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THE DISCIPLINE OF ORGANIZING

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Outline

- Project Motivation

- We Organize Things, Documents, Information…

- The Concept of "Organizing System"

- Project Collaboration, Customization, Curation

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Project Motivation

- Since 2005 I have taught the required course for entering professional students at Berkeley's "Information School"

- The ISchools span the range from traditional library schools to informatics and computer science programs

- They are all "interested in the relationship between information, people and technology" but what do they have in common?

→ THE DISCIPLINE OF ORGANIZING

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We Organize…

- Things
- Information
- Information about Things
- Information about Information
   about {Things, Information}
- …

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We Organize…

- Most people have a notion of LIBRARY, MUSEUM, BUSINESS INFORMATION SYSTEM, and a few other common institutions that organize collections of various kinds

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Library

Photo by Wally Goebetz
http://www.flickr.com/photos/wallyg/6977666395/

Bancroft Library, UC Berkeley
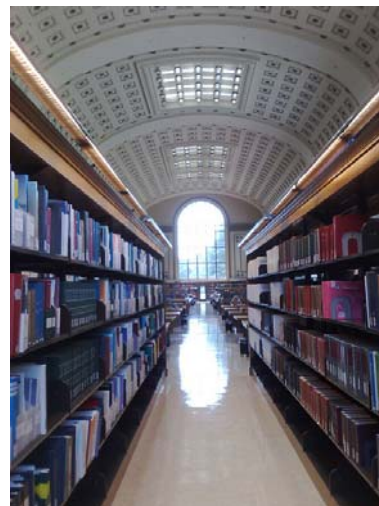

Photo by George Oates
http://www.flickr.com/photos/george/

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Museum

Louvre, Paris – with Mona

Photos by Bob Glushko

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Archive
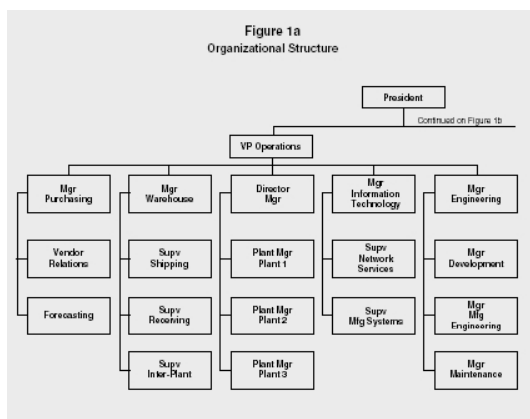

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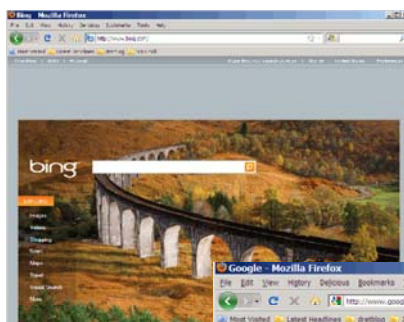
Human Resource Organization

9

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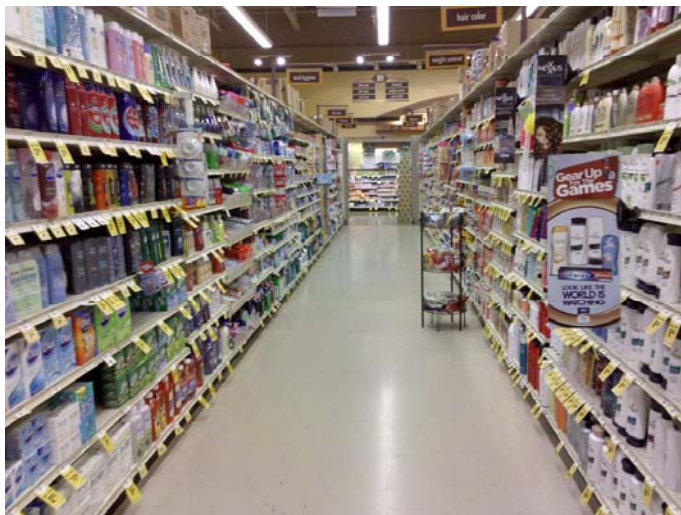SCHOOL OF INFORMATION

