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Challenging Classification Bias with Linked Data

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Challenging Classification Bias With Linked Data

TRY Library Conference, May 3, 2016

Juliya Borie, *Cataloguing Librarian*
Robarts Library, University of Toronto
F. Tim Knight, *Head of Technical Services*
Osgoode Hall Law School, York University
Jordan Hale, *Original Cataloguer and Reference Specialist*
Map and Data Library, University of Toronto

UNIVERSITY OF TORONTO
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OSGOODE HALL LAW SCHOOL
YORK UNIVERSITY

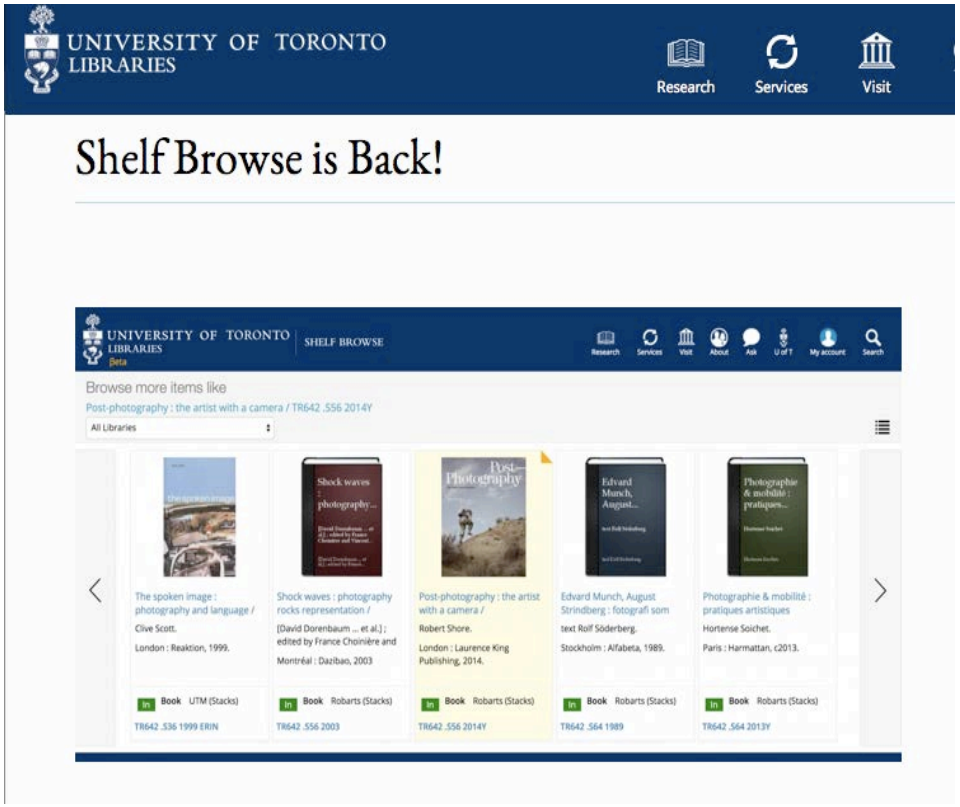
What are we talking about?

- *Classification* is broadly defined as the act of **organizing the universe of knowledge** into some systematic order (Chan, 2007).
- Subject access
- Controlled vocabularies

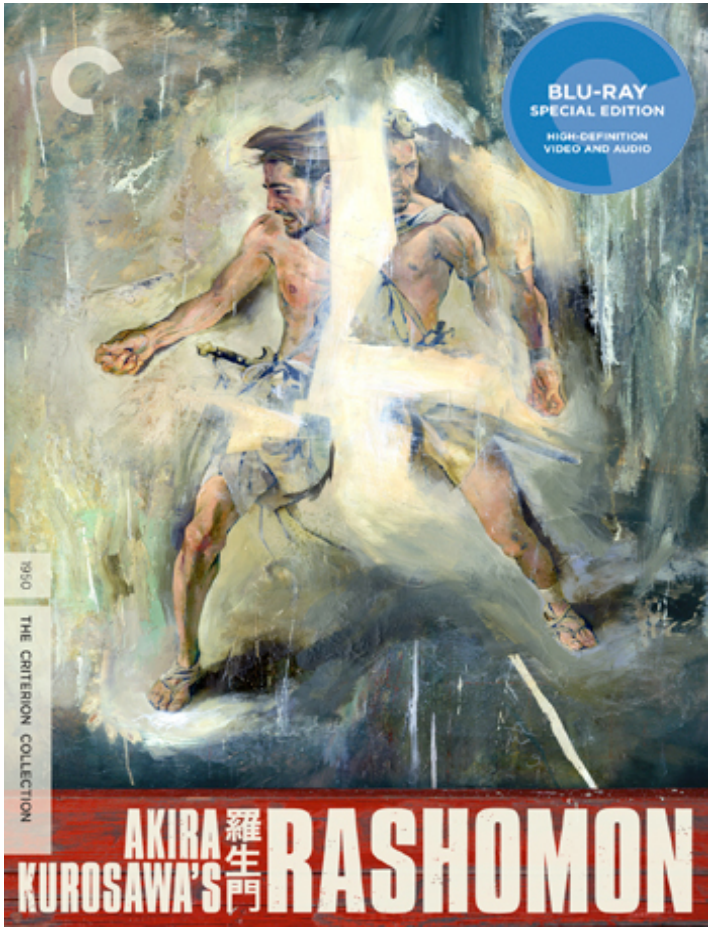
Chan, L. (2007). *Cataloguing and Classification: An Introduction.* 3rd ed. Lanham, Md: Scarecrow Press.

Why are we talking about it?

- Classification provides the scaffolding of information infrastructures
- Still essential to users
- Linked data will rely on structured data in our subject and authority files



Perspectives and Classification



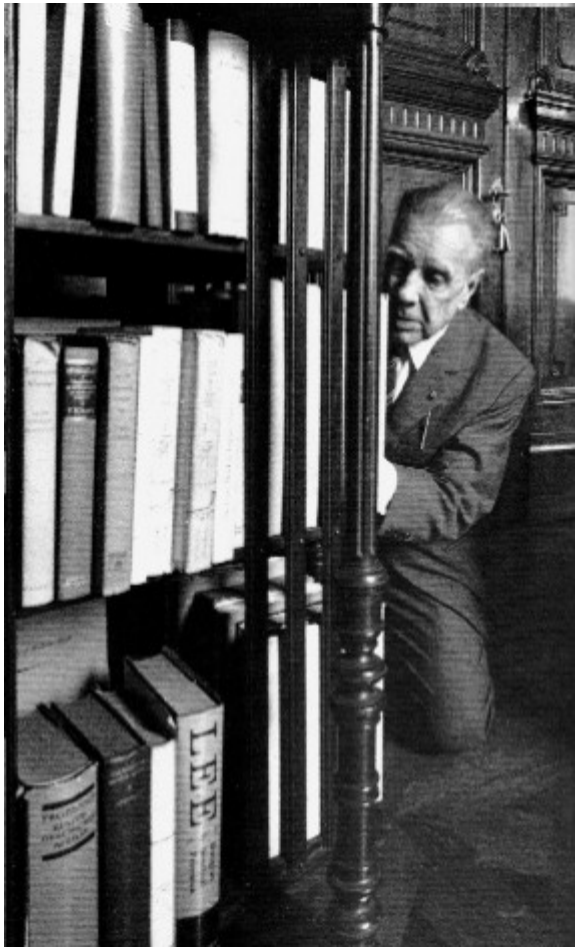
Rashomon cover art

Perspectives and Systems

- Objectivity and neutrality are pillars of our practice.
- Different user needs.
- Known and well-documented issues:
  LC Classification, LCSH, Dewey Decimal reflect a worldview, biases and power imbalances that exist in society.
  - Women and computers
  - Placing Indigenous materials in the past (History section)

Are neutral and unbiased classifications a possibility?

"Obviously there is no classification of the universe that is not arbitrary and conjectural." (Borges, 1952, p. 104)



Borges, J.L. (1952), "The analytical language of John Wilkins", Other Inquisitions 1937-1952, Souvenir Press, London, 1973.

Knowledge Organization and Other Ways of Knowing

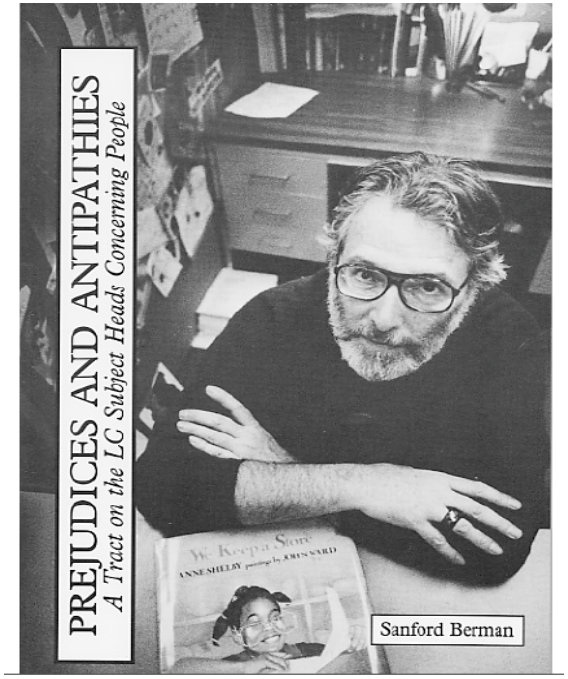
The *Celestial Emporium of Benevolent Knowledge is a* Chinese Encyclopedia described by Jose Luis Borges, where an alternative taxonomy of animals is listed:

- Those that belong to the emperor
- Embalmed ones
- Those that are trained
- Sucking pigs
- Mermaids (or Sirens)
- Fabulous ones
- Stray dogs
- Those that are included in this classification
- Those that tremble as if they were mad
- Innumerable ones
- Those drawn with a very fine camel hair brush
- Et cetera
- Those that have just broken the flower vase
- Those that, at a distance, resemble flies

(Borges, 1952, p. 104)

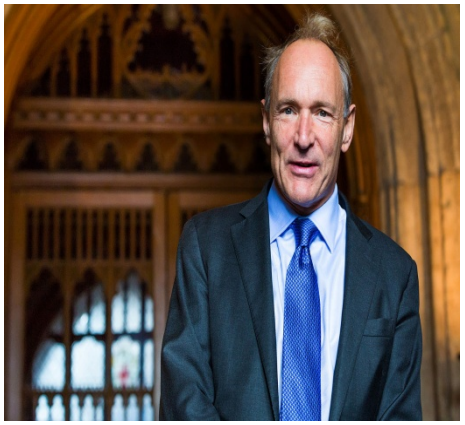
What can we do to make subject access more inclusive and responsive?

- Further broadening the expertise, experiences, and perspectives
- Use multiple headings to work around limitations and gaps
- Advocate for change in standard practices
- Use parallel subject headings
- Integrating different taxonomies through linking technologies



Can Linked Data help?

- Linked Data: a set of **best practices** for publishing and **connecting structured data** on the Web.
- It is about making data on the web:
  - **machine-readable**
  - **linked to and from other data sets**



Tim Berners-Lee
Inventor of the Internet

- Currently, library data is recorded in records, hiding potential context within and across collections.

MARC as “Things”, not “Strings”

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005		20150826133536.0
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020		2349723143
024	1	|z9782349723147
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037		003539237|bGroupe Archambault
039		|fevb
040		TOH|beng|cPUL|dTOH|dWIH|dLTSCA|dCDX|dOCLCF|dOCLCO|dCaOTU
043		n-cn-qu|an-cn-ns
050	4	F1030|b.V293 2014
055	8	FC2950.A2|bV33 2014|2fcps
082	04	971.5/017|223
100	1	Vachon, André-Carl,|d1973-
245	14	Les déportations des Acadiens et leur arrivée au Québec, 1755-1775 /|cAndré-Carl Vachon.
260		Tracadie-Sheila (Nouveau-Brunswick), Canada :|bLa Grande Marée,|c[2014], c2014
300		220 p. :|bill., map ;|c23 cm.
504		Includes bibliographical references (p. 191-205) and index.
596		ROBARTS
650	0	Acadians|zNova Scotia|xHistory|yExpulsion.
650	0	Acadians|zQuebec (Province)|xHistory.

