogo de letras.

El Independentista. Miami, FL: 1989.

La nación. Miami, FL: 1968.
The various municipalities of Cuba formed an association in exile and this is their newsletter. Each municipality sponsors so a good primary source showing the attitudes of exiles over time. It is available on microfilm via Reproduction: Microfilm. / v.1: Gainesville, Fla. / George A. Smathers Libraries, University of Florida, / 1999. / 1 microfilm reel ; 35 mm.

Noticias Católicas: NC. Washington, D.C.: 1964.
Published by the Catholic Church, this is a newsletter that served as a communication vehicle for moderate to center left lay Catholics. Library which has a portion of 1962.

NotiCuba. Washington, D.C.:
This is the official publication of Cuba Independiente y Democrática headed by Huber Matos. It appears both in print and electronic form. <http://www.cubacid.com/NotiCuba-CID.html>

Papel periódico. Miami, FL: 1971.

Presencia. Miami, FL: 1980.
This is the newsletter of the Junta Patriótica Cubana.

- Application being largely used to make policy decisions regarding Cuba
- Search Results were pulling up accurate but overly long picture (old problem of precision/recall)
- Remixing the metadata did not cut it?

Is there a more elegant way of solving this problem?

Online Site Comparison

New Media Expression vs. Substance

100
interactivity
video
audio
Increasing
Online
Media
Richness
images
Text
0



High Online Expressiveness (Design/Style)

(Rich Media Possibilities, Video, Audio, Interactivity)

Advertising, Fashion, Games Sites

Generally Little Substance,

Points Well Made to "Sell Product"



Rafters Site Goals

Robust Academic Structure

High Degree of New

Media Expressiveness



Traditional Online Academic Digital Libraries

Text Heavy/ Database Search + Text, Images, etc.

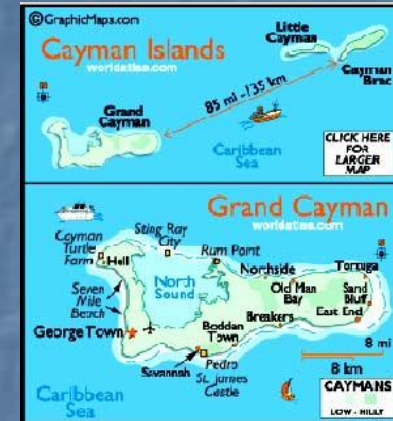


Increasing Academic Depth Structure/Substance

Research Academic
Generally R&D, Serious
Science, Engineering
Virginia Tech, Content DM

Serious Focus on Visual Narratology, Multimedia and Visual Metaphor for Information Architecture

- What does this create?
 - Interactive Information System
 - Interactive Multimedia Digital Archive
 - New Media Digital Library
 - Interactive Flash Based Multimedia Website
 - Streaming Video Interactive 2D Online Educational Resource
 - Rich Media Online Historiographical Archive



Tufte's et al's Ideas Regarding Information Visualization



napster™

MP3 Format

Is this a digital library or do semantic debates regarding terminology herald something new

The Drawing Board: Taxonomy, Folksonomy or Visual Metaphor for Information Architecture

- This was recent history and the cognitive coordinates (histories) were still largely fluid and uncoded.
- Old idea: Use Metadata Specialist and construct ontology/taxonomy (Proved impracticable as contents/material was coming in on a rolling basis in various formats (video, audio text)
LCSH and Getty Image Taxonomies seemed ossified and out of date



Back to the Drawing Board: Folksonomy and the Dictatorship of the Proletariat for Information Architecture

- 2nd Idea) Use Existing experts to organically produce 'folksonomy' based on collaborative feedback among experts



- Proved overly long and produced another long scrolling list taxonomy that made the principal investigator unhappy



The Big Experiment: Overarching Visual Metaphor and a Cognitive Map to Guide Information Architecture

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The Cuban Rafter Phenomenon: A Unique Sea Exodus