The Web & Digital Libraries

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Retail Store

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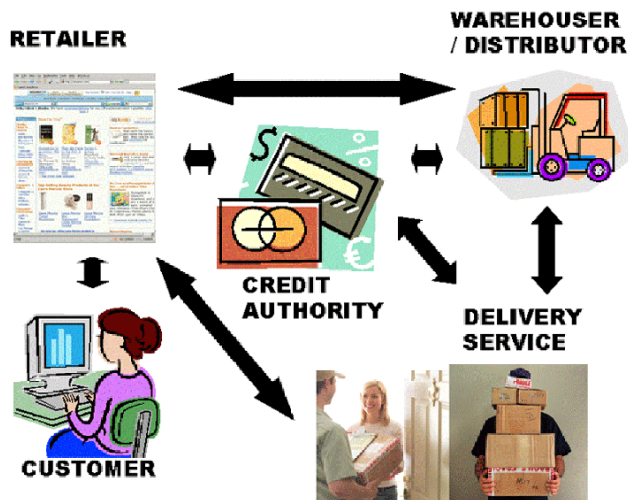UNIVERSITY OF CALIFORNIA, BERKELEY
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Web Retail Store

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Drop Shipment Business Model: Choreography of Services

RETAILER
WAREHOUSER / DISTRIBUTOR
CREDIT AUTHORITY
DELIVERY SERVICE
CUSTOMER

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Supply Chain

Tier 3
Tier 2
Tier 1
Enterprise
Distributors
Retailers
Customers

Materials
Products
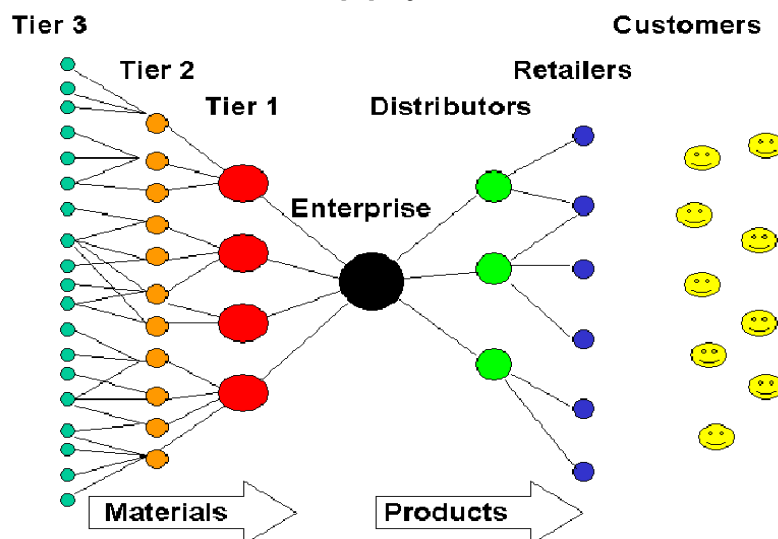
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Real-Time Information About Supply Chains

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Real-Time Information About Information

We Organize…

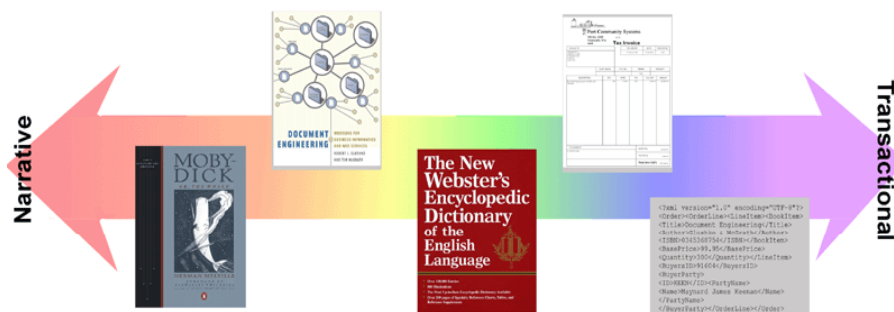- Most people also have a notion of different types of documents that have characteristic content, structures, and presentations

