



UNIVERSITY OF CALIFORNIA, BERKELEY  
SCHOOL OF INFORMATION

# INFO 202

## “Information Organization & Retrieval”

### Fall 2013

Robert J. Glushko  
[glushko@berkeley.edu](mailto:glushko@berkeley.edu)  
@rjglushko

3 September 2013  
Lecture 2.1 – Organizing Organizing Systems

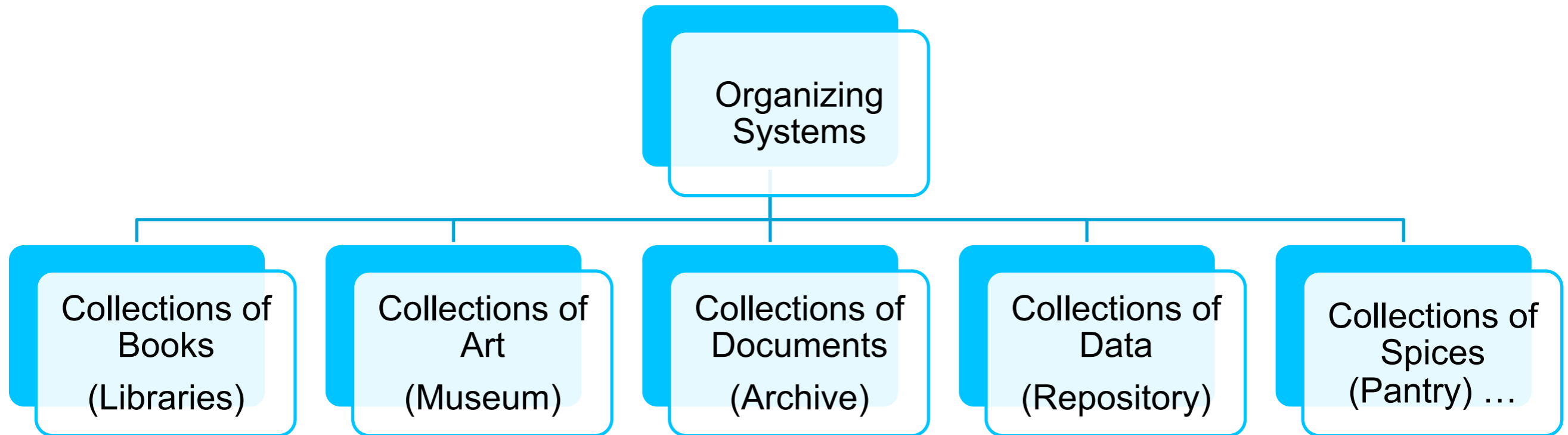


# Organizing Organizing Systems [1]

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

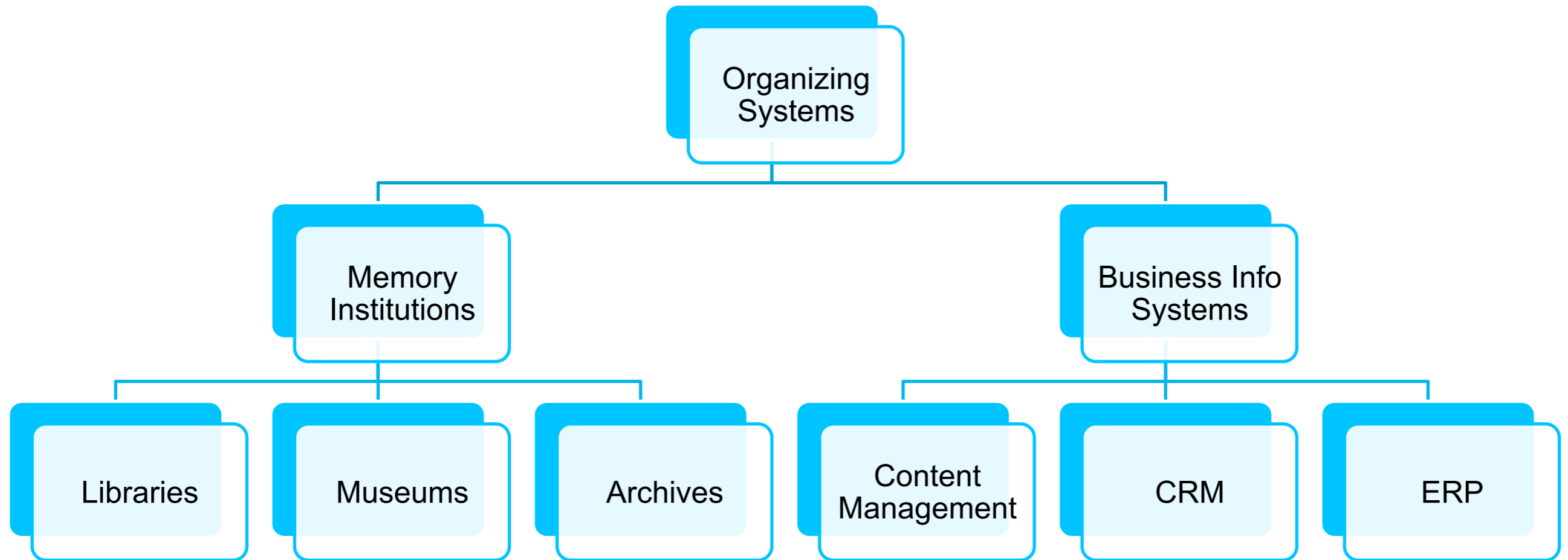


# Categorizing by Resource Type



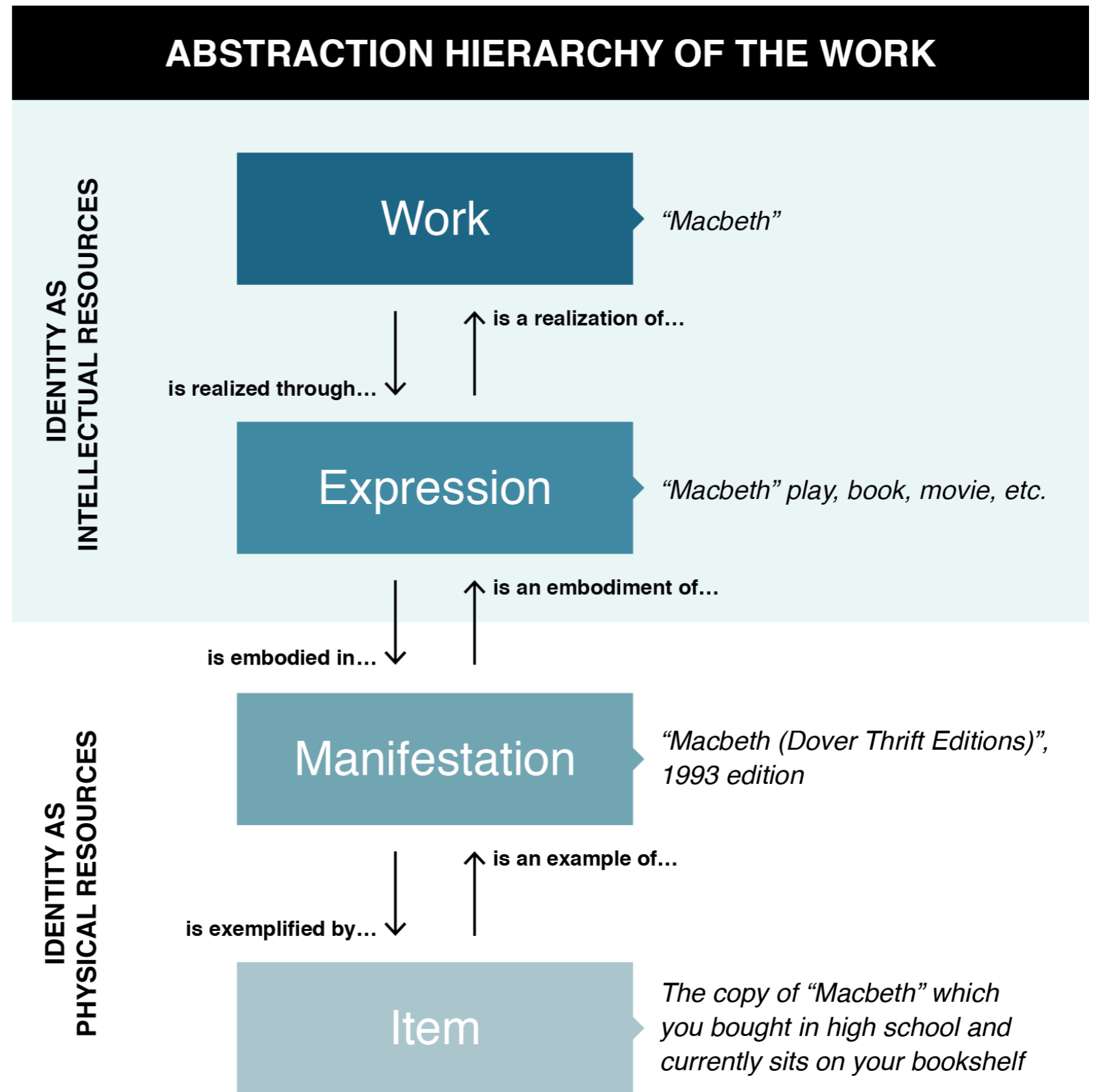


# Categorizing by Purpose: Resource Preservation as Means vs. End



Preserving instances or preserving types?

# Instances vs. Types





# “Shamu” -- Instance or Type?





## Organizing Organizing Systems [2]

- Many more categorizations:
  - Personal collections vs. institutional collections
  - Location of the user community
  - Technology used
  - ...
- But these classifications overlap without clear boundaries or necessary and sufficient features



UNIVERSITY OF CALIFORNIA, BERKELEY  
SCHOOL OF INFORMATION

# A Library







# A Library?

Hudson Valley Seed Library - Mozilla Firefox

File Edit View History Delicious Bookmarks Tools Help

Hudson Valley Seed Library

www.seedlibrary.org/catalog/

Most Visited 18 Google Calendar Gmail - Inbox (14) - bo... Google Docs - Home Home | Information Sy... Home | Info 202 Fall 20... Google Scholar

**Hudson Valley SEED LIBRARY** [View Cart or Checkout](#)  
0 items | Subtotal: \$0.00

[Home](#) • [Catalog](#) • [Membership](#) • [Events](#) • [About Us](#) • [Login](#)

**Art Packs**  
Heirloom  
Seeds and Contemporary Art,  
All in One Pack.

All Seeds by Category

- Arugula
- Asian Greens
- Beans
- Beets
- Brassicas
- Broccoli
- Cabbage
- Carrots
- Chard
- Corn
- Cucumbers
- Eggplant
- Fennel
- Flowers
- Greens
- Ground Cherry
- Herbs
- Kale and Collards
- Lettuce
- Melons
- Okra
- Onions
- Parsnips
- Peas

## 2012 Catalog

Welcome to our catalog for the 2012 growing season. It features over 150 varieties of seed, 60 of which were grown locally. With your support, we can continue to grow, package, and celebrate heirloom and open-pollinated varieties of garden seed right here in upstate New York. Browse our catalog by navigating the categories to the left or by using our full catalog quick-order page below.

### About Our Seed Packs

Our Art Packs are frameable art with seeds inside. **\$3.75 each (\$3.25 for members)** [Click here to see all of our Art Packs.](#)