- Solved Problem of Taxonomy and also provided intuitive mode of Navigation

Navigation on left, Map on Right

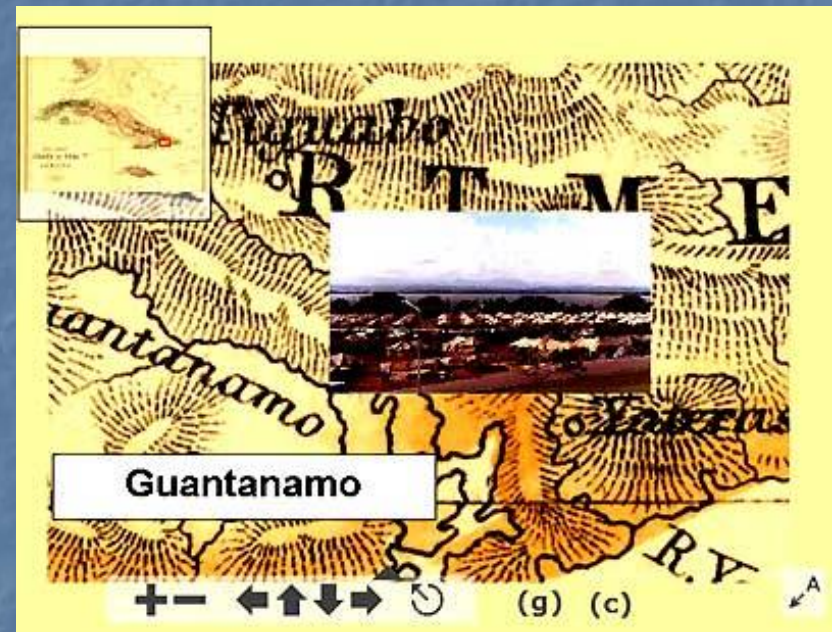
- More than simple map, the interface provides a cognitive cartography and Humanly intuitive way to navigate

New Visual HCI Interface Possibilities

Zoomable Fly-Through Humanly Intuitive Navigation and Cognitive Landmarks



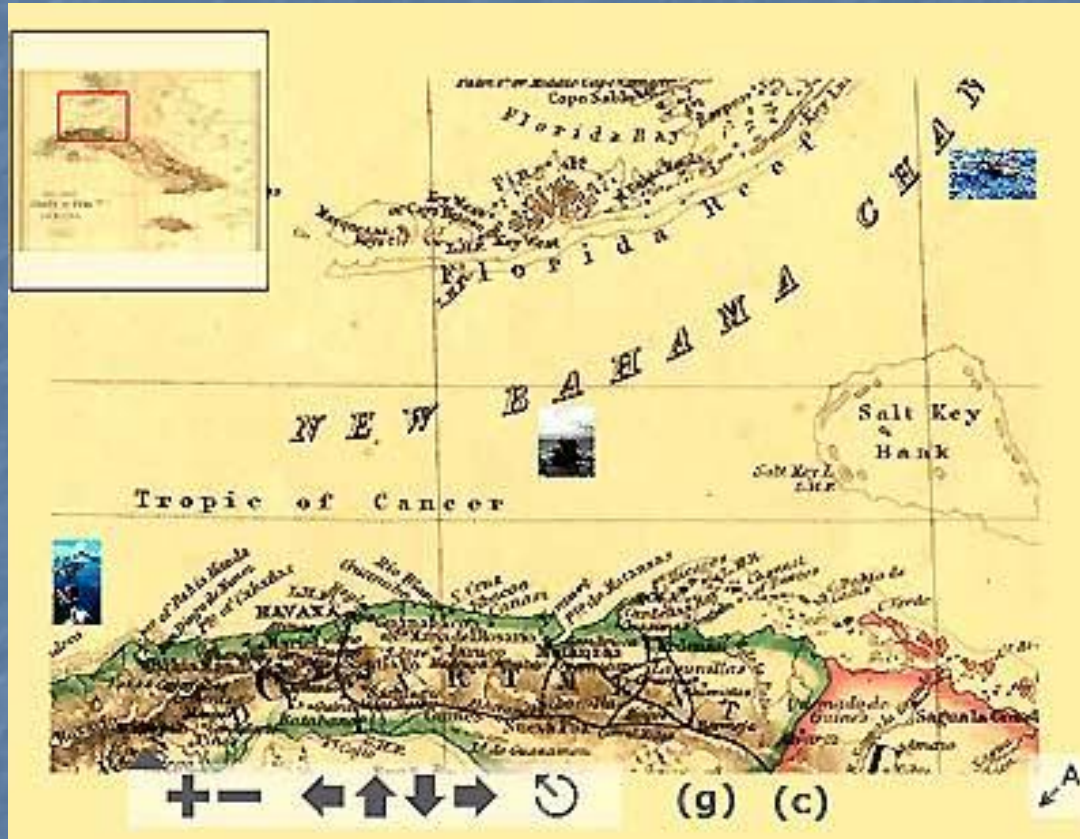
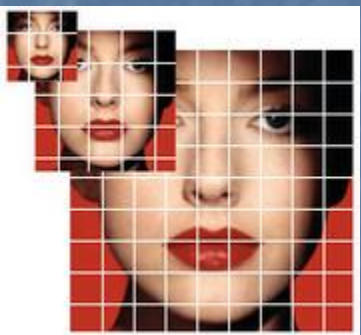
Problem Solved: Context Preserved (Upper Left)/ Humanly Intuitive Map