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The "Document Type Spectrum"

from "Document Engineering,"
R. Glushko & T. McGrath, MIT Press 2005

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A Novel

CALL me Ishmael. Some years ago—never mind how long precisely—having little or no money in my purse, and nothing particular to interest me on shore, I thought I would sail about a little and see the watery part of the world. It is a way I have of driving off the spleen, and regulating the circulation. Whenever I find myself growing grim about the mouth; whenever it is a damp, drizzly November in my soul; whenever I find myself involuntarily pausing before coffin warehouses, and bringing up the rear of every funeral I meet; and especially whenever my hypos get such an upper hand of me, that it requires a strong moral principle to prevent me from deliberately stepping into the street, and methodically knocking people's hats off—then, I account it high time to get to sea as soon as I can. This is my substitute for pistol and ball. With a philosophical flourish Cato throws himself upon his sword; I quietly take to the ship. There is nothing surprising in this. If they but knew it, almost all men in their degree, some time or other, cherish very nearly the same feelings towards the ocean with me.

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Product Catalog

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We Organize…

- Most people also have PERSONAL COLLECTIONS of things or information

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Closet

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Stamp Collection

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Document Collection

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Motivating the Concept
of "Organizing System"

- We can emphasize how all of these examples differ… or we can emphasize what they have in common

- They are all "Organizing Systems"
  - *A collection of resources*
  - *Intentionally arranged*
  - *To enable some set of interactions*

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The Organizing System [2]

- RESOURCES are "anything of value that can support goal-oriented activity"

- A COLLECTION is a group of resources that have been selected for some purpose
  - A collection is also a resource but because collections are an important and frequently used type of resource we distinguish them as a separate concept

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The Organizing System [2]

- INTENTIONAL ARRANGEMENT captures the idea that the system requires explicit or implicit acts of organization by AGENTS – human or computational ones

- These arrangements follow or embody one or more ORGANIZING PRINCIPLES, "directives for design" that are expressed in an abstract or logical way that does not constrain their implementation

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Intentionality in Organizing Systems

•The Grand Canyon contains information in its organization but is not an organizing system

• Organizing systems exist because of some intentional acts to enable interactions … where we can identify the agent(s)

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The Organizing System [3]

- INTERACTIONS include any activity, function, or service supported by or enabled with respect to the resources in a collection or with respect the collection as a whole

- Interactions can include access, reuse, copying, transforming, translating, comparing, combining… anything that a person or process can do with the resources… but we should focus on those that are designed into or directly supported by the organizing system

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The Activities of Organizing Systems

- We can identify four activities in the lifecycle of every organizing system:
  - Selecting resources
  - Organizing resources
  - Supporting resource-based interactions and services
  - Maintaining resources

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For Your Closet Organizing System…

- **Selecting**: *Should I hang up my sweaters in the closet or put them in a drawer?*

- **Organizing**: *Should I sort my shirts by color, sleeve type, or season?*

- **Supporting Interactions**: *Do I need separate places for laundry or dry cleaning?*

- **Maintaining:** *Should I toss out my clothes based only on stains and tears, based on how long I've owned them, or based on whether I'm tired of them?*

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Stop and Reflect…

• Does the definition of "Organizing System" apply to all of the types of collections, documents, and information services we've seen?

• Is it OK to use more abstract terms like "resource," "interaction," and "maintenance" instead of more specific and domain-specific terms?

- • Collection development, Appraisal vs. Selecting
- • Cataloguing, Indexing vs. Organizing
- • Curation, governance vs. Maintenance …

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Resources…

In the Library?   **In the Zoo?**

On the Web:
  Universal Resource Identifiers (URIs)

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Organizing Organizing Systems [1]

• We can classify organizing systems by:
  • resource type
  • dominant purpose
  • creator
  • size of intended user community
  • or many other ways

•But these classifications overlap and don't
have clear boundaries

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Organizing Organizing Systems [2]

- "Memory institutions" - libraries, archives, and museums

- Enterprise collections - business content, business data and knowledge management, web-based services

- Collections of structured information

- Collections of unstructured or semi-structured information

- Personal collections vs. institutional collections

- …

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A Library

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A Library?

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A Library?

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Natural History Museum

Museum national d'histoire naturelle, Paris

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Is a Zoo an Animal Museum?

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Is an Animal Theme Park a Museum?
Is it A Zoo?