Our Library Packs contain seed grown and processed in the Hudson Valley by small, sustainable farms, mostly on our own farm here in Accord, New York. **\$2.75 (\$2.25 for members)**

Our Garden Packs contain seed provided by responsible wholesalers. **\$2.75 (\$2.25 for members)**

**Members get a deal on all packs; [click here to learn more or join today!](#)**

### Arugula

- Arugula** : Roquette into taste heaven with fast-growing and plentiful arugula. **Add: 0**
- Arugula** : Bright and potent green, delectable in the cooler months. **Add: 0**
- Wild Arugula** : Smaller, punchier, and hardier than standard arugula, the wild strain is beautiful and delicious. **Add: 0**

### Asian Greens

- Baby Bok Choy** : A diminutive and tender Bok Choy which has an extreme cuteness quotient. **Add: 0**
- Bok Choy** : The stir-fry green par excellence. **Add: 0**
- Komatsuna** : Extremely cold hardy, ultra-mild Asian mustard green. Almost as sweet as spinach, but even easier to grow. **Add: 0**



# A Library?

## WIKIPEDIA

### English

*The Free Encyclopedia*  
3 861 000+ articles

### 日本語

フリー百科事典  
790 000+ 記事

### Deutsch

*Die freie Enzyklopädie*  
1 355 000+ Artikel

### Español

*La enciclopedia libre*  
864 000+ artículos

### Русский

*Свободная энциклопедия*  
817 000+ статей

### Français

*L'encyclopédie libre*  
1 208 000+ articles

### Italiano

*L'enciclopedia libera*  
886 000+ voci

### Polski

*Wolna encyklopedia*  
874 000+ haseł



### Português

*A enciclopédia livre*  
712 000+ artigos

### 中文

自由的百科全書  
398 000+ 條目



# What is a Library?

- Collection of resources
  - Organized to enable “access” and “reuse”
  - Curated for “public good” and “community creation”
  - Conventional interaction is “circulation” – borrowing and return of resources...
- Seed library and Wikipedia share some of these properties... but not the last... you only “return” a resource if you have improved its quality



# Consequences of Categorical Thinking

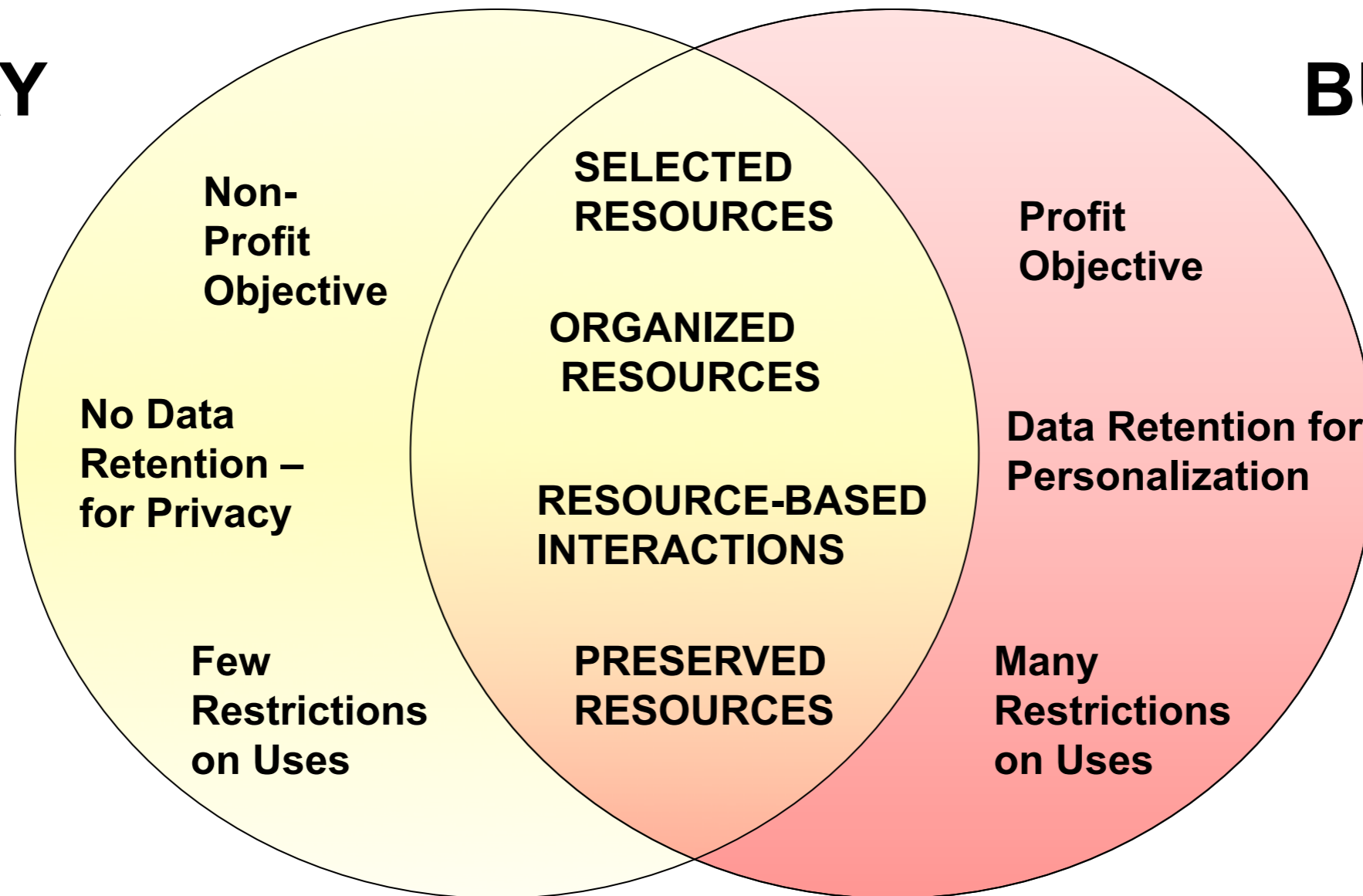
- Many types of resource collections have conventional characteristics that are deeply embedded in culture and language
- Using an established category to describe an organizing system reinforces these characteristics, even if we add qualifiers (“seed” library)
- ... and marginalizes any atypical characteristics of the organizing system being categorized