Link to Image, Document and Video Libraries

Physical/Cognitive Cartographies

Information Visualization, Interactivity, Multimedia



Context
Preserved
In Map in Upper
Left Corner

High Zoomable
Resolution

Cognitive
Landmarks
Emphasized
through annotated
clickable
Iconology
superimposed
On Map

Zoomable Interface (1.800 Gig Map) – Front End (Zoomify)
Links to Digital Video, databases, document and Image Libraries –
Streaming and other Server Back ends (Real Media Streaming Server).



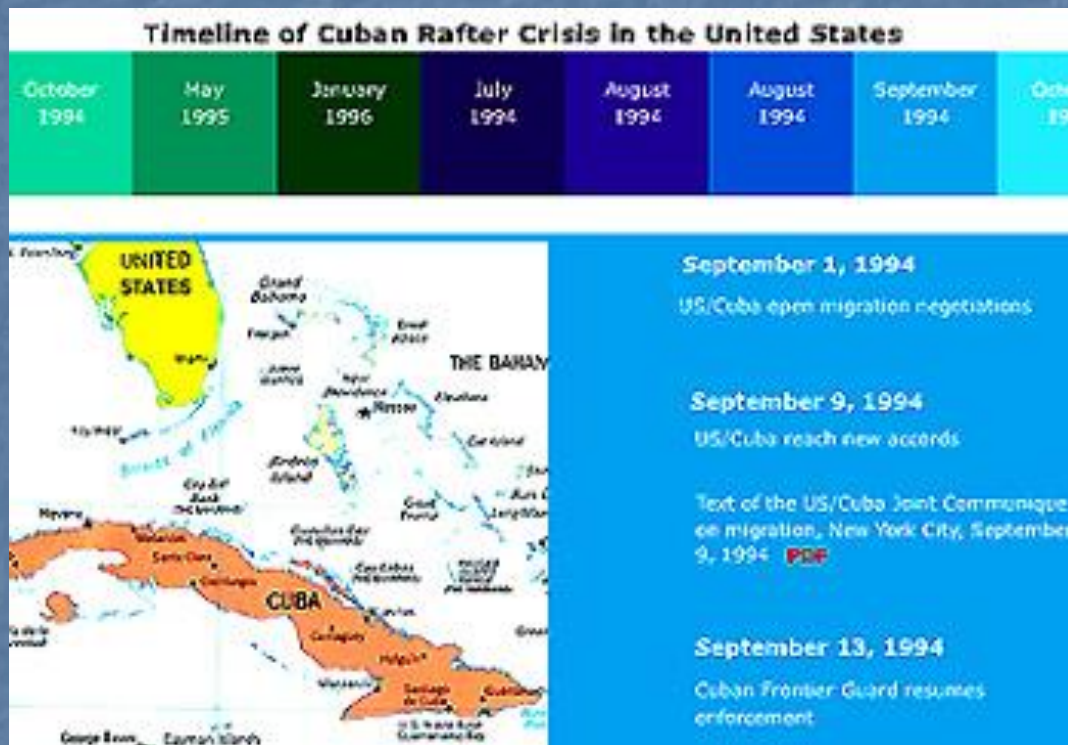
Web Development Technical Background



- DreamweaverMX used to quickly build pages (integrate different media types, Real video, audio datasets, keep track of changing translations (allowed major sections of website to be done easily both in Spanish and English) CSS, Frames and templates were used to build larger site structure
- Adobe Acrobat used to maintain archival integrity of source documents (press releases, news articles, gov documents)