Sea World, San Diego - with "Shamu" **[ARKS]**

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Is a Cemetery a Memory Institution? Is it a Human Resource Organization?
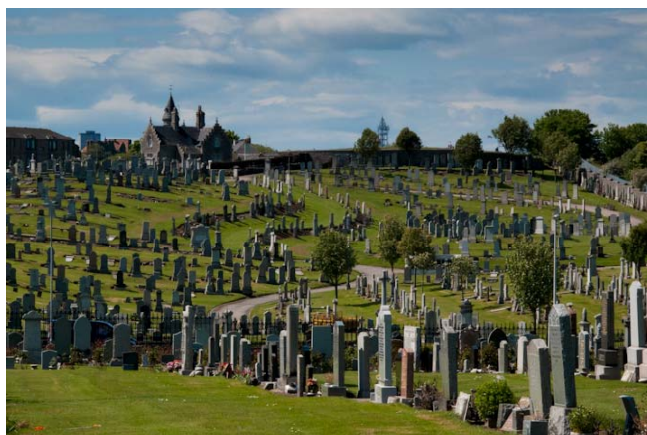
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"Design Space" or "Dimensional" Perspective

• Instead of thinking in terms of categories like Library or Museum or Business Information System, consider a specific organizing system as a point in a multidimensional design space and these categories as regions in that space...

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The 5 Dimensions of an Organizing System

• What Is Being Organized?

• Why Is It Being Organized?

• How Much Is It Being Organized?

• When Is It Being Organized?

• Who (or What) is Organizing It?

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What Is Being Organized?

- Identifying the unit of analysis is a central problem in every intellectual or scientific discipline - and in every organizing system

- Resources that are aggregates or composites of other resources, or that have internal structure, pose questions about the granularity of their "thingness"

- We might need to organize and manage the granular resources, the composite resources, and the relationships between them - all at the same time

45
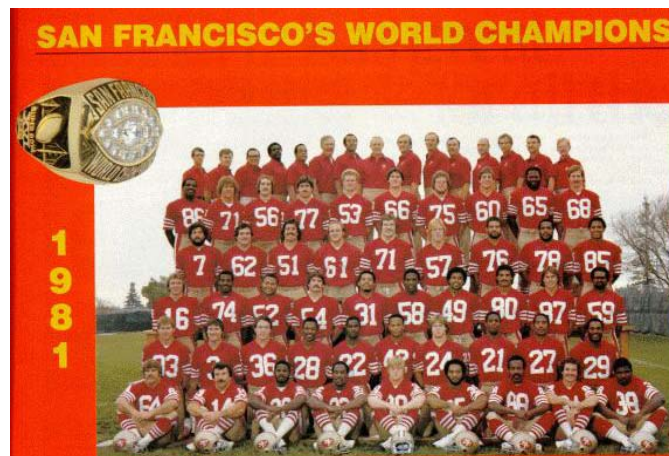
How Many Things?

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How Many Things?

THE CARPET-BAG   **II**

I STUFFED a shirt or two into my old carpet-bag, tucked it under my arm, and started for Cape Horn and the Pacific. Quitting the good city of old Manhatto, I duly arrived in New Bedford. It was on a Saturday night in December. Much

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How Many Things?

THE CARPET-BAG   **II**

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```
<Section title="The Carpet- Bag">
<Para>I stuffed a shirt or two into my old carpet-bag, tucked it under my arm,
and started for <Location>Cape Horn</Location> and the
</Location>Pacific</Location>. Quitting the good city of old
<City>Manhatto</City>, I duly arrived in <City>New Bedford</City>,
It was on a <Day>Saturday</Day> night in <Month>December</Month>...
```

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Primary Resources and Description Resources

- We often designate some resource as primary because it is the focus of our attention

- We often create other resources that are descriptions of or otherwise associated with the primary resource

- We call these "Description resources" (a more general term than "metadata")

- Primary and description resources can be either physical or digital…. So there are 4 combinations

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A Collection of Physical Description Resources of Physical Resources

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A Card from a Card Catalog

```
Z671        Phillips, David Rhys, 1868-
L6             The monastic libraries of Wales, fifth to
v.14        sixteenth centuries (Celtic and mediaeval
            periods).