# Google Books == Library?

**LIBRARY**

**BUSINESS**



**YES:** [www.nytimes.com/2009/10/09/opinion/09brin.html?](http://www.nytimes.com/2009/10/09/opinion/09brin.html?_r=1)

**NO:** [http://www.huffingtonpost.com/pamela-samuelsong/google-books-is-not-a-lib\\_b\\_317518.html](http://www.huffingtonpost.com/pamela-samuelsong/google-books-is-not-a-lib_b_317518.html)



## A “Design Space” or “Dimensional” Perspective

- In addition to using 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...
- This treats the familiar categories as “design patterns” that embody typical configurations of design choices



# 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?



# An Organizing System Analogy Test

ZOO : NATURAL HISTORY MUSEUM

WORKFORCE ORGANIZATION : ( ? )

WILD ANIMAL PARK : ANIMAL THEME PARK

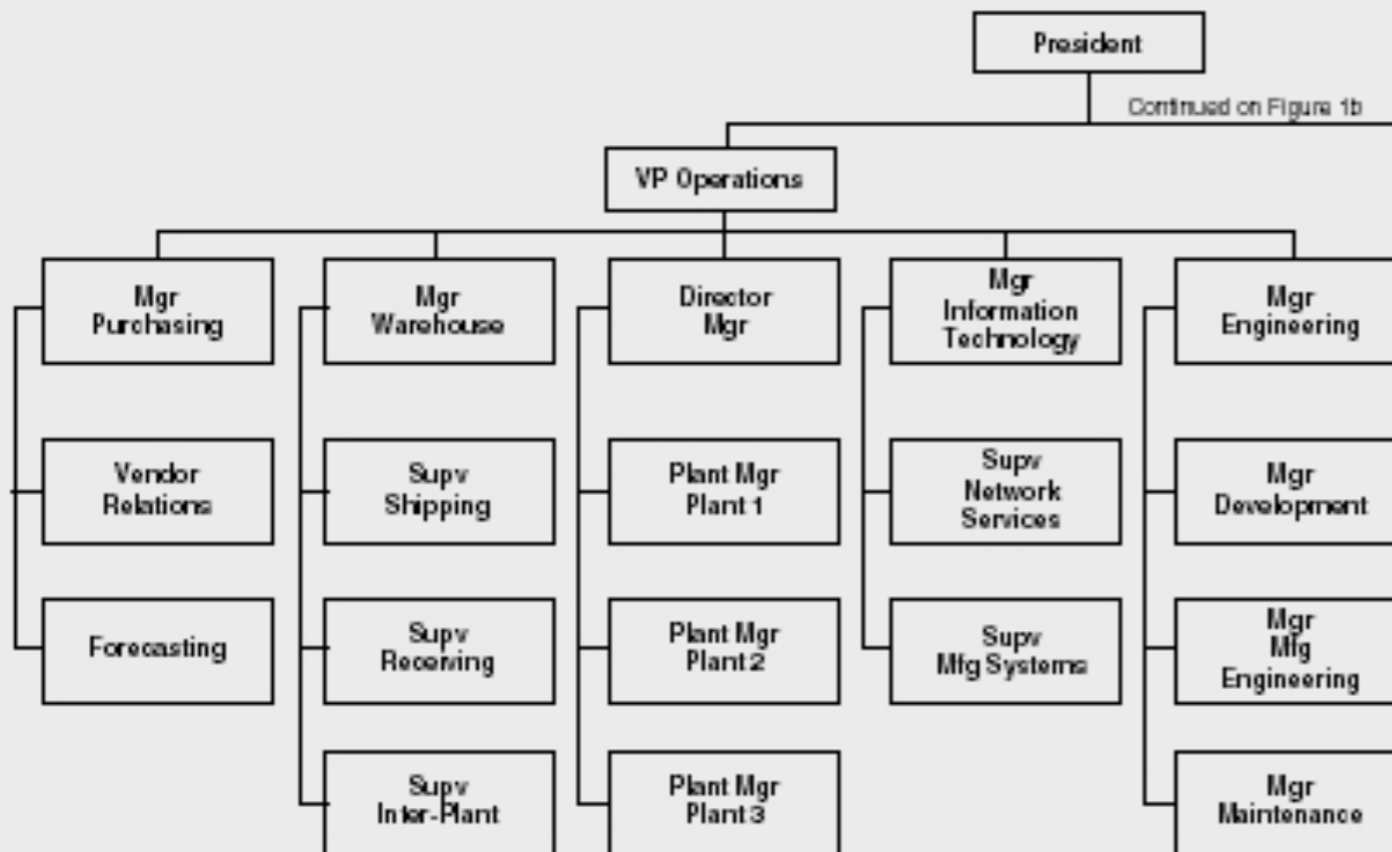
YOUR CITY : ( ? )





# Workforce Organization

Figure 1a  
Organizational Structure





# Cemetery == Memory Institution? == Human Resource Organization?





UNIVERSITY OF CALIFORNIA, BERKELEY  
SCHOOL OF INFORMATION

# Williamsburg == Human Theme Park? == Living History Museum?





# Consequences of Dimensional Thinking

- Overcomes the bias and conservatism inherent in familiar categories
- Design patterns support multi-disciplinary work that cuts across familiar categories and applies knowledge about them to new domains
- Creates a design vocabulary for translating concepts and concerns from category and discipline-specific vocabularies



UNIVERSITY OF CALIFORNIA, BERKELEY  
SCHOOL OF INFORMATION

# INFO 202

## “Information Organization & Retrieval”

### Fall 2013

Robert J. Glushko  
[glushko@berkeley.edu](mailto:glushko@berkeley.edu)  
@rjglushko