Other Technical Possibilities



- visual horizontal timelines

visual metaphors for navigation and condensed structure to present large amounts of information in single screen spaces

(Possibilities in Studio 8 largely untapped)

- New Interactive Possibilities of Macromedia Flash heavily used to provide more robust interactivity and human engagement

Visualization and Progressive Incremental Iterations

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Rafts and Rafters

Choose a number to see pictures of the Cuban rafters and their rafts on the ocean's waters:

1 2 3 4 5 6 7 8 9 10 11 12 13



Although the Cuban rafts look simple, many rafters spend months or even years obtaining the materials to construct their fragile vessels. Access to every sort of construction material is restricted in Cuba. The materials are evidence of intent to leave the country and it is illegal to own items such as motors, inner tubes and compasses unless you can prove that they belonged to your family prior to 1959 or were acquired for state-sanctioned purposes after 1959. Until Fidel Castro called back the border guard on August 12, 1994 all evidence of a raft had to be carefully hidden. Photo courtesy of the Public Affairs Office, 7th Coast Guard District, Miami, Florida.

- Still Image Slideshows (Javascript application) – archival images delineating history of period.
- Entire Site Context Preserved in larger visual narratology.
- Once big picture is worked out the thousand pages of details fall into a natural place.

Academic Video/Audio Possibilities

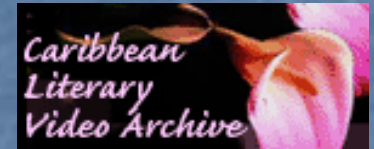
- Video Files – Copyright easily obtained for robust amount of news footage of rafter phenomenon (educational usage, footage digitized, converted to Real Media Files, Served from Real Media Streaming Server, (Adobe Premiere))



Sixties, Course Video Archive

<http://scholar.library.miami.edu/Sixties>

- Spanish/English Audio Interviews digitized, converted to MP3: Plentiful OpenSource Software Buzzsaw Audio Ripper, Lame, served via Flash



<http://scholar.library.miami.edu/cls/CWSIMainPage.php>

New Flash Video (fvp.) possibilities, Quick streaming + very robust interactivity possibilities (Actionscript 2.0) + New Database Components (Adobe/Macromedia Recent Merger)



Cuban Theatre Archive

<http://scholar.library.miami.edu/archivoteatral>

Digital Library Interactivity Technology and New Conceptual Paradigms

Timeline of Cuban Rafter Crisis in the United States

July 1994	August 1994	August 1994	September 1994	October 1994	October 1994	May 1995
						
<p>July 1994 1,010 rafters are rescued by the USCG up from 248 in June.</p> <p>US Coast Guard Rafter Rescues Part I (Real Video) Part II (Real Video)</p> <p>U.S. Coast Guard Alien Ingrat Statistics // U.S. COAST GUARD</p>						
<p>From the University of Minnesota Human Rights Library, here is the book of the findings of the Inter-American Commission on Human Rights of the Organization of American States, "Victims of the Tugboat 'L3 de Mayo v. Cuba'"</p>						

(Actionscript 2.0/ Flash
Schneiderman's Leonardo's
Laptop, Manovich,
Language of New Media,

*(The visual timeline here
contains a spectrum of
media types: **real video**
archival footage of the
rafters, image and PDF
archival document links,
links to US Coast guard
statistics and outside links
to ancillary databases)*

HCI Focus

- **Keywords**

Cognitive Cartography
Visual Metaphor
Visual Narratology



- All media types can be attached to the skeleton of a Humanly centered visual metaphor (text, audio, video, datasets, images) which contains the databases

Paradigm Shift to New Visual Cognitive Cartography

- The rafters application heralded a gradual and synergistic methodological paradigm shift for our department



TextBox HTML Search
Metadata attached to Text,
Images, Video Material
(Backend PHP/MySQL
Or other Database

Organically generated visual
Metaphor, cognitive cartography
Visual narrative, HCI,Flash,
Actionscript, Zoomify Possibilities