               (In:  Library association record.  London.
            v. 14 (1912), p. 288-316, 374-398)
```

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A Digital "Catalog Card"

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"Augmented Reality" – Digital Descriptions for Physical Resources

San Francisco Nearest Transit
Floating signs can direct you to the nearest bus line or subway station.

Wikitude
Tags for Wikipedia entries and points of interest float on screen, telling you what's around.
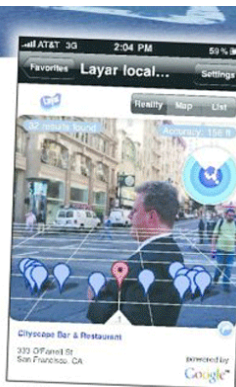
Layar
Layar lets you set a radius and filter your search by restaurants, bars or other destinations.

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Search Results are Digital Description Resources for Digital Resources

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Printed QR "Quick Response" Codes are Physical Descriptions of Digital Resources

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Why Is It Being Organized?

- The essential purpose of an Organizing System is to "bring like things together and differentiating among them"

- But there are always more precise requirements and constraints to satisfy and more specific kinds of interactions to support

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Interactions – The Why of Organizing Systems

- Some interactions can be enabled with any type of resource, while others are tied to resource types

- Interaction can be direct, mediated or indirect, or limited to interactions with resource copies or descriptions

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Some Interactions with Resources

Search (Boolean, Keyword, Structure)
Browse (Faceted, Social)
Display (Listen, Read, Watch, Perform)
Derivative (Edit, Annotate, Augment, Mash Up, Transform)
Copy (Share, Reproduce)
Sell (Exchange, Transact, Resell)
Protect (Preserve, Encrypt, Secure)
Destroy
Organize (Bookmark, Tag, Categorize, Move, Label)

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Understanding Interactions

Physical Manipulation

Symbolic Manipulation

Interpersonal Contact
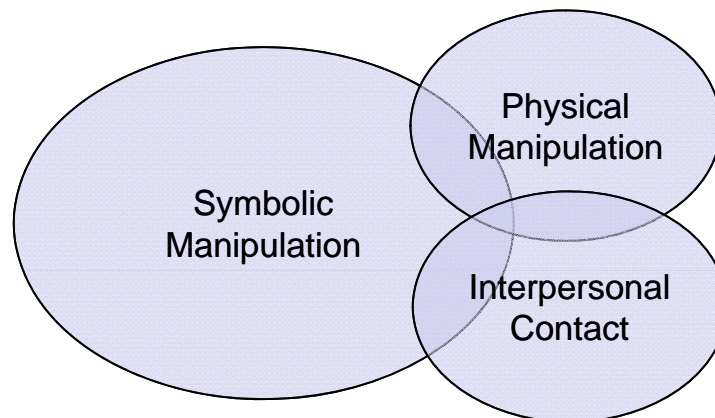
Apte, U. and Mason, R. (1995). *Global Disaggregation of Information-Intensive Services.*

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Understanding Interactions

- Physical manipulation is an intrinsic interaction with collections of physical resources

- Physical manipulation and interpersonal contact might be required to interact with information resources in physical form like the printed books in libraries

- With digital resources, neither physical manipulation nor interpersonal contact is required for interactions, and the essence of the interaction is information exchange or symbolic manipulation of the information contained in the resource

- So we often interact with physical resources through associated digital resources

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Principles of Organization

•The organization of physical resources is strongly influenced by their material manifestation, and this organization often persists when digitized resources are organized

•The simplest organizing principle is co-location

•Almost any property of a resource might be used as a basis for its arrangement, and multiple properties are often used simultaneously

• Properties of the collection as a whole can also be used in organizing principles