Authority Control finally gets awesome

001		9973828
003		OCoLC
005		20150826133536.0
020		9782349723147
020		2349723143
024	1	|z9782349723147
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039		|fevb
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043		n-cn-qu|an-cn-ns
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082	04	971.5/017|223
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http://lccn.loc.gov/no2015062659

name authority

http://geonames.org

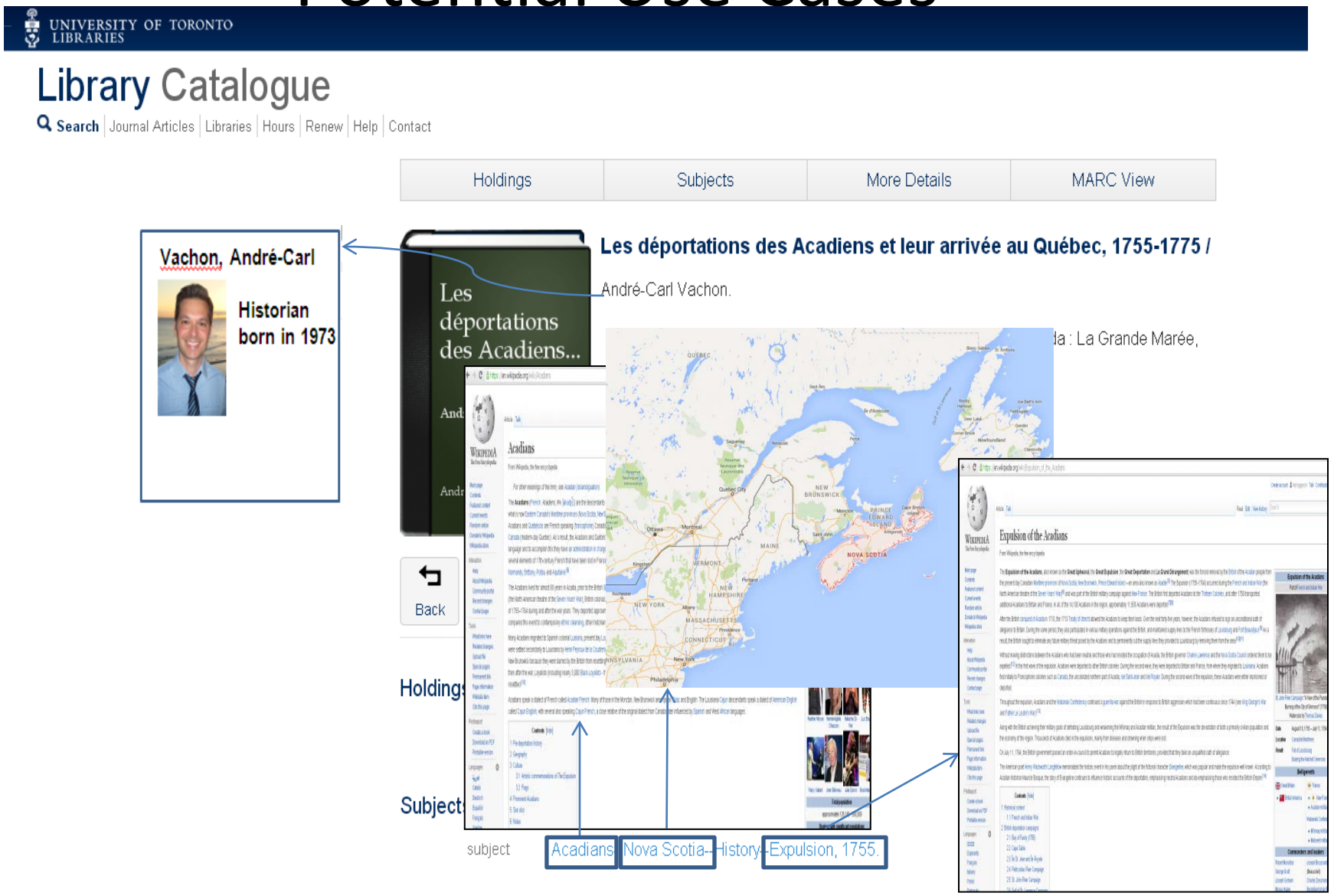
geographical authority

http://id.loc.go

subject authority

holding

Enriching Discovery: Potential Use Cases



Commerce, See Also Rhetoric

SciGator

Explore University of Pavia scientific libraries... **[it]**

start

Browse subclasses ↓ or find books on the shelf or in the whole catalogue or including the related subjects

	150	↓	psychology, perception	
↑	152	↓	sensory perception	→ 611.8 612.8
↑	153	↓	mental processes, understanding	→ 001.5 616.89

See also:

↑	001.5	↓	information, communication	→ 153 808
↑	611.8	↓	nervous system anatomy	→ 152 612.8
↑	612.8	↓	nervous system physiology	→ 152 611.8 615.78
↑	616.89	↓	psychiatry	→ 153
↑	Q.4	↓		≈ 153 519.8MSC 91E

In each row, the three icons allow for increasigly broader searches:

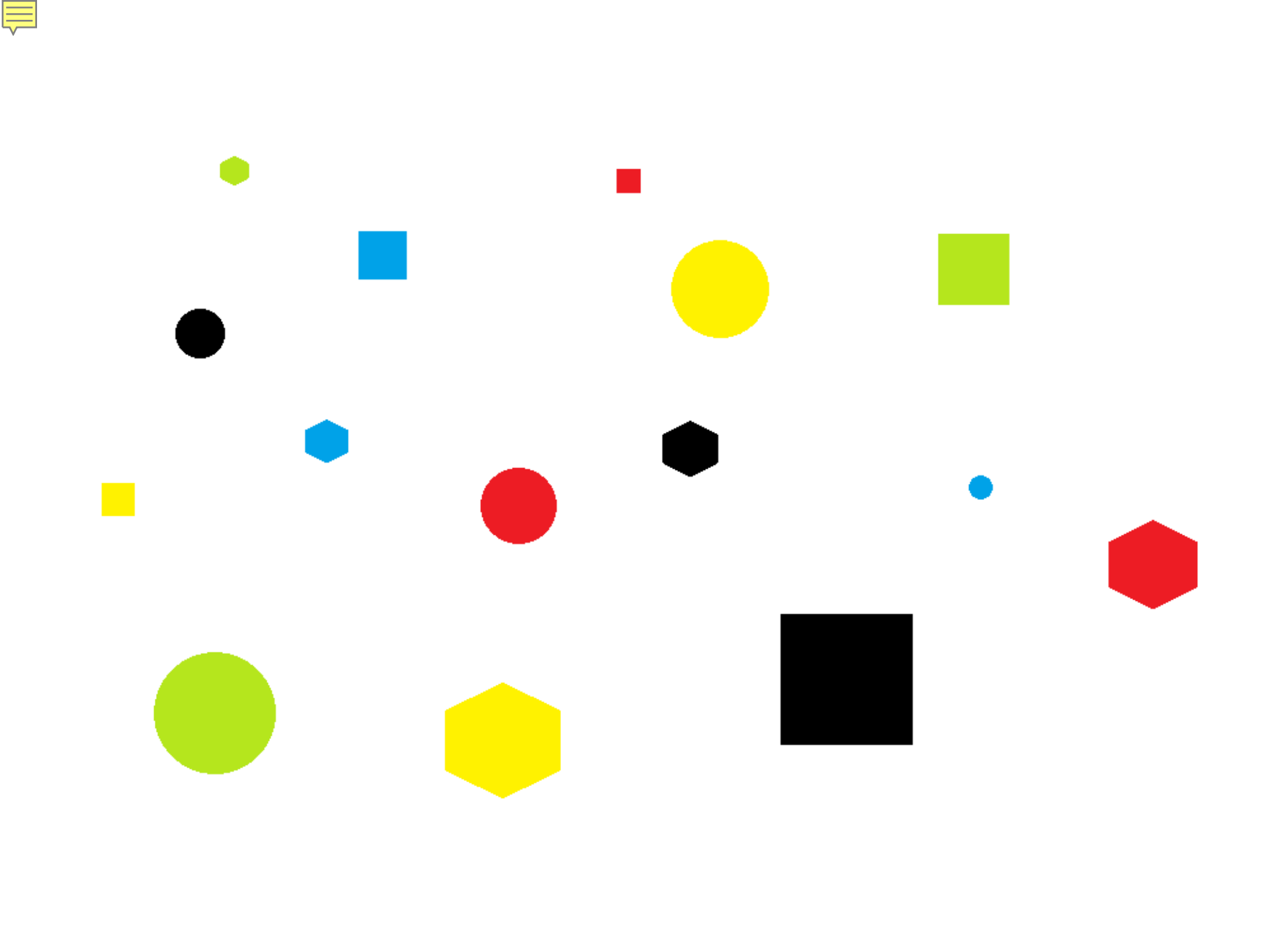
- *by clicking on you will retrieve only books in the corresponding shelf;*
- *by clicking on you will retrieve books classed in that discipline, both in the corresponding shelf and elsewhere;*

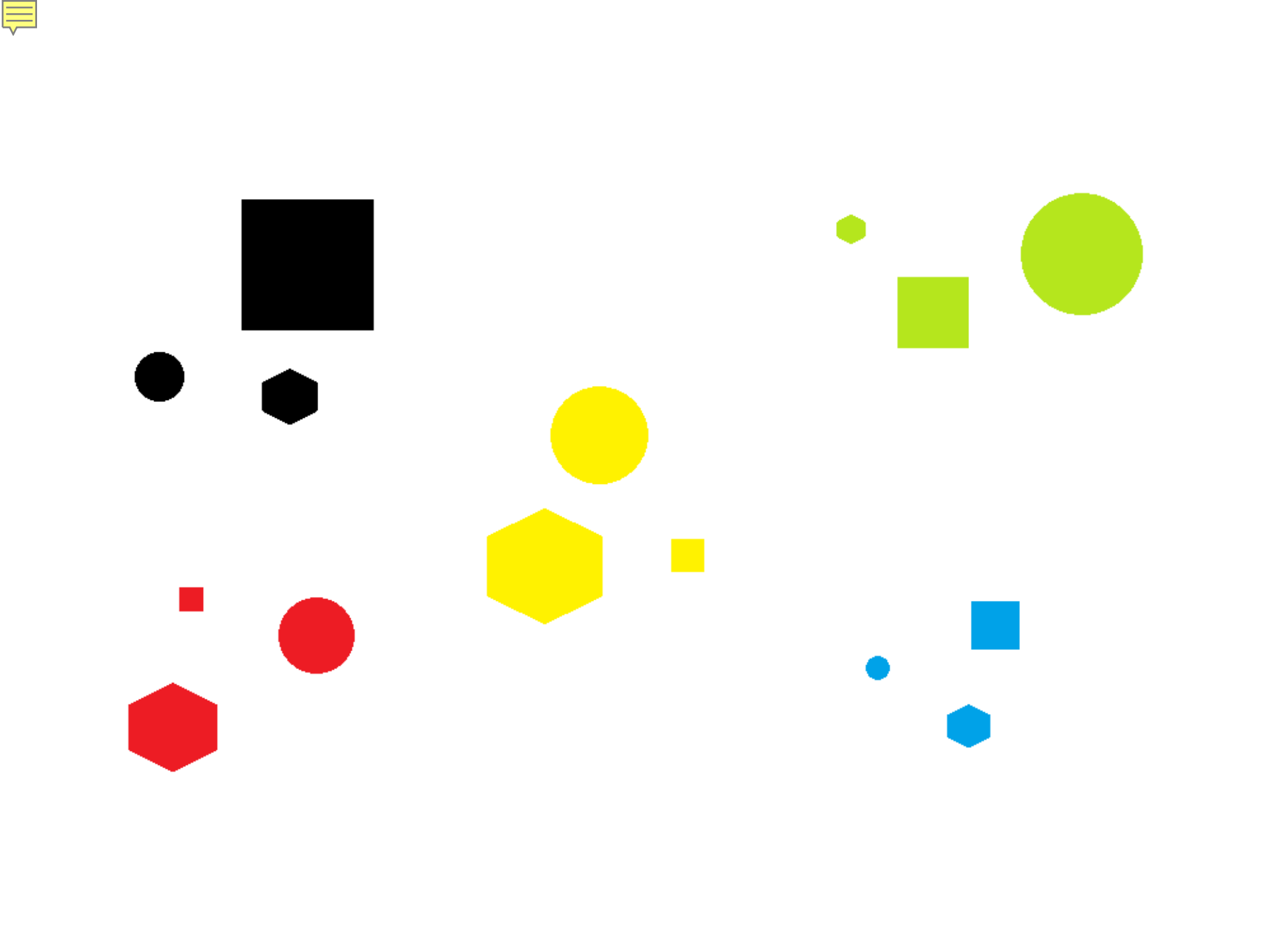
"Technologies can be used to make systems permeable, but the contents of information systems are still governed by standards such as LCSH and DDC that also need to be made permeable."

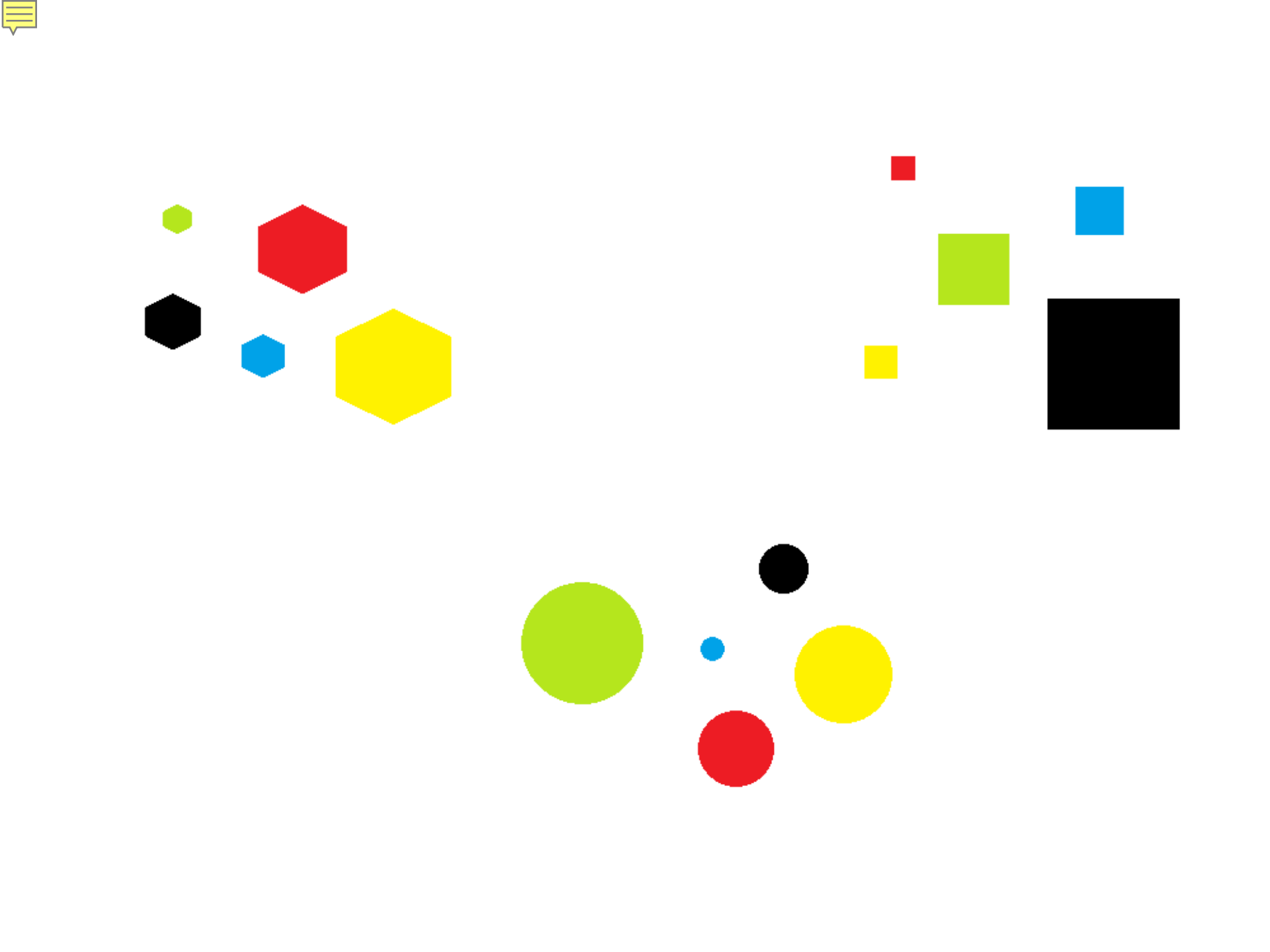
Olson, H. A. (2001). The Power to Name: Representation in Library Catalogs. *Signs*, *26*(3), 639–668.

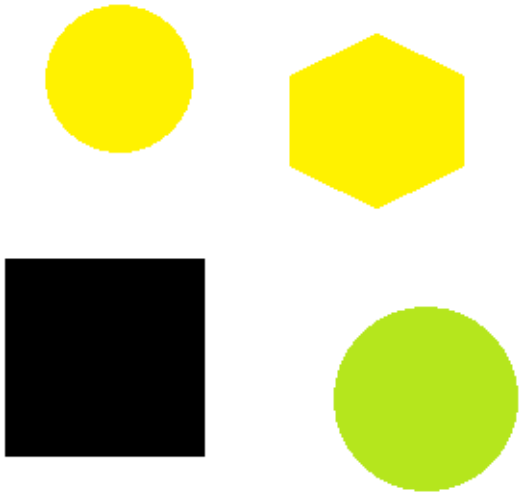
“To classify is human.”

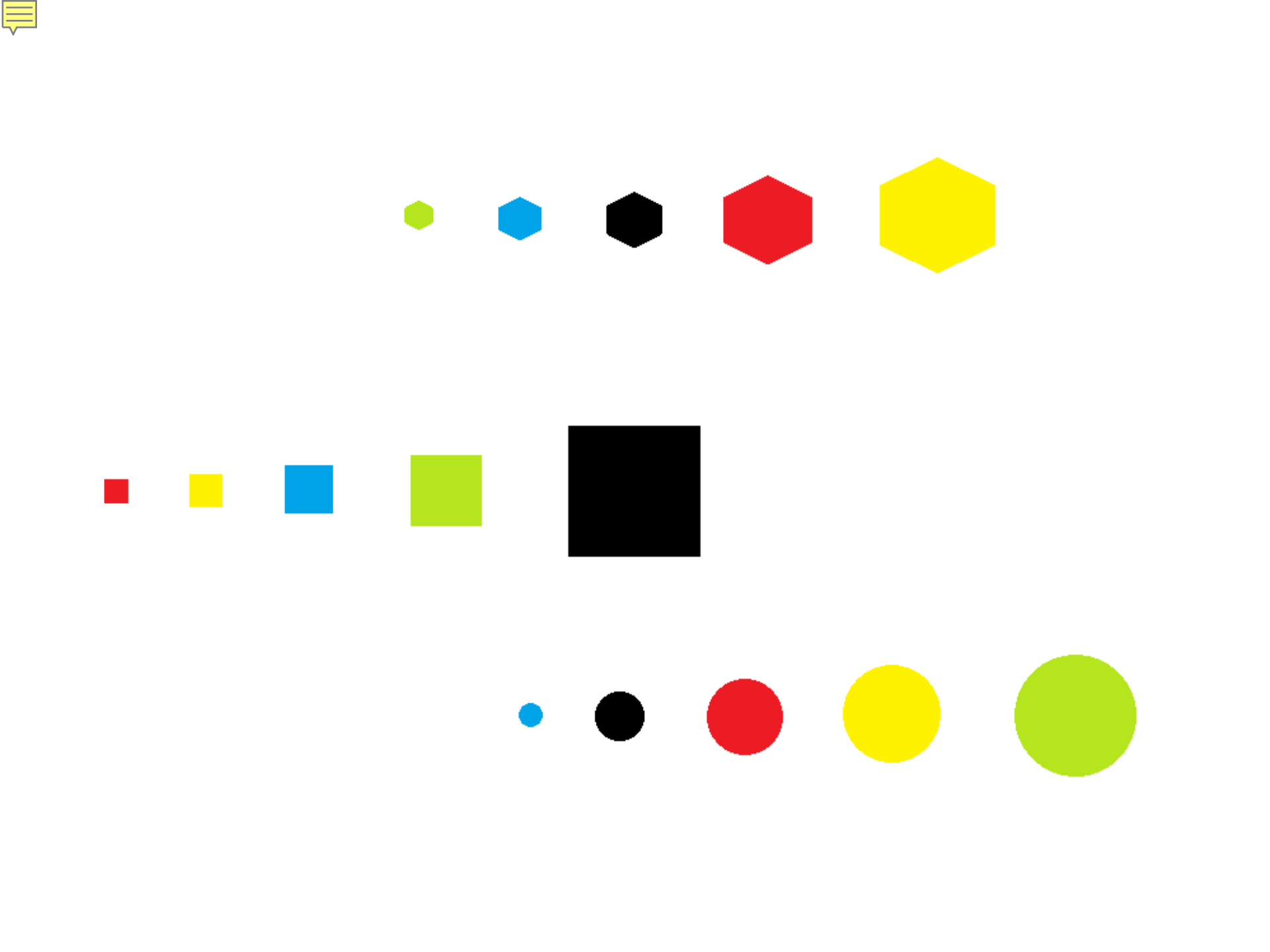
Geoffrey C. Bowker, Susan Leigh Star. Sorting things out : classification and its consequences, (Cambridge, Mass. : MIT Press, 1999).

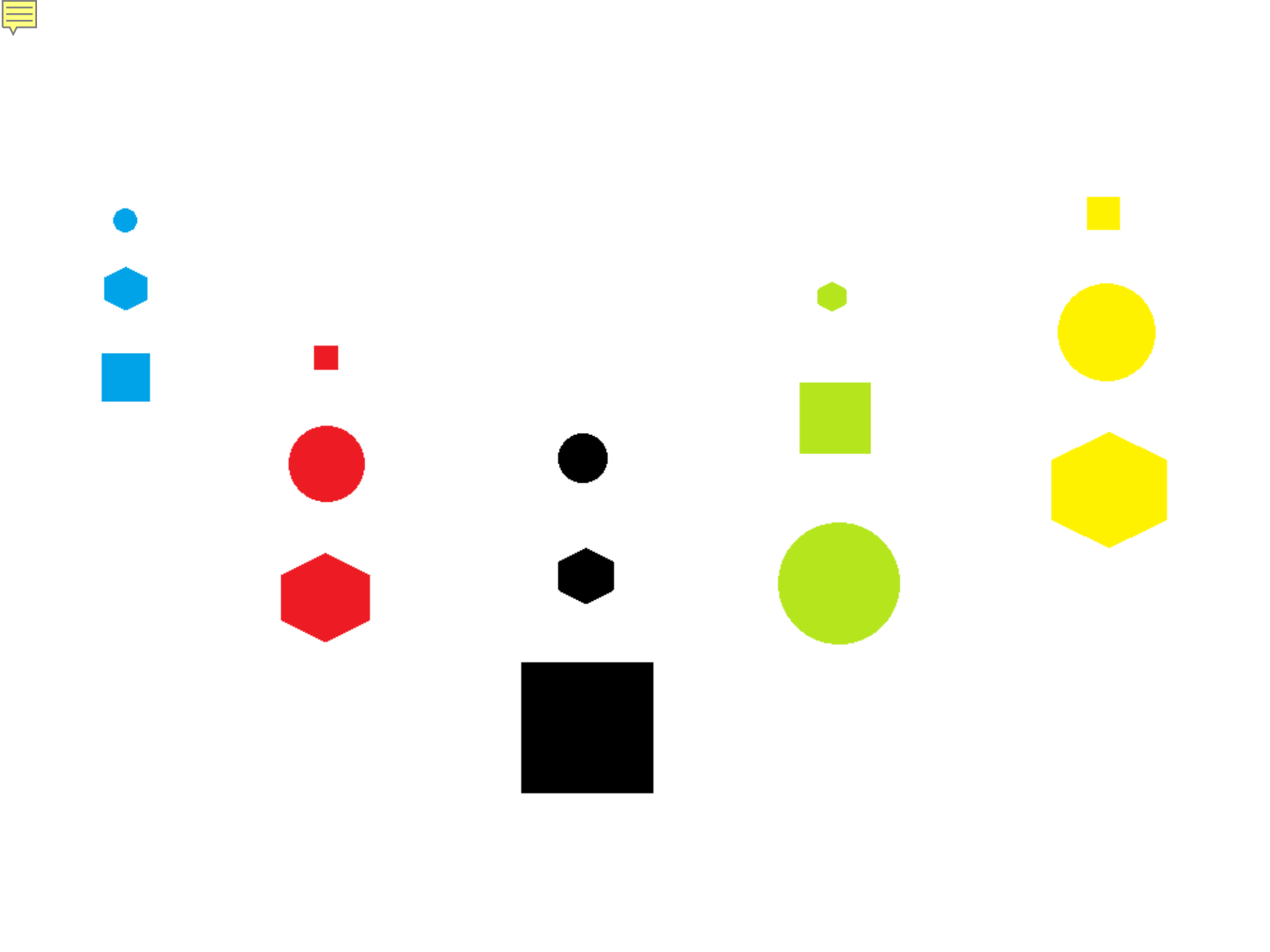


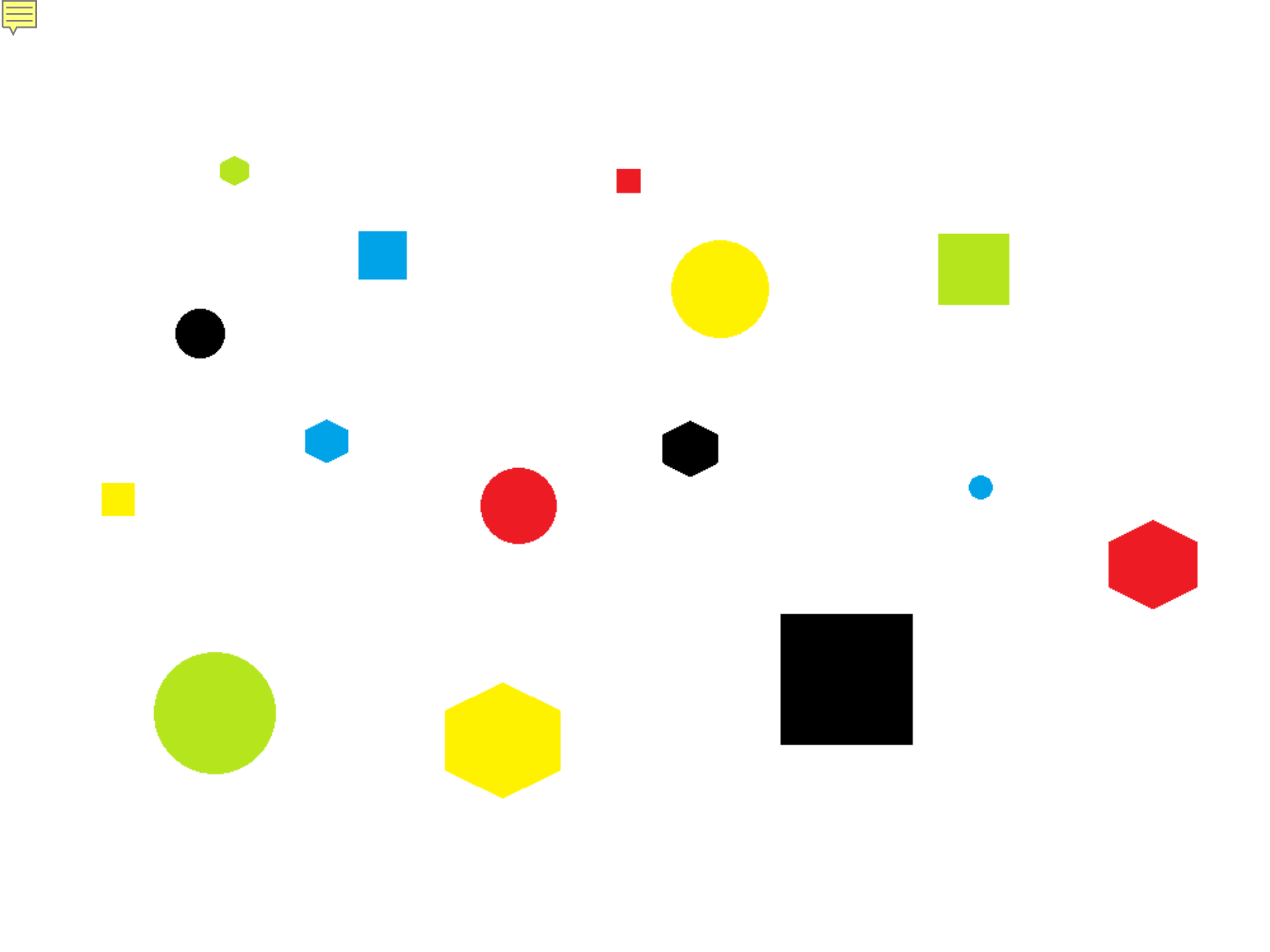


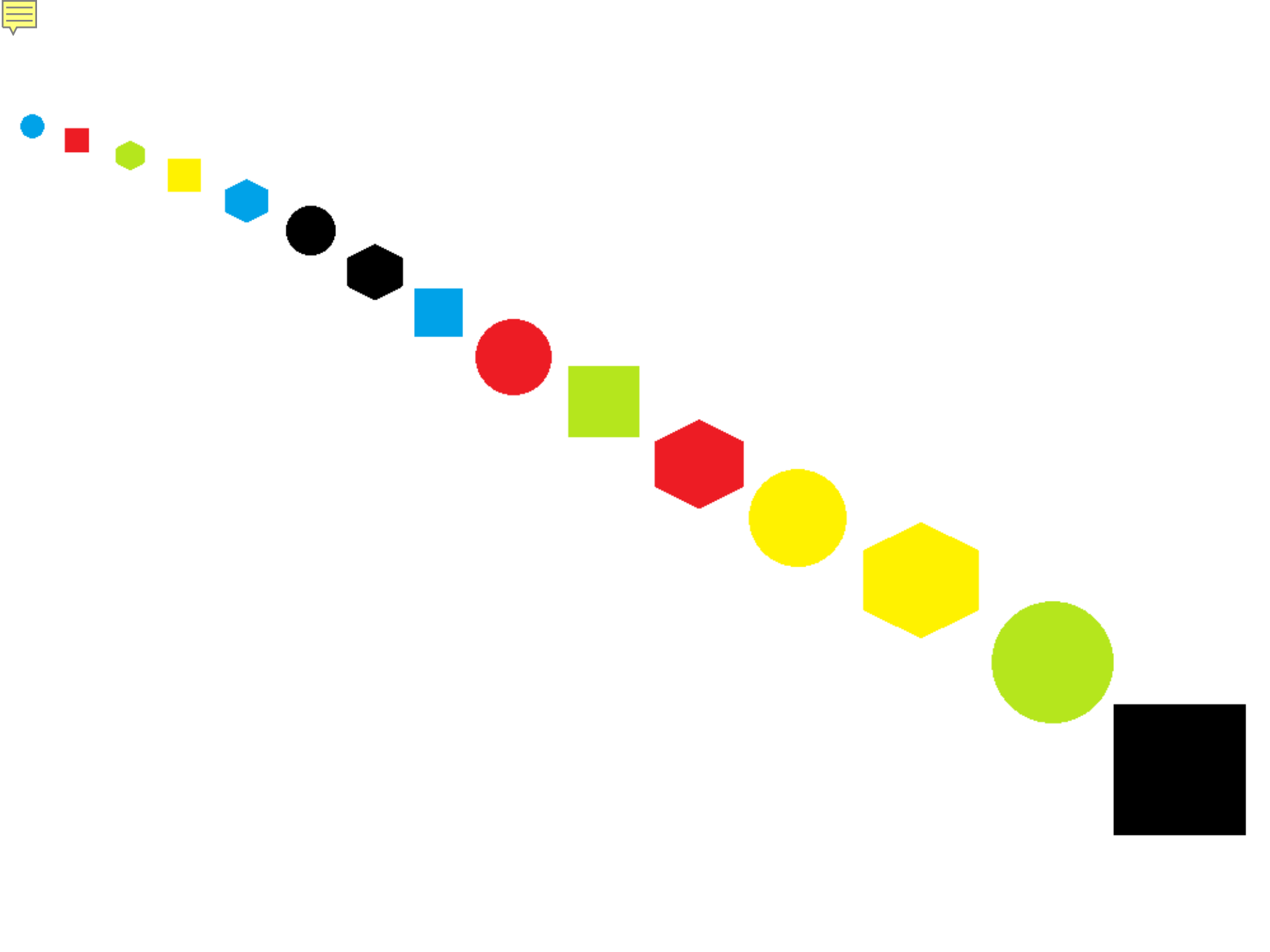












“To classify is human.”

Geoffrey C. Bowker, Susan Leigh Star. Sorting things out : classification and its consequences, (Cambridge, Mass. : MIT Press, 1999).

“There is nothing more basic than categorization to our thought, perception, action, and speech.”

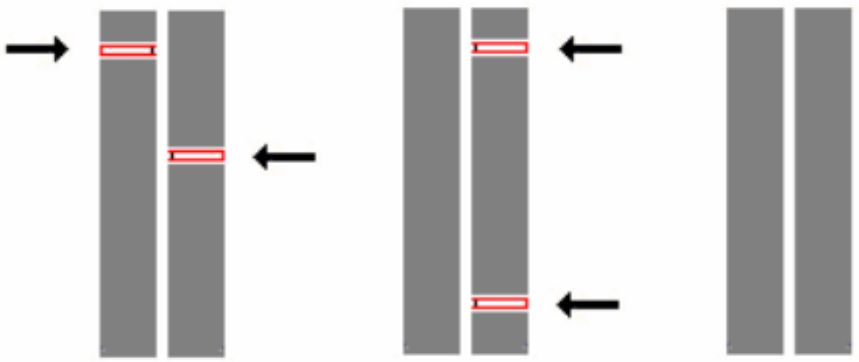
George Lakoff. Women, Fire and Dangerous Things : What Categories Reveal About the Mind, (Chicago, University of Chicago Press, 2008), p. 5.

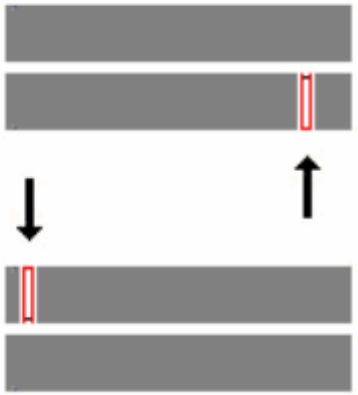
Queen’s University Library, 1967, https://www.flickr.com/photos/qul_photos/204115138/.

"The Library of Congress staff elected to arrange the law schedules *geographically by jurisdiction*, a departure from the non-law schedules (which are arranged by subject) and a decision that seems appropriate for law collections, but one which can sometimes be frustrating for the reference librarian or patron, especially in an academic setting."

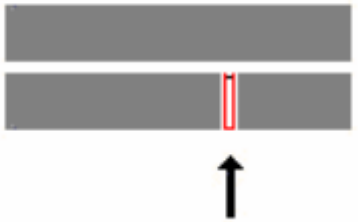
Gail M. Daly. "Reference Work in a Classified Collection : Is LC Class K Successful?", *Legal Reference Services Quarterly*, Volume 13(1), p. 94. [emphasis added]

LCC - First by Jurisdiction

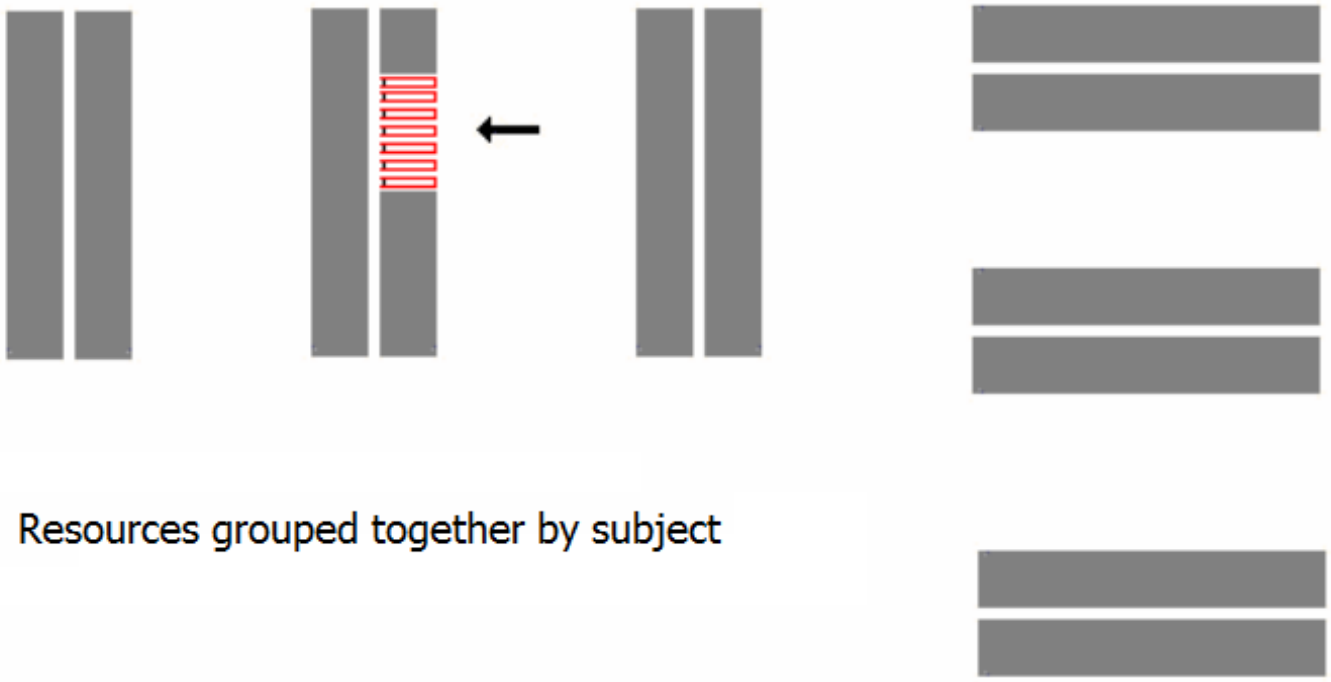




Resources scattered throughout the collection



KF Modified – First by Subject



Resources grouped together by subject

When Everything is Miscellaneous

"What you really want is a [classification] tree that arranges itself according to your way of thinking, letting you sort first by expertise and then by experience, and then tomorrow lets you just as easily sort first by language and then by cost, location, and expertise. You want a *faceted classification* system that dynamically constructs a browsable, branching tree that exactly meets your immediate needs."

David Weinberger, Everything is Miscellaneous: The Power of the New Digital Disorder (New York: Times Books, 2007) at 78 [original emphasis].

When Everything is Linked

"When knowledge was communicated and preserved on paper, it had to work around the fact that connected ideas were expressed in a disconnected medium."

David Weinberger, Too Big To Know: Rethinking Knowledge Now That the Facts Aren't the Facts, Experts Are Everywhere, and the Smartest Person in the Room Is the Room (New York: Basic Books, 2011) , p. 177.

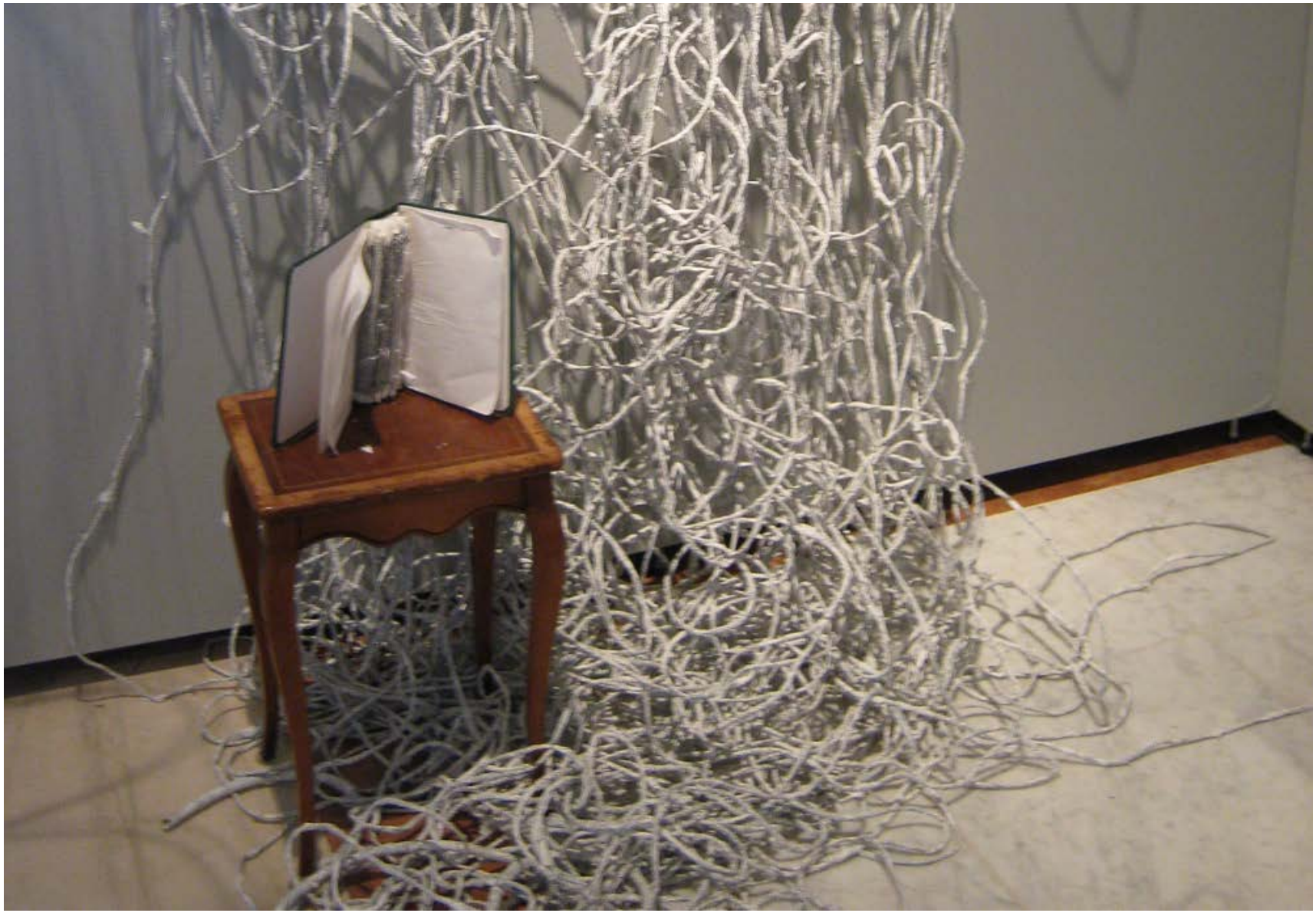
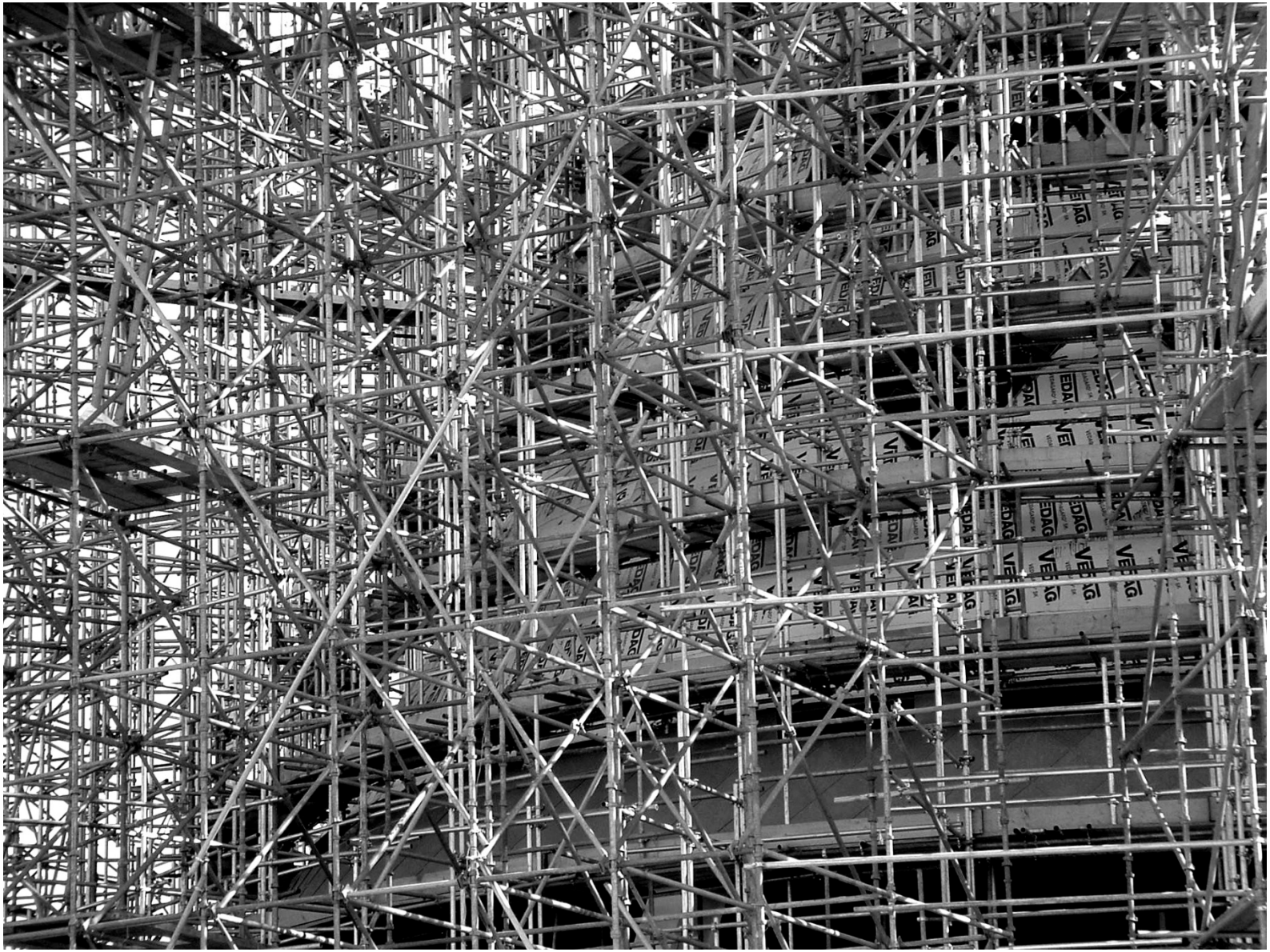
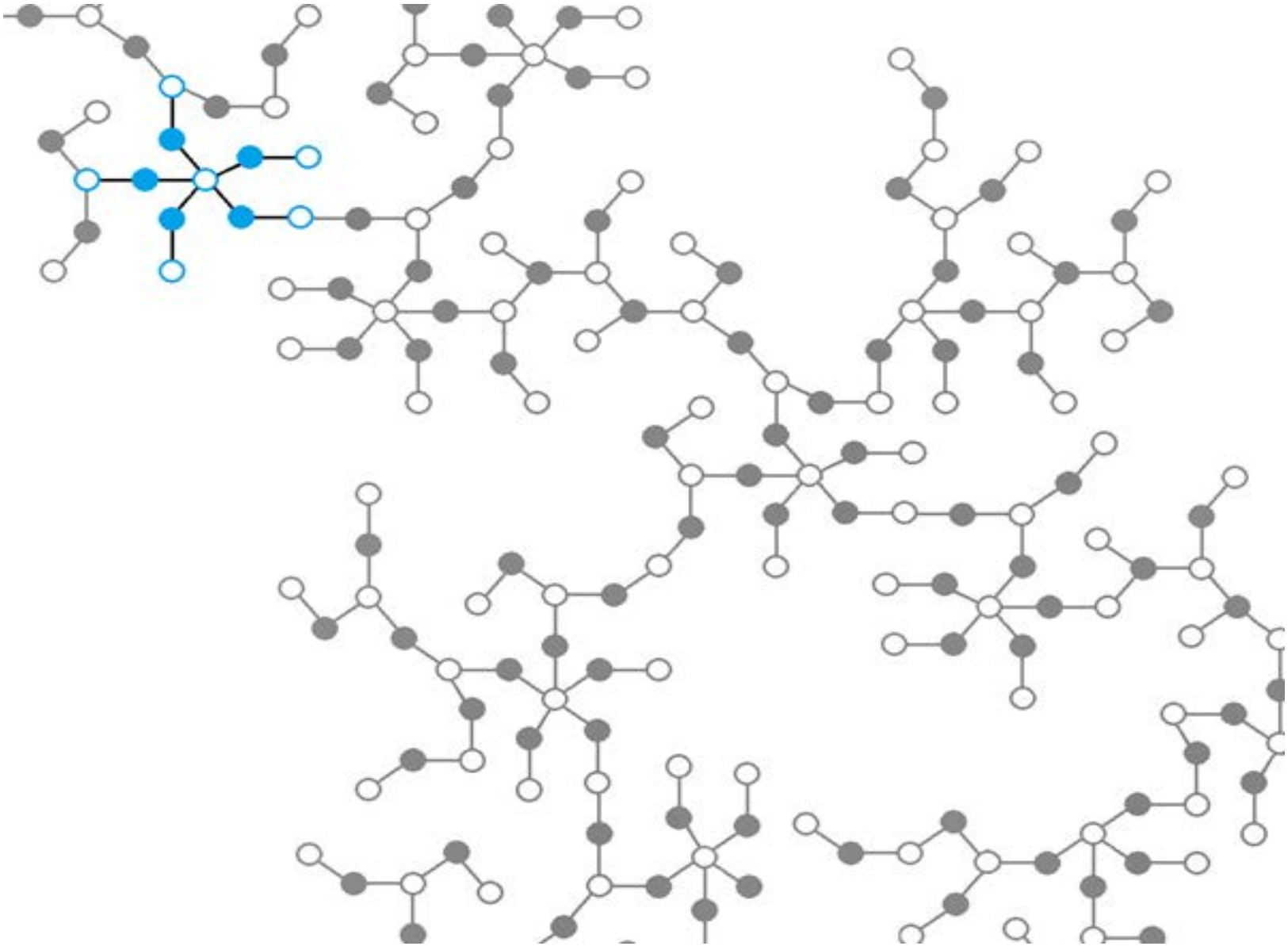


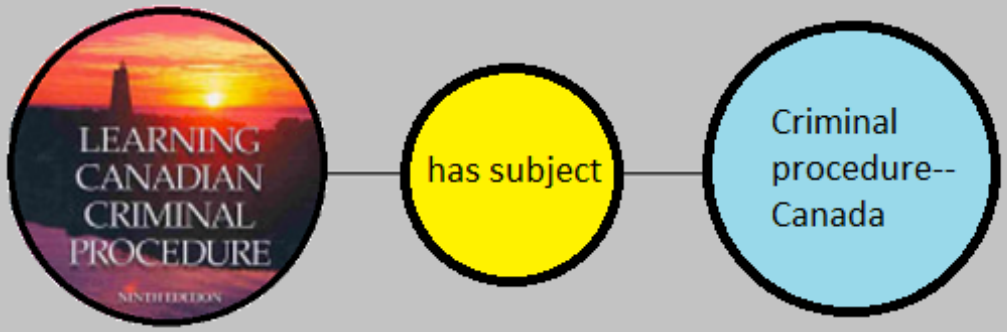
Exhibit in Boston Public Library, photographed by the author July 26, 2012



Lewis Martin, March 23, 2005 https://www.flickr.com/photos/ldm/14296081/



The Triple



Subject → Predicate → Object

The Triple

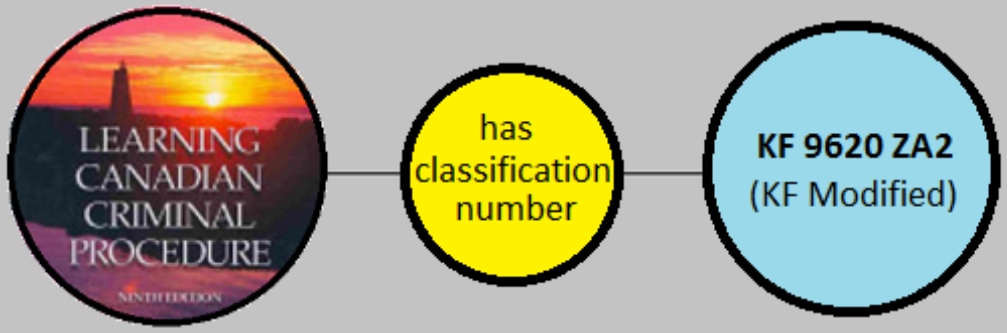
has subject

Criminal procedure--Canada

Subject → Predicate → Object

Resource Attribute Value

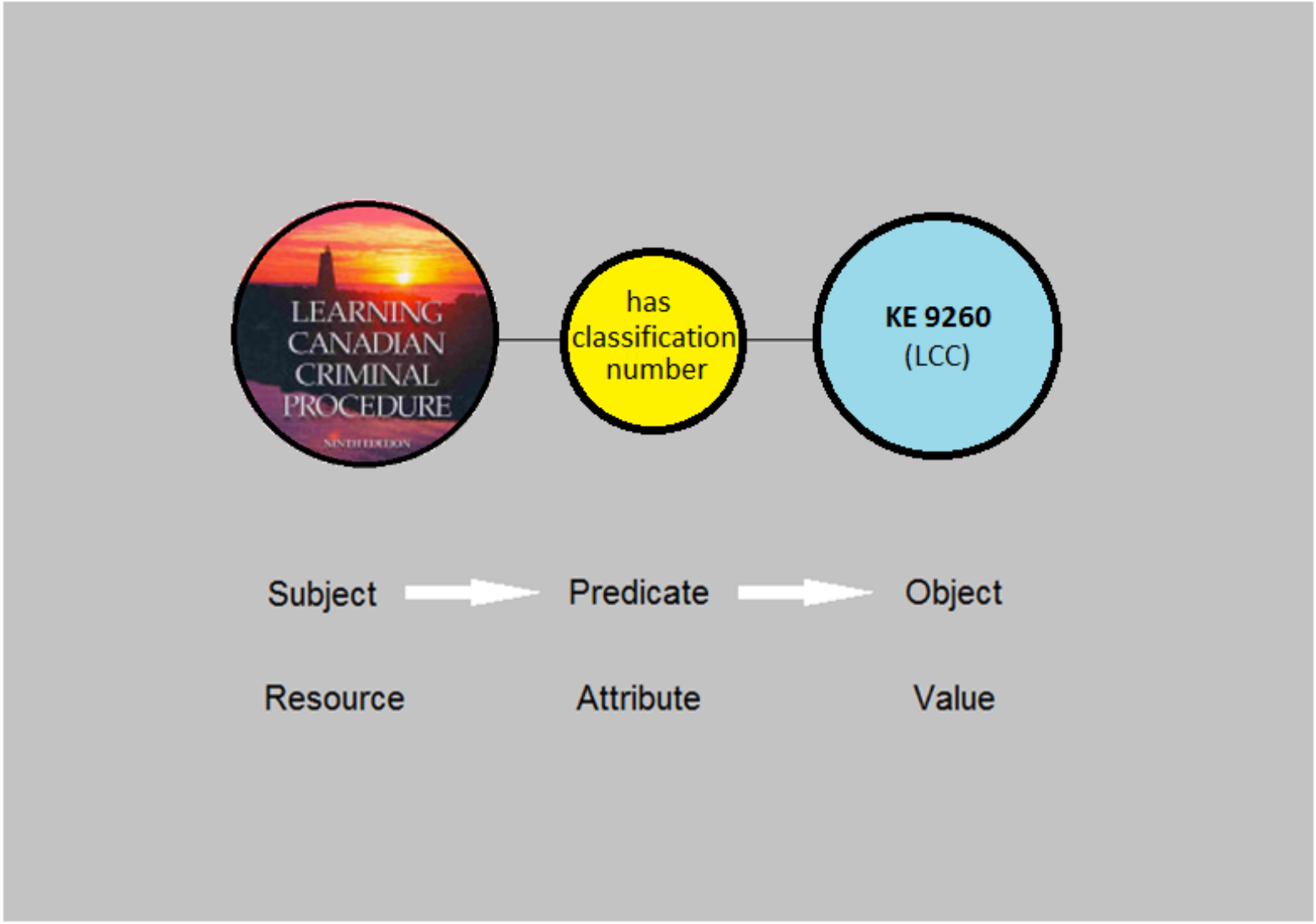
The Triple



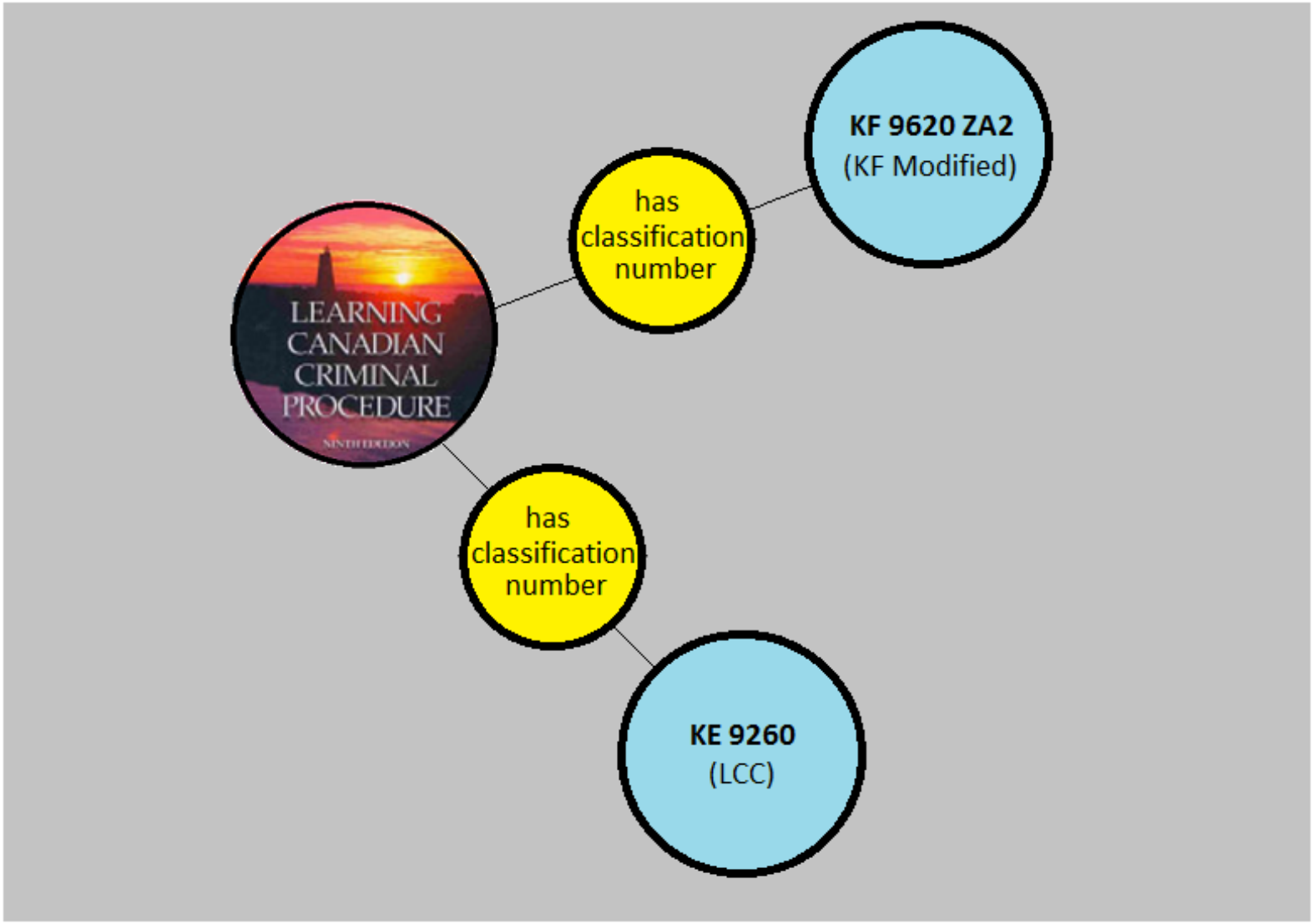
Subject → Predicate → Object

Resource Attribute Value

The Triple


LEARNING CANADIAN CRIMINAL PROCEDURE
has classification number
KE 9260 (LCC)
Subject
Predicate
Object
Resource
Attribute
Value

The Triple


KF 9620 ZA2
(KF Modified)
has classification number
LEARNING CANADIAN CRIMINAL PROCEDURE
has classification number
KE 9260
(LCC)

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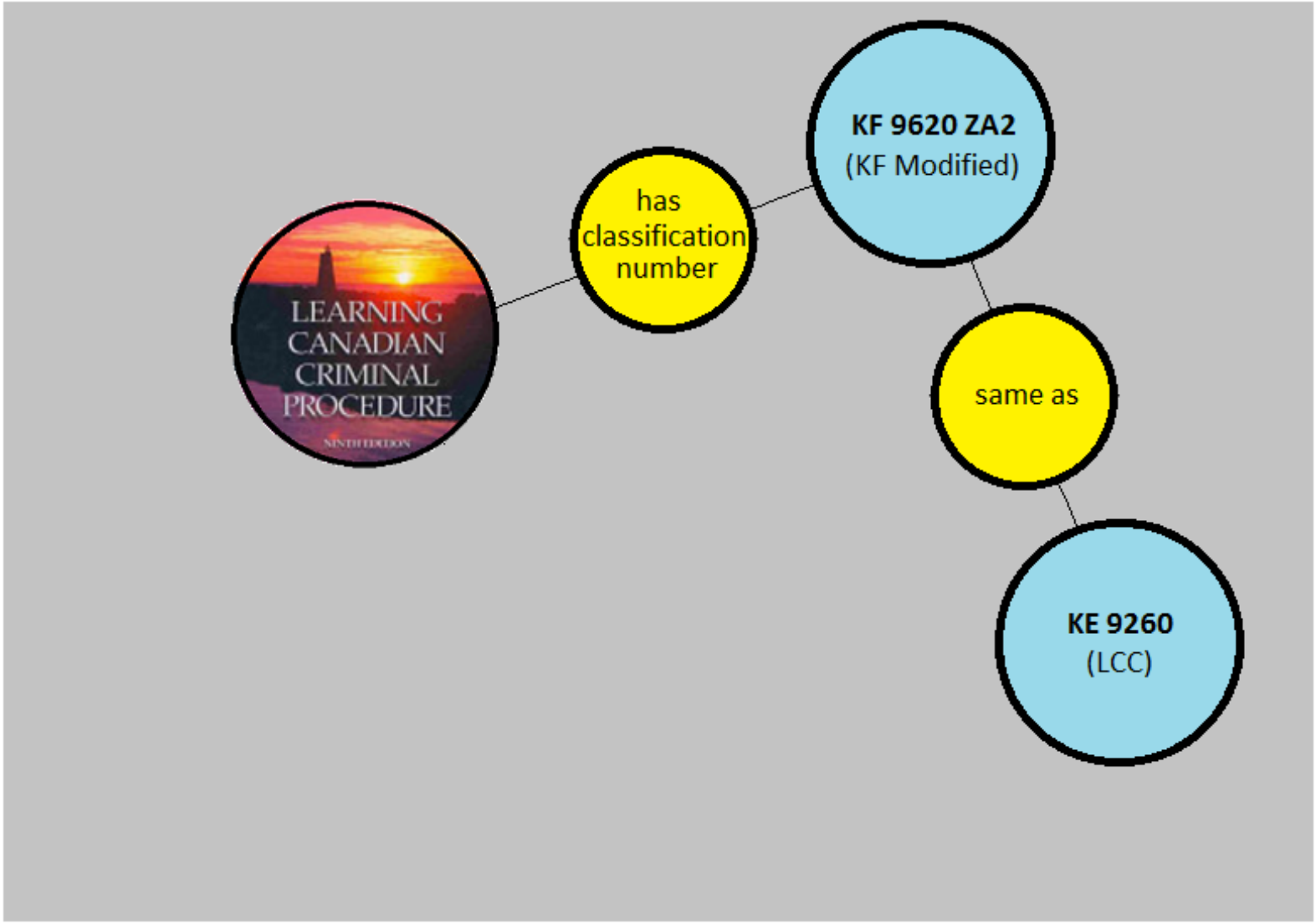
LEARNING CANADIAN CRIMINAL PROCEDURE
has classification number
KF 9620 ZA2
(KF Modified)
same as
KE 9260
(LCC)

<owl:sameAs>

LEARNING CANADIAN CRIMINAL PROCEDURE
has classification number
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same as
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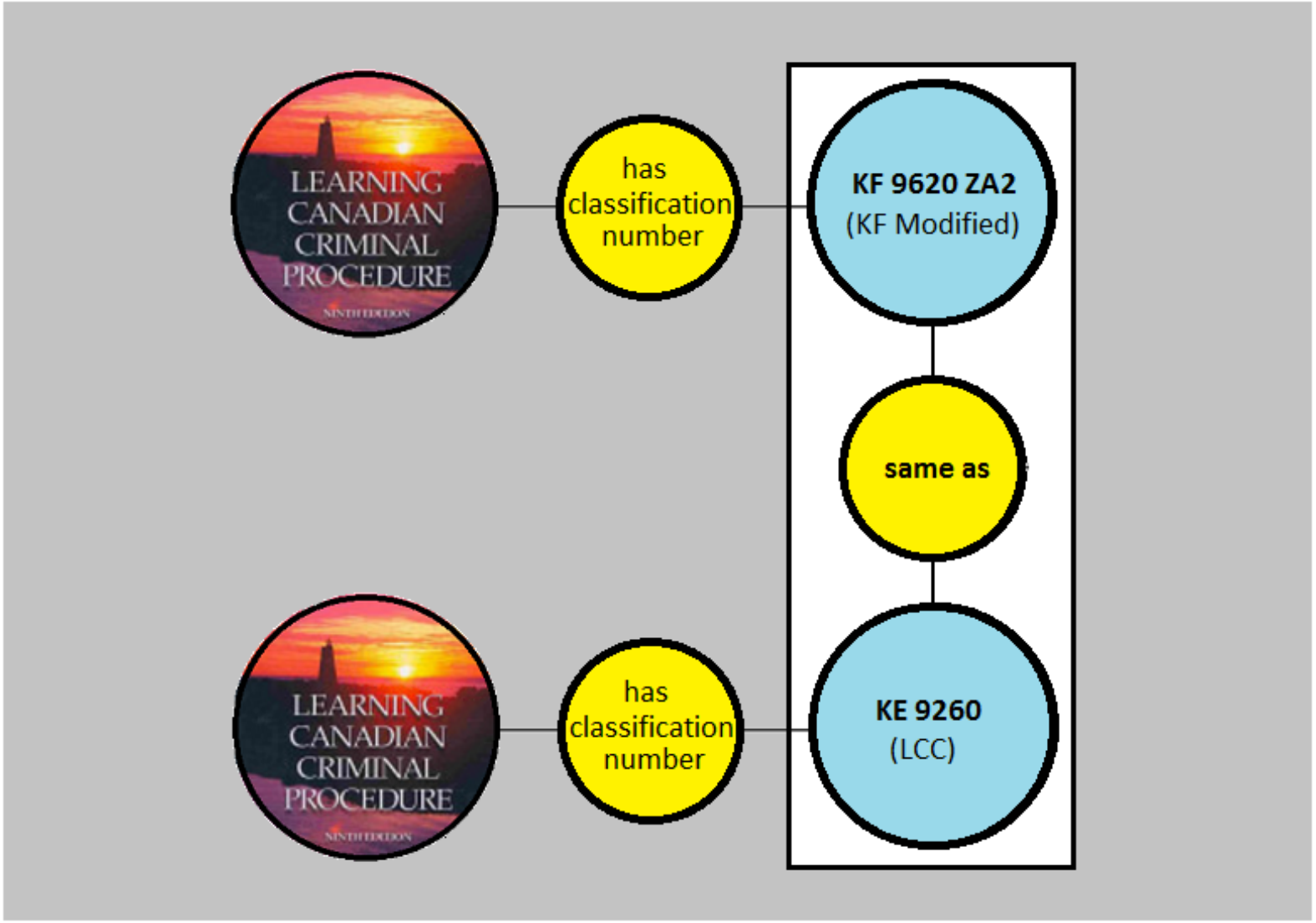
has classification number
KE 9260
(LCC)

KF Modified Linked Data Project



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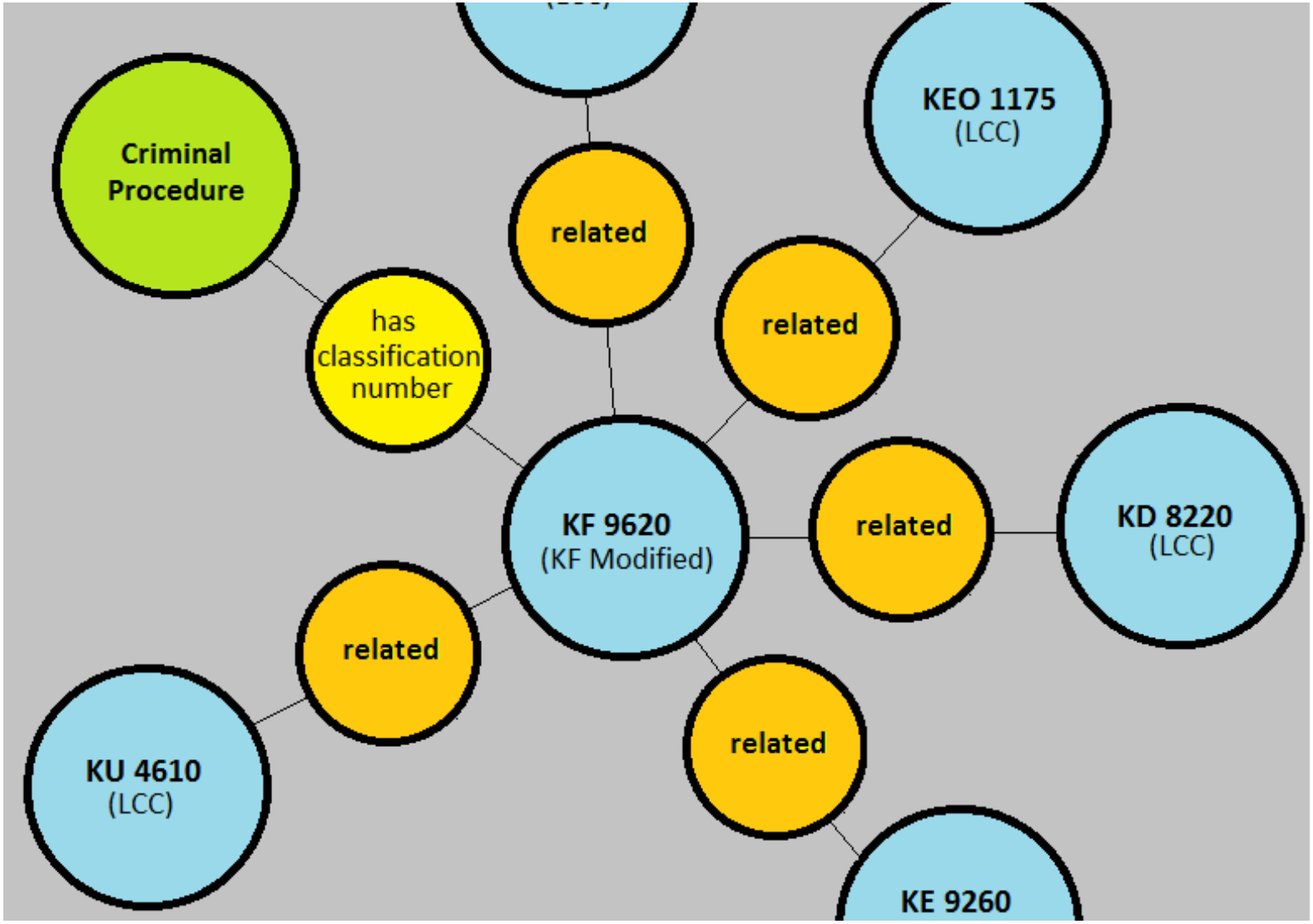
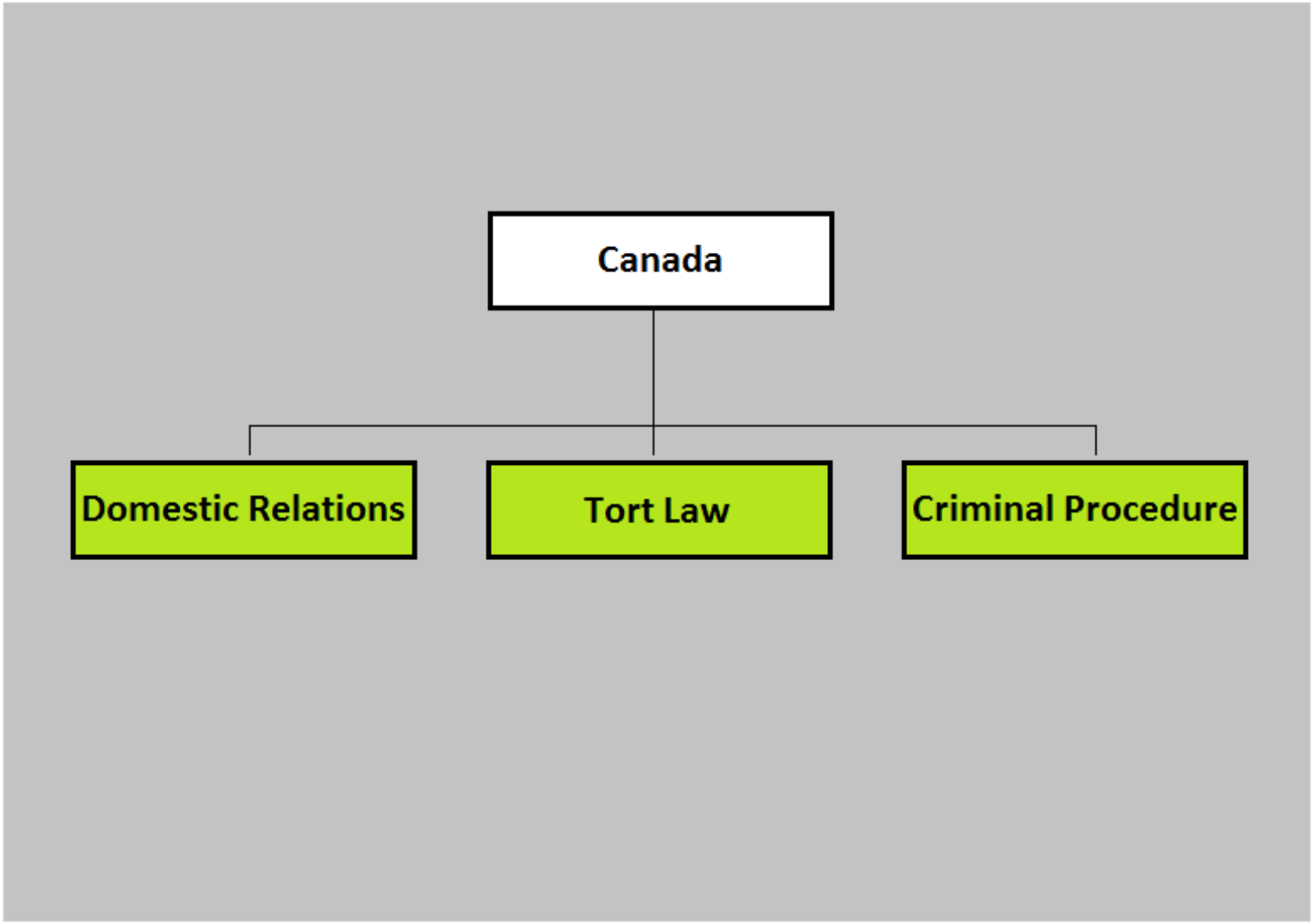
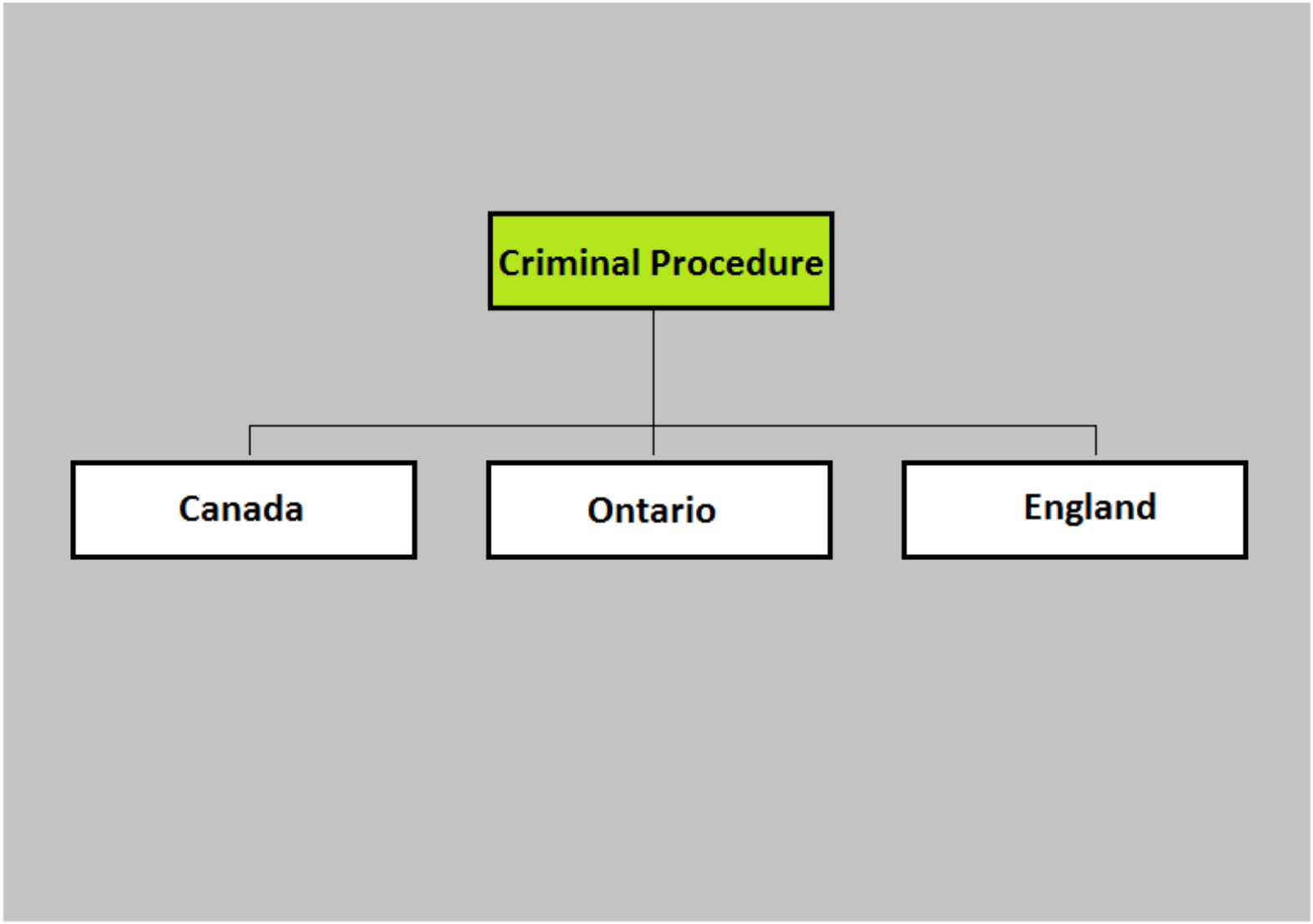


Browse by Juridiction



Browse by Subject



Meet the map collection

(and the map cataloguer)

About the collection

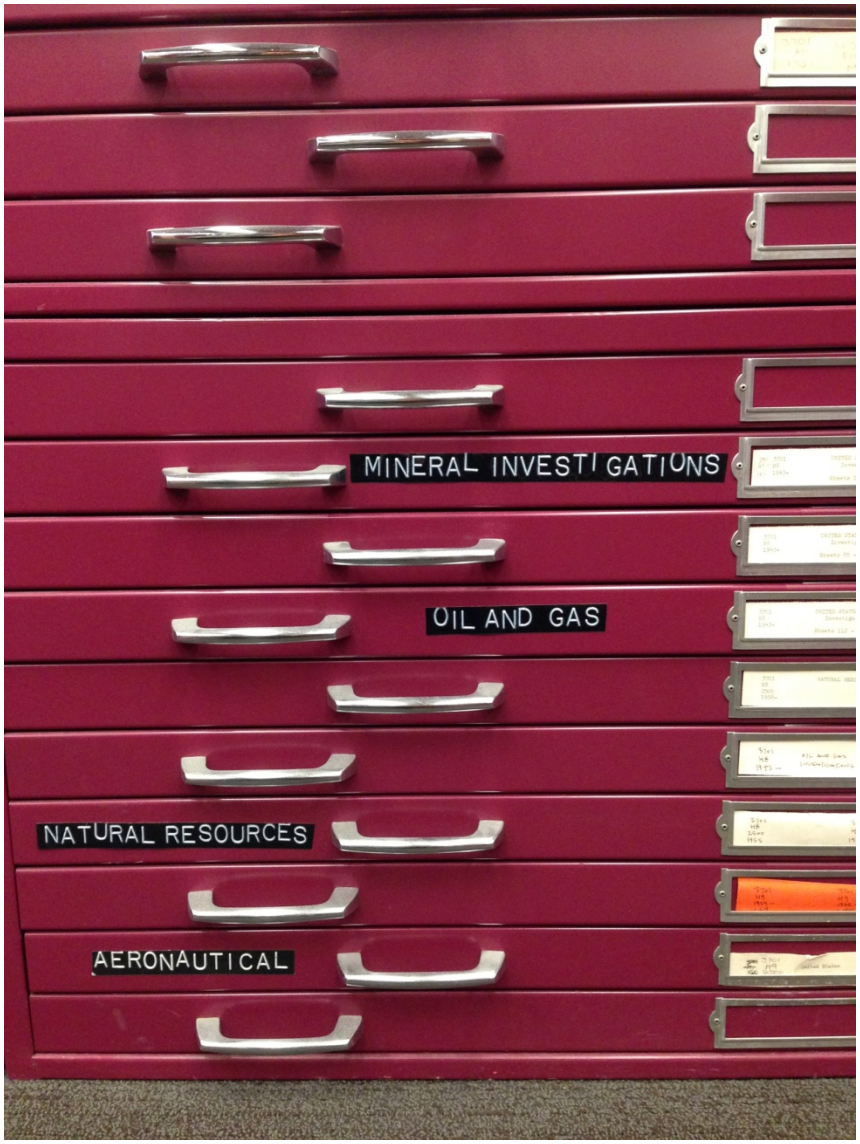
- Hundreds of thousands of paper maps, divided between the 5th floor of Robarts and sub-basement B2 (available upon request)

Organization

- By geography…

Organization

- …by theme…