Old Paradigm ‘Digital Library
Emphasis on “Container”, “Silo”
Passivity,,Repository,Textbased

**New Paradigm Academic Digital
Resource**, emphasis on Fluidity,
Hybridity of Media, Synthesis, Action

Technical Specifications

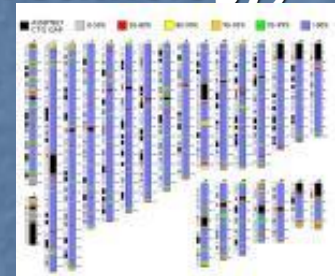
■ Rafters Model

Digital Assets (Documents, Images, Audio, Video, Databases)

Visual Map (Zoomify: Streamable, Tiling Algorithm Technology)

Flash (compiled swf file)

HTML (Frames Based Casing)



■ Advantages

(fully customizable Map can be chosen, imported, Human Genome, Stars, Cuba, size unlimited)

Zoomify Enterprise Provides Higher Annotative Possibilities

(Used by U.S. Government, Raytheon in lieu of Java Runtime API, less development time, less clunky)

Rich Interactivity Possibilities Provided by Flash and Actionscript 2.0

Studio 8 (Macromedia RIA Rich Internet Application Platform + Merger with Adobe Provides New Possibilities)



Google Maps Mashup Model

For Rent For Sale Rooms Sublets

Powered by [craigslist](#) and [Google Maps](#)
(this site is in no way affiliated with craigslist or Google)

City: Price: [Show Filters](#) [New](#) [Refresh](#) [Link](#) [About / Feedback](#)

\$1,500 - 1bd
Miami Beach Furnished, full ocean view on Millionaire Row
5880 Collins Ave
Miami Beach
305-793-9487 / email

pics	price	bd	description	city	date
	\$1900	2bd	Really Nice Completely Remodeled Condo in Historic District	Miami Beach	10/28
	\$1650	3bd	Furnished Apartment	Pompano Be	10/28
	\$1600	1bd	Brand New Never Lived In Penthouse On The 42Th Floor With Great Views!	Miami	10/27
	\$1500		Furniture is optional! This 2/2 is located in the heart of Brickell	Miami	10/27
	\$1500		Furnished Studio w/balcony Bay View includes Utilities	Miami	10/27
	\$1600	1bd	Mirador Crazy Landlords And Agents!	Miami Beach	10/27
	\$1650	1bd	Gorgeous Furnished Short Term Rental	Miami	10/27
	\$1800	3bd	2 BA & 1 Car garage home in beautiful neighborhood!	Boca Raton	10/27
	\$1990		New Luxury Condo, > Cats and Dogs Ok < Turnberry On The Green	Aventura Fl	10/27
	\$1600		Turnberry On the Green - New Luxury Condo, > Cats and Dogs Ok	Aventura Fl	10/27
	\$1600		Fully Furnished, Renovated Gorgeous Apt in the Heart of South Beach!	Miami Beach	10/26
	\$1500	4bd	New Home in Port Saint Lucie, Florida	Port Saint Lu	10/26
	\$1899	3bd	House Waterfront Close To The Beach	Miami Beach	10/26
	\$1650	2bd	701 Collins Ave & 7 Street	Miami Beach	10/25
	\$1950	2bd	Hibiscus Island-Waterfront Apt with Boatslips	Miami Beach	10/24
	\$1600	1bd	Beachside Condo w/ Direct Ocean View	Miami Beach	10/24
	\$1700	1bd	Furnished fully equipped oceanview 1/1 and studios across Ritz Carlton	Miami Beach	10/23
	\$1850	2bd	2BR - Ft. Lauderdale Penthouse	Fort Lauderc	10/23
	\$1800	4bd	4 bed 2bath house Fort Lauderdale	Fort Lauderc	10/23

Map data ©2005 Tele Atlas - [Terms of Use](#)

Mashup Technology and Lightweight Developer Models

For Rent For Sale Rooms Sublets

City: Miami Price: \$1500 - \$2000 Show Filters ^{New} Refresh Link

**\$1,650 - 1bd
Gorgeous Furnished Short
Term Rental**
Ne 63rd St
Miami

305-498-7878 / [email](#)

Map data ©2005 Tele Atlas - Imagery ©2005 DigitalGlobe - [Terms of Use](#)

Two Existing Databases Remixed:

Craigs List + Google Maps

Google has opened their API (Navteq, Multimillion dollar Map database ope, Up to 50,000 hits/day
<http://www.google.com/apis/maps/>

AJAX Model

presentation, XHTML, CSS;
dynamic display/interaction, Document Object Model;
data interchange/manipulation: XML, XSLT;
asynchronous data retrieval, XMLHttpRequest;
JavaScript binding everything together."