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Principles of Organization

RESOURCE

Single Resource Properties

Intrinsic Static	Extrinsic Static
definition: directly experienced, subject matter, implicit, inherent properties	definition: assigned to resource, name, identifier.
examples: size, color, shape, author, date of creation Text content	examples: Dewey Decimal
Intrinsic Dynamic	**Extrinsic Dynamic**
definition: inherent properties; change over time.	definition: behavior based properties.
examples: skills, experience	examples: current owner, location, best seller lists

Time

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Organizing System: Home Kitchen
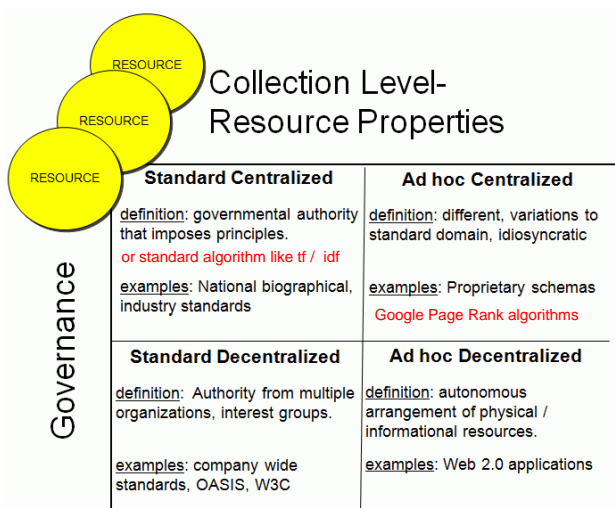

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Principles of Kitchen Organization

•**Intrinsic static properties:** If you store your pots, frying pans, and baking pans in different cabinets and nest each set by size

• **Extrinsic static properties:** A spice rack with the spices arranged in alphabetical order

• **Intrinsic dynamic properties** if you arrange your milk and other perishable goods by expiration date, a "useful life remaining" property that decreases to zero as the expiration date approaches

• **Extrinsic dynamic properties** if you put the most frequently used condiments or spices in the front of a refrigerator or pantry shelf.

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Principles of Organization

Collection Level- Resource Properties

RESOURCE
RESOURCE
RESOURCE

Governance

Standard Centralized	**Ad hoc Centralized**
definition: governmental authority that imposes principles. or standard algorithm like tf / idf examples: National biographical, industry standards	definition: different, variations to standard domain, idiosyncratic examples: Proprietary schemas Google Page Rank algorithms
Standard Decentralized	**Ad hoc Decentralized**
definition: Authority from multiple organizations, interest groups. examples: company wide standards, OASIS, W3C	definition: autonomous arrangement of physical / informational resources. examples: Web 2.0 applications

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Grocery Store: Multiple Organizing Principles

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Closet

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An Individual's Book Classification System

Photo by Brendan Curran

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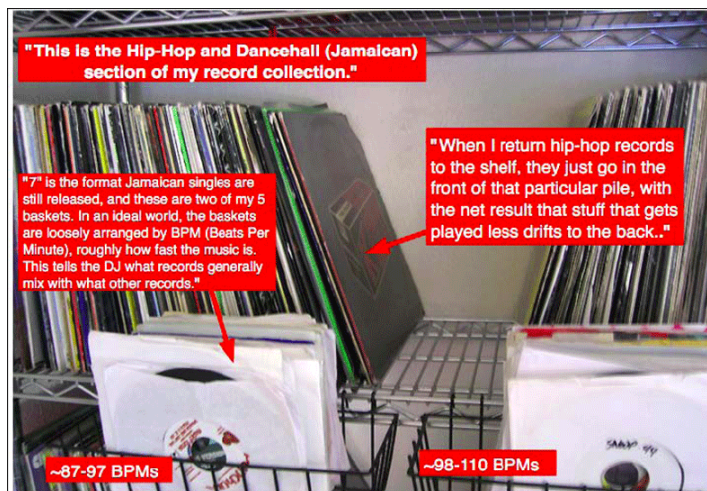SCHOOL OF INFORMATION

A DJ Organizes His Record Collection

Photo by Matt Earp aka Kid kameleon

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Be Careful About "Objective" Principles

• Alphabetical - Arrange resources according to the spelling of their names or identifiers

• Chronological - Arrange resources according to some time-related property or descriptor

• Geographical - Arrange resources according to location information

Rosenfeld & Morville, Information Architecture for the World Wide Web (the "Polar Bear" book)

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How Much Is It Being Organized?

•Not every resource needs the same amount of organization

•Not everything is equally describable

•A controlled vocabulary can yield more consistent organization

•The scope and size of a collection shapes how much it needs to be organize