3 September 2013  
Lecture 2.2 – Five Design Dimensions  
for Organizing Systems



# The 5 Design 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?



## 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"



# How Many Things?

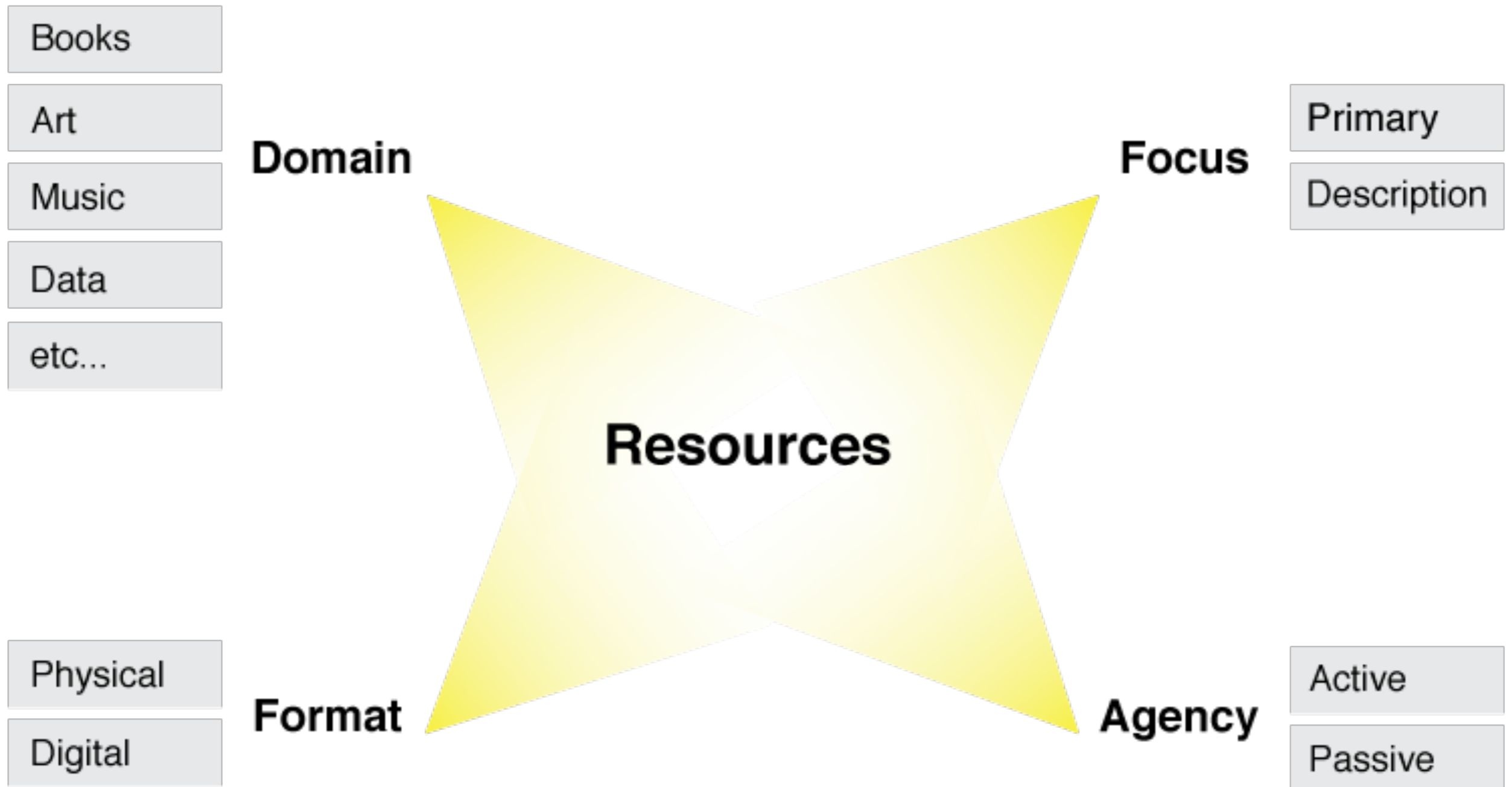


Photo by Emma Jane Hogbin Westby (<http://www.flickr.com/photos/emmajane/6817671955/>) Creative Commons CC BY 2.0





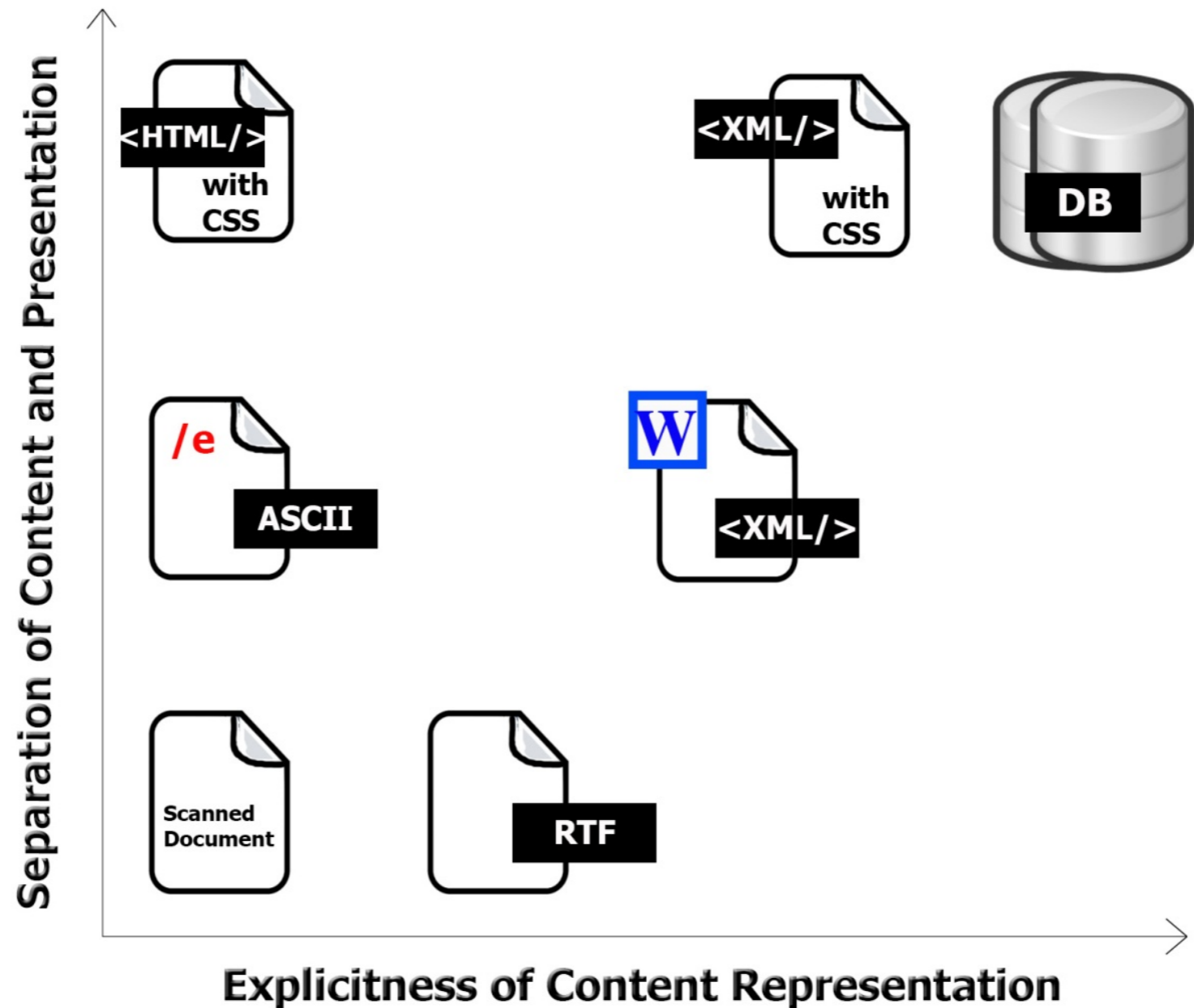
# Design Choices & Patterns for Resources





# Format Matters!

## INFORMATION IQ



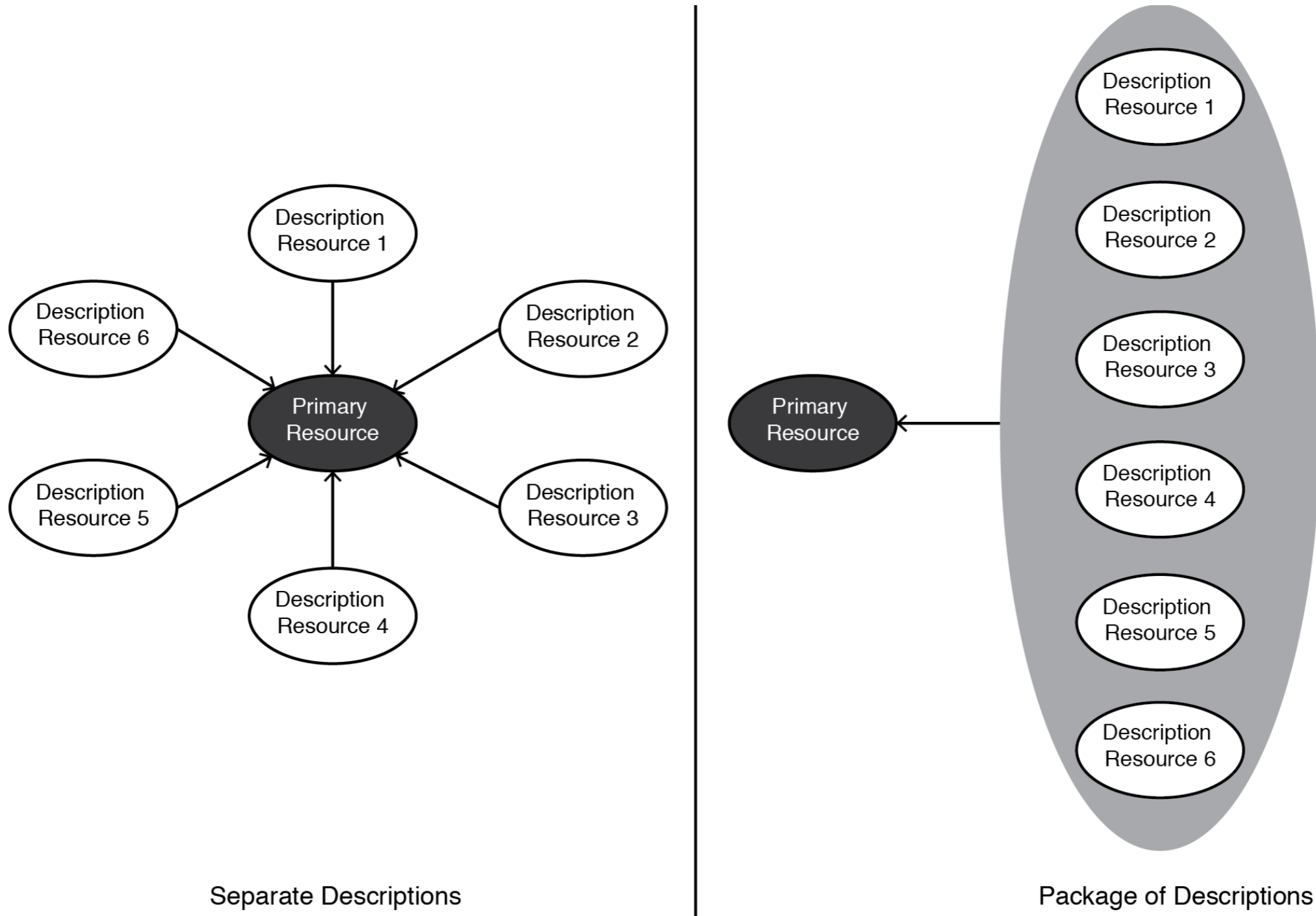


## Resource Focus

- 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”)
- The descriptions of a resource can be packaged or single statements



# Description Resources



Separate Descriptions

Package of Descriptions



# Fantasy Football: One Person's Description is another Person's Resource

No lineup moves made. UNDO RESET SUBMIT

| STARTERS |                          |        | WK 2 |           | 2012 SEASON |      |      |      | WEEK 2 |      |       |       |       |
|----------|--------------------------|--------|------|-----------|-------------|------|------|------|--------|------|-------|-------|-------|
| SLOT     | PLAYER, TEAM POS         | ACTION | OPP  | STATUS ET | PRK         | PTS  | AVG  | LAST | PROJ   | OPRK | %ST   | %OWN  | +/-   |
| QB       | Tom Brady, NE QB P       | MOVE   | Ari  | Sun 1:00  | 13          | 17.5 | 17.5 | 17.5 | 23.1   | 4th  | 100.0 | 100.0 | +0    |
| RB       | Ben Tate, Hou RB         | MOVE   | @Jac | Sun 1:00  | 39          | 4.3  | 4.3  | 4.3  | 2.8    | 24th | 28.7  | 100.0 | +0    |
| RB       | Mark Ingram, NO RB       | MOVE   | @Car | Sun 1:00  | 66          | 1.5  | 1.5  | 1.5  | 7.1    | 20th | 10.7  | 100.0 | +0.3  |
| RB/WR    | Steve Smith, Car WR      | MOVE   | NO   | Sun 1:00  | 20          | 14.1 | 14.1 | 14.1 | 16.9   | 27th | 97.1  | 100.0 | +0    |
| WR       | Jordy Nelson, GB WR      | MOVE   | Chi  | Thu 8:20  | 36          | 10.9 | 10.9 | 10.9 | 16.2   | 23rd | 99.3  | 100.0 | +0    |
| WR/TE    | Jeremy Maclin, Phi WR Q  | MOVE   | Bal  | Sun 1:00  | 8           | 19.1 | 19.1 | 19.1 | 15.2   | 14th | 69.8  | 100.0 | +0    |
| TE       | Jermichael Finley, GB TE | MOVE   | Chi  | Thu 8:20  | 5           | 14.2 | 14.2 | 14.2 | 11.8   | 18th | 98.0  | 100.0 | +0    |
| D/ST     | 49ers D/ST D/ST          | MOVE   | Det  | Sun 8:20  | 20          | 5    | 5.0  | 5    | 5      | 24th | 87.5  | 100.0 | +0    |
| K        | Garrett Hartley, NO K    | MOVE   | @Car | Sun 1:00  | 22          | 6    | 6.0  | 6    | 9      | 20th | 95.4  | 100.0 | +0    |
| BENCH    |                          |        | WK 2 |           | 2012 SEASON |      |      |      | WEEK 2 |      |       |       |       |
| SLOT     | PLAYER, TEAM POS         | ACTION | OPP  | STATUS ET | PRK         | PTS  | AVG  | LAST | PROJ   | OPRK | %ST   | %OWN  | +/-   |
| Bench    | Ryan Mathews*, SD RB O   | MOVE   | Ten  | Sun 4:25  | 93          | 0    | 0.0  | 0    | 5.3    | 25th | 46.5  | 100.0 | +0    |
| Bench    | Matt Ryan, Atl QB        | MOVE   | Den  | Mon 8:30  | 1           | 32.3 | 32.3 | 32.3 | 16.4   | 18th | 54.1  | 100.0 | +0    |
| Bench    | Lance Moore, NO WR       | MOVE   | @Car | Sun 1:00  | 6           | 21   | 21.0 | 21   | 9.4    | 4th  | 8.9   | 100.0 | +0    |
| Bench    | Coby Fleener, Ind TE     | MOVE   | Min  | Sun 1:00  | 13          | 11.2 | 11.2 | 11.2 | 9.1    | 23rd | 4.5   | 23.3  | -10.6 |
| Bench    | James Starks, GB RB Q    | MOVE   | Chi  | Thu 8:20  | 93          | 0    | 0.0  | 0    | 0      | 10th | 0.1   | 6.7   | -22.1 |
| Bench    | Mario Manningham, SF WR  | MOVE   | Det  | Sun 8:20  | 77          | 4.9  | 4.9  | 4.9  | 6.1    | 10th | 4.5   | 92.5  | +6    |
| Bench    | Brent Celek, Phi TE      | MOVE   | Bal  | Sun 1:00  | 21          | 8.5  | 8.5  | 8.5  | 5.7    | 6th  | 15.1  | 70.2  | +0.4  |

# DESCRIPTION RESOURCE

# PRIMARY RESOURCE

## Physical

## Digital

## Digital

Melvyl - Full View of Record

Melvyl<sup>®</sup> The Catalog of the University of California Libraries

Sign In (optional) Quit Article Database & E-Journal Lists Help Other Catalogs

Home Basic Search Advanced Command Browse Most Recent Search Previous Searches Saved Items

Search results: 2 Item(s) [Modify Search](#) Display: Full MARC

[Print / Email](#) [Save](#) [Save Across Sessions](#) [Request](#) [Previous](#) [Next](#)

Item 1 of 2 Total

[Return to Search Results List](#)

SRC [UC Riverside](#) [UC Los Angeles](#) [All](#)

FMT BK

LDR cam 22002659 4500

005 20100303000000.0

008 83042051912 wk 00000 eng

010 ja 13002130

035 ja 4123728

040 ja DLC jc CarP

043 ja e-UK-wf

10010 ja Phillips, David Rhys. [d 1868-

24504 ja The romantic history of the monastic libraries of Wales from the fifth to the sixteenth centuries (Celtic and mediaeval periods)

2600 ja Swansea, [b The author [c [1912]

300 ja 62 p. [c 26 cm.

500 ja Reprinted with additions, from the Library association record for July and August, 1912.

Google - Mozilla Firefox

File Edit View History Delicious Bookmarks Tools Help

http://www.google.com/

Most Visited Latest Headlines dretblog Jon Udell

Web Images Videos Maps News Shopping Gmail more

bob.glushko@gmail.com | iGoogle | Settings | Sign out

# Google™

Advanced Search Language Tools

Google Search I'm Feeling Lucky

## Physical





# Resource Agency

- Passive or operand resources ("nouns") must be acted upon or interacted with to produce an effect
- Active or operant resources ("verbs") create effects or value on their own, sometimes by initiating interactions with operand resources



# Smart Resources



**Swiss Cows Send Texts to Announce They're in Heat**  
NY Times 1 October 2012





## 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



# Interactions –The Why of Organizing Systems

- 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...



## Interactions

- 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
- The supported interactions depend on the nature and extent of the resource descriptions and arrangement
- Different principles, or different implementations of the same organizing principles, determine the efficiency or effectiveness of the interactions



# A DJ Organizes His Record Collection

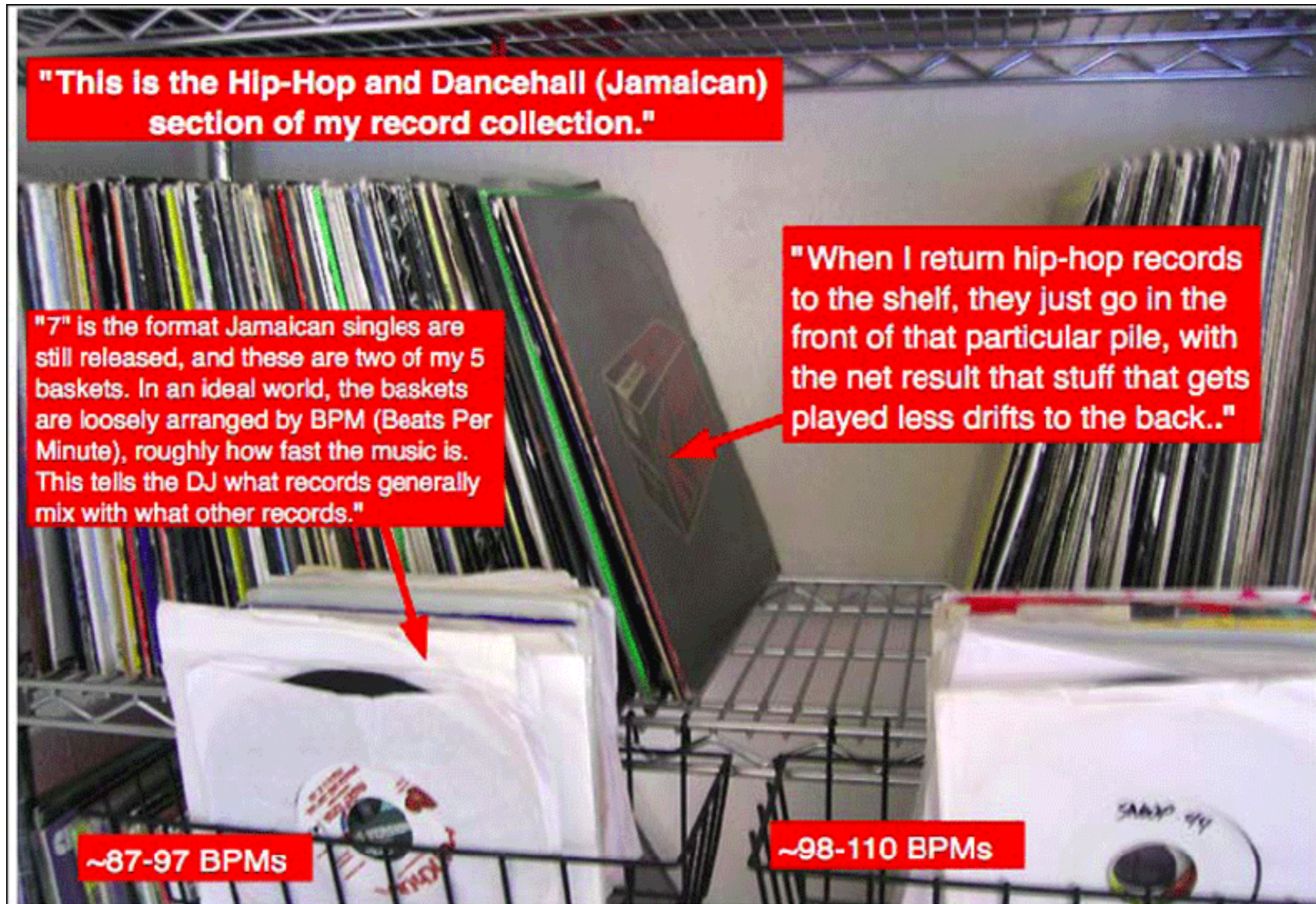


Photo by Matt Earp aka Kid kameleon



# Organizing Books by Color

Trading aesthetics for scalability in organization and retrieval

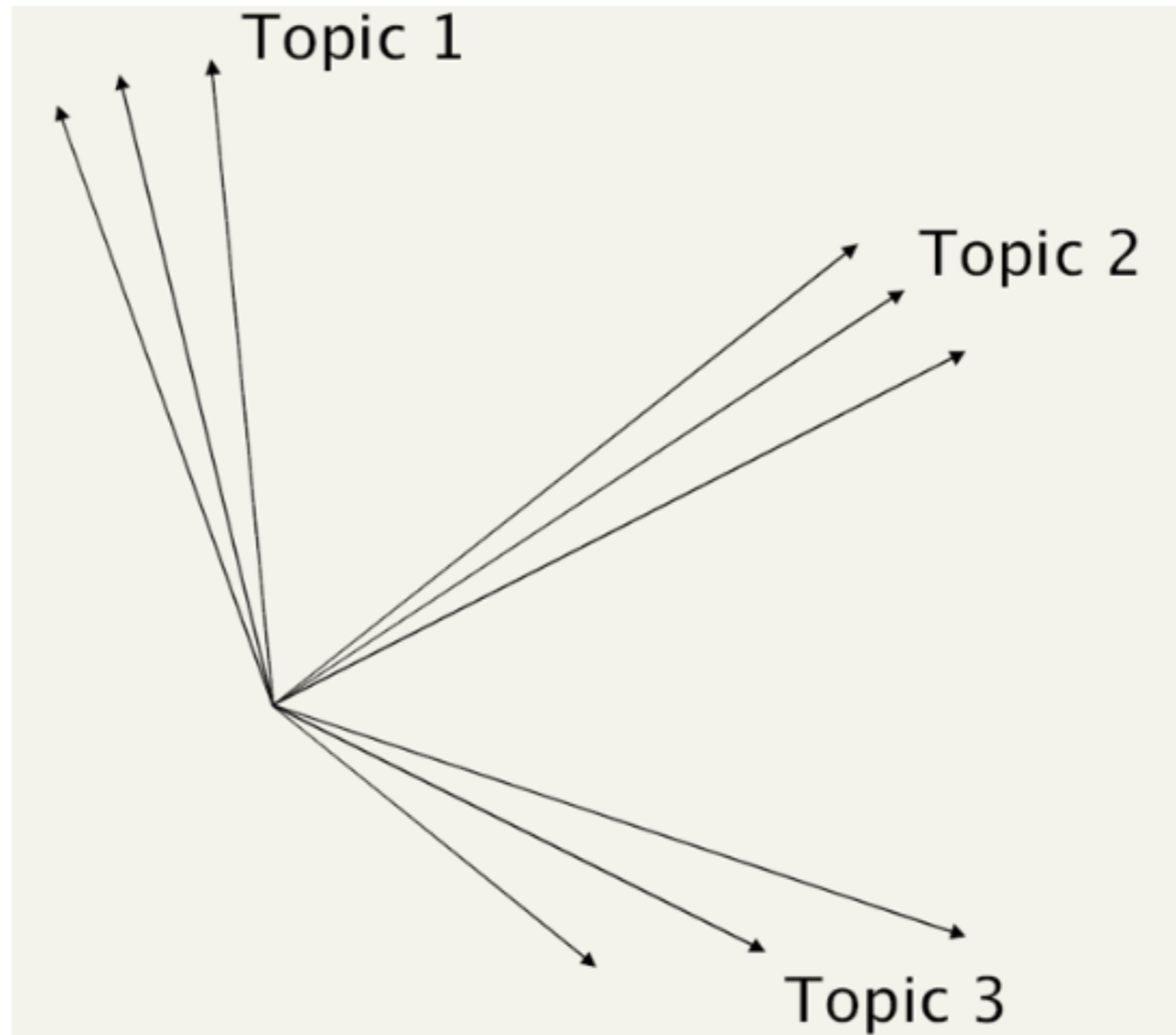


Photo by See-ming Lee (<http://www.flickr.com/photos/seeminglee/4556156477>) Creative Commons CC BY-SA 2.0 license



# Dimensionality Reduction in the Vector Model of IR

Indexing  
“Topics”  
instead of  
“Terms”  
increases  
precision





## How Much Is It Being Organized?

- 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 organized
- 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?



# 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





UNIVERSITY OF CALIFORNIA, BERKELEY  
SCHOOL OF INFORMATION

# “Just in Case” Organization





UNIVERSITY OF CALIFORNIA, BERKELEY  
SCHOOL OF INFORMATION

# Postponing Organization





# Who or What Is Organizing?

- Authors or creators
- Professional organizers
- Users “in the wild”
- Users “in institutional contexts”
- Automated or computerized processes



UNIVERSITY OF CALIFORNIA, BERKELEY  
SCHOOL OF INFORMATION

# INFO 202

## “Information Organization & Retrieval”

### Fall 2013

Robert J. Glushko  
[glushko@berkeley.edu](mailto:glushko@berkeley.edu)  
@rjglushko

3 September 2013  
Lecture 2.3 – “Case Studies”  
of Organizing Systems

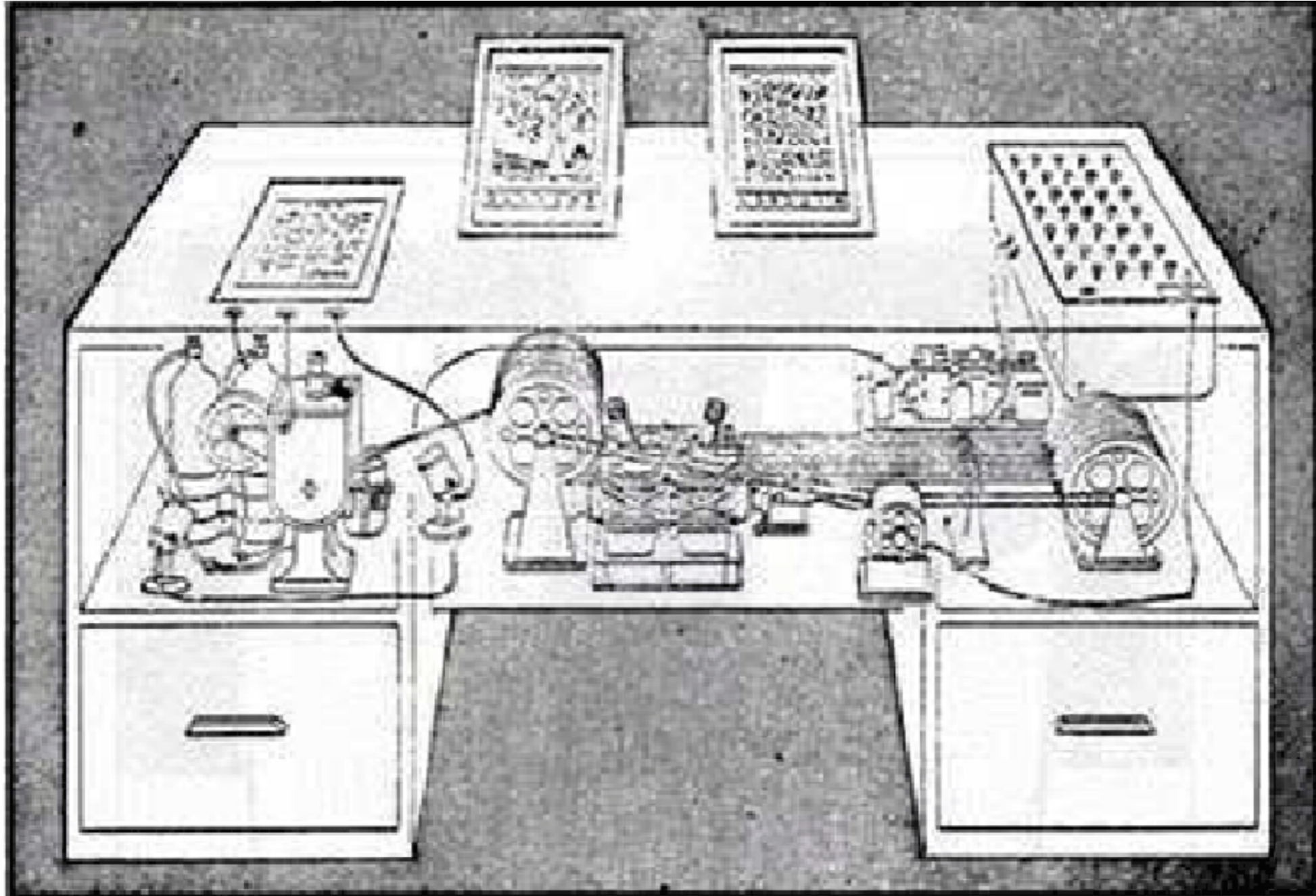


## The “Case Studies”

- Bush, Vannevar. “As We May Think”
- Borges, Jorge Luis. “The library of Babel”
- Homann et al. “Flexible value structures in banking”
- Siegal , Nina. “Masterworks for one and all”
- Wakabayashi, D. “Japanese Farms Look to the ‘Cloud’”
- Kharif , Olga. “Retailers enlist the smartphone to encourage shopping”
- Yang, Sarah. “Help wanted: Public needed to uncover clues in natural history collections”



# The Memex





# Memex as an Organizing System

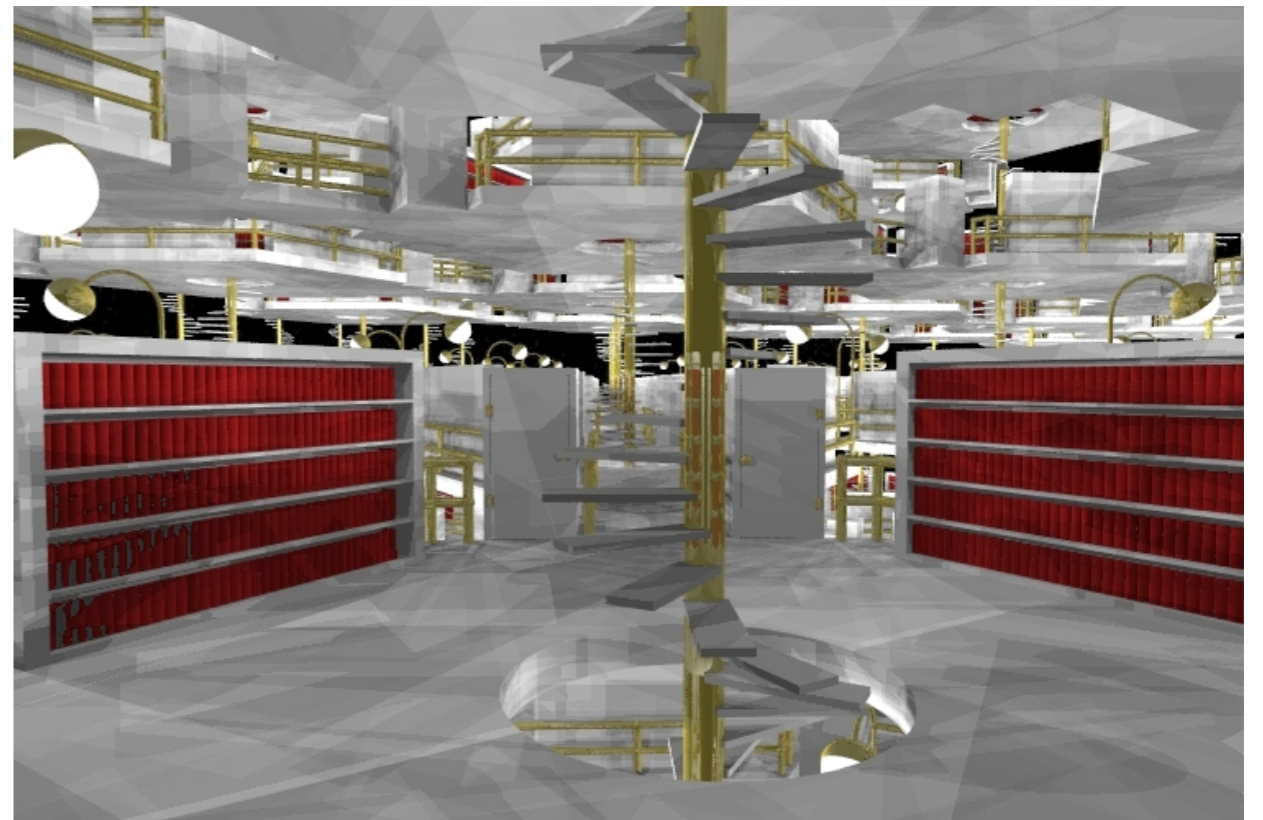
- What?
- Why?
- How much?
- When?
- Who (and by what means)?



# The Library of Babel



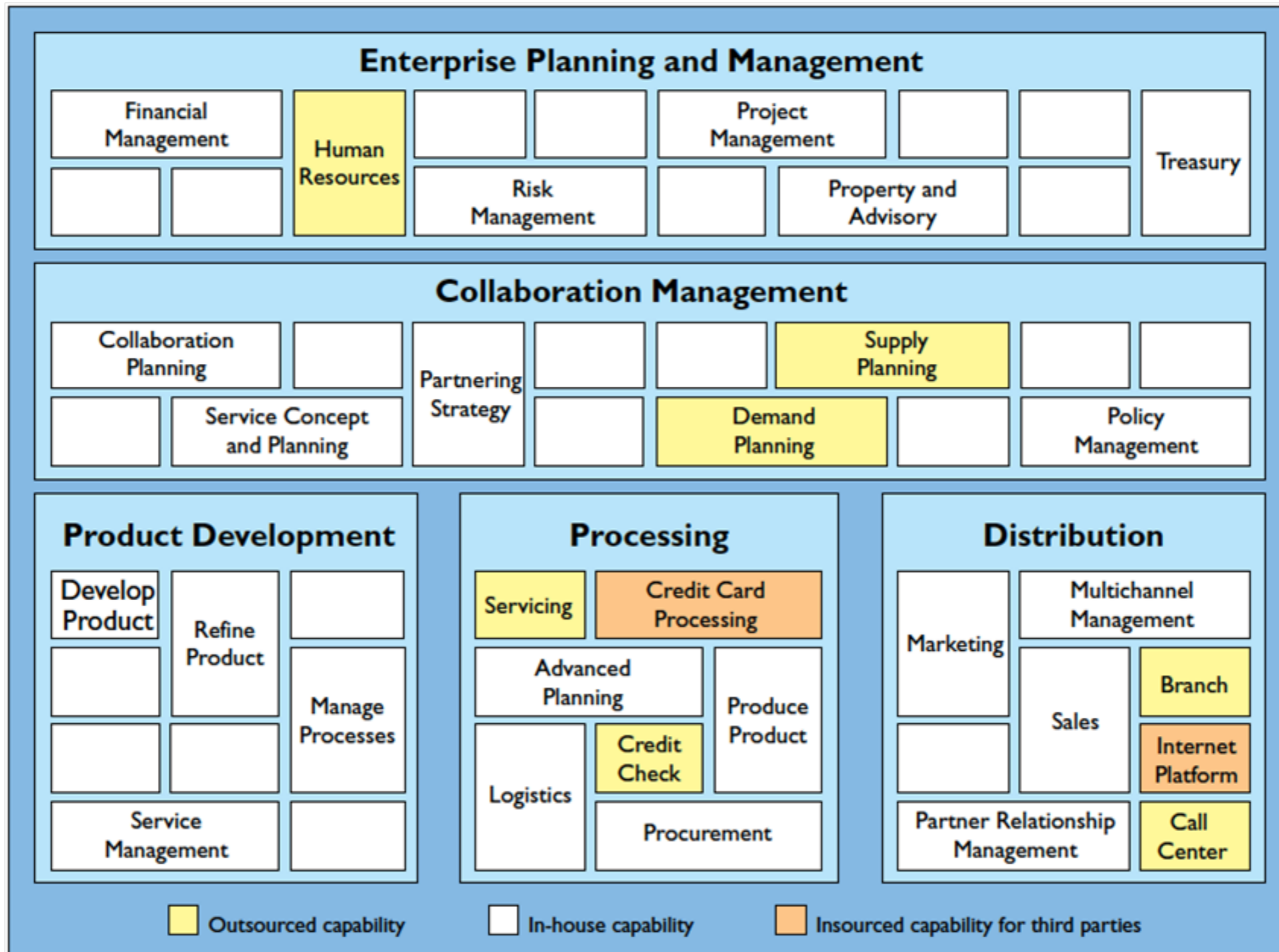
The Tower of Babel by Pieter Bruegel the Elder  
(1563)







# The Componentized Bank





## Masterworks for One and All

- What is the Rijksmuseum doing that differs from the practices of most museums?
- Why is it doing it?
- What new kinds of interactions with the museum's resources are now possible?
- How likely are other museums to do the same thing?



# Farming in the Cloud

- What?
- Why?
- How much?
- When?
- Who (and by what means)?
- [http://www.youtube.com/watch?v=zfU\\_w03VeM8](http://www.youtube.com/watch?v=zfU_w03VeM8)



# Smartphone Shopping



- QR Code Promotions
- Rewards & prize for data sharing
- Geolocation offers
- Interior GPS
- Mobile checkout
- Scanning while shopping
- Near Field payment
- Self checkout



# Natural History Crowdsourcing with Calbug



See also

<http://www.inaturalist.org/>

2008 ISchool Final Project

<http://>

[www.ischool.berkeley.edu/  
programs/masters/projects/  
2008/inaturalist](http://www.ischool.berkeley.edu/programs/masters/projects/2008/inaturalist)



## Assignment 1: Everything Is Organized

Choose a domain (or industry or subject area) that's interesting to you. Write one paragraph explaining why you find it interesting. Write another paragraph in which you answer the six key questions for describing organizing systems (listed in section 1.3 of the *The Discipline of Organizing*) for your domain.



# Assigned Readings for Next Lecture

TDO Chapter 2,  
“Activities in Organizing Systems”