Advantages

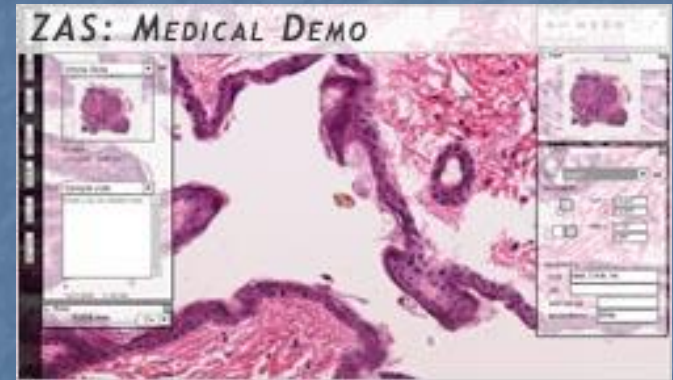
Anyone can use this with a little Javascript knowledge, not as much programming needed (no Flash.)
Not strictly true: different set of tools

Disadvantages

limited to Google Map specified annotation features

Final Questions: Are these Methodologies strictly for Humanities/Social Sciences?

- National Cancer Institute, UC Davis Center for Comparative Medicine Using more robust form of Zoomify (Enterprise) for medical research). Other areas: GIS, semiconductor inspection, materials science, Chemistry and Biotech, Security, Astronomy, Bioinformatics, Human Genome
- Zoomify sits on top of Flash
- Any process where humans make 'models'
- Current state of research: exploring limit cases and synthesis with databases



Lessons Learned: Synergies and Humanly Usable Digital Libraries

- After a year and a half of use, our Webtrends Weblog Statistics show that this is our most widely used Digital Library (approx. 47,000 hits per month compared to 3000-5000 of other MySQL/PHP Digital Libraries
 - Cognitive map and focus on visual narratology and interactivity sucks users in for second/third viewings (same IP addresses)
 - 2-3 viewings prefer mixture of map + text centric taxonomy to explore site
- -New Synergistic Effects with other MySQL/PHP database`digital image/video libraries`



Conclusions

- The Balseros site was successfully used as a large screen kiosk during the Cuban Rafters Conference
It continues permanently at <http://balseros.miami.edu>
- It acted as a paradigm case study for our department and is currently used largely as a living library, continuously updated as a learning and policy resource
Future plans include turning the entire structure into an open weblog format
- Currently, this is the next frontier as academic 'digital library' boundary walls are still in place (organically living digital libraries)



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- Human Computer Interaction Laboratory . (Shneiderman et al., College Park Maryland) <http://www.cs.umd.edu/hcil/> (click Visualization)
- Flashforward <http://www.flashforward2003.com> (Click on past winners for excellent examples)
- Macromedia. <http://www.macromedia.com> (Click on Sites of the month for technical deconstructions)
- Maproom: A Weblog about Maps. http://www.mcwetboy.net/maproom/cat_hacks.phtml
- MIT Media Lab, In particular John Maeda's Aesthetics and Computation/Visual Language Groups) <http://acg.media.mit.edu/> and <http://plw.media.mit.edu>
- University of Miami Digital Initiatives. <http://digital.library.miami.edu>
- Uzwyszyn, Raymond John. Information Visualization: Trajectories, Traces and Tools for Augmenting Human Intelligence. 2004. Online Presentation Available at <http://www.asis.org/SIG/SIGVIS/index.htm>
- Xerox Parc Research Group <http://www.parc.xerox.com/research>
- Zoomifyer. <http://www.zoomify.com>

Thank You for Coming

Questions?

<http://balseeros.miami.edu>

<http://digital.library.miami.edu>

Presentation Available at :

<http://www.library.miami.edu/Presentations/Rafters.ppt>

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