•Are you organizing the resources you have, or do you need to create an organizing system that can apply to resources that you have not yet collected?

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When Is It Being Organized?

- When the resource is created

- When it is added to some collection

- Just in time

- Never

- All the time - continuous or incremental

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"Just in Case" Organization

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Postponing Organization

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The Tradeoff

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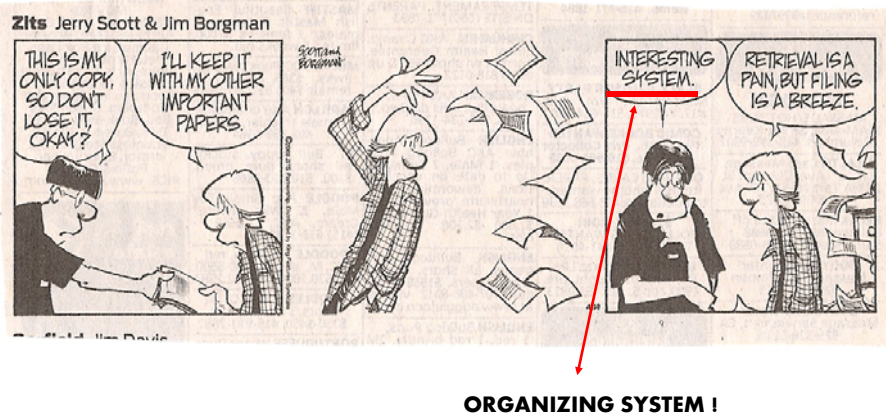
Who or What Is Organizing?

- Authors or creators

- Professional organizers

- Users "in the wild"

- Users "in institutional contexts"

- Automated or computerized processes

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Summary

- The concept of Organizing System unifies a vast body of design and analysis practice from many disciplines

- Thinking in terms of design dimensions overcomes the limitations and inertia of the traditional categories

- It is a generative, forward-looking approach that encourages and accommodates innovation while preserving conventional theory and practice as design patterns

- It enables intelligent conversations between people who didn't have much common language before

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Project Collaboration

- This book began as the lecture notes from my Berkeley course, but I soon realized that it was more ambitious than I could do on my own

- So I enlisted numerous collaborators, and the book is now the product of countless discussions with students and faculty colleagues at Berkeley and other schools

- Manuscript has been used at Berkeley (2x), UNC, and Humboldt, and other schools will soon try it

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What We Are Publishing

- "The Discipline of Organizing" will be published by MIT Press in early 2013 (R. Glushko, editor) simultaneously in several different formats:
  - As a traditional printed book
  - As pdf files, freely available for anyone to use (starting Fall 2012)
  - In one or more ebook formats, integrated into an content repository to enable continued collaboration among the ISchools, who will collectively maintain and evolve the content and who can generate customized ebooks on demand

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Customization

- We have devised an approach that lets the book focus on core ideas while enabling it to satisfy different topical emphases ("flavors")

- Solution: "Lean text" + tagged "endnotes"
  - [Citation], [LIS], [Computing], [Business], [Law], [CogSci], [2012], etc.
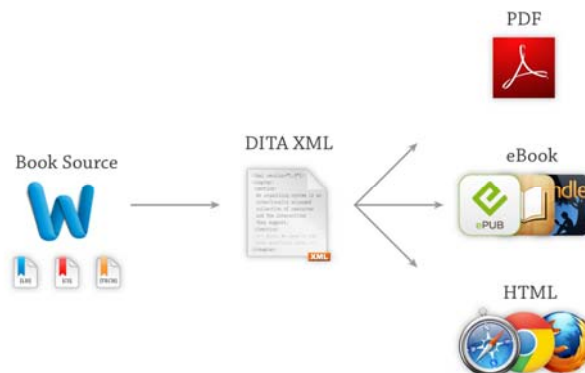 - Seamlessly incorporated into the text on demand

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TDO Publishing System
From Word to Pdf, ebooks, HTML

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Curation

- The repository of book content and shared course materials (lecture notes, assignments, etc.) will be hosted at Berkeley as DisciplineOfOrganizing.org

- I will serve as curator for at least two years

- We will also provide technical guidance and support for authoring and customization

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Comments, questions?

glushko@berkeley.edu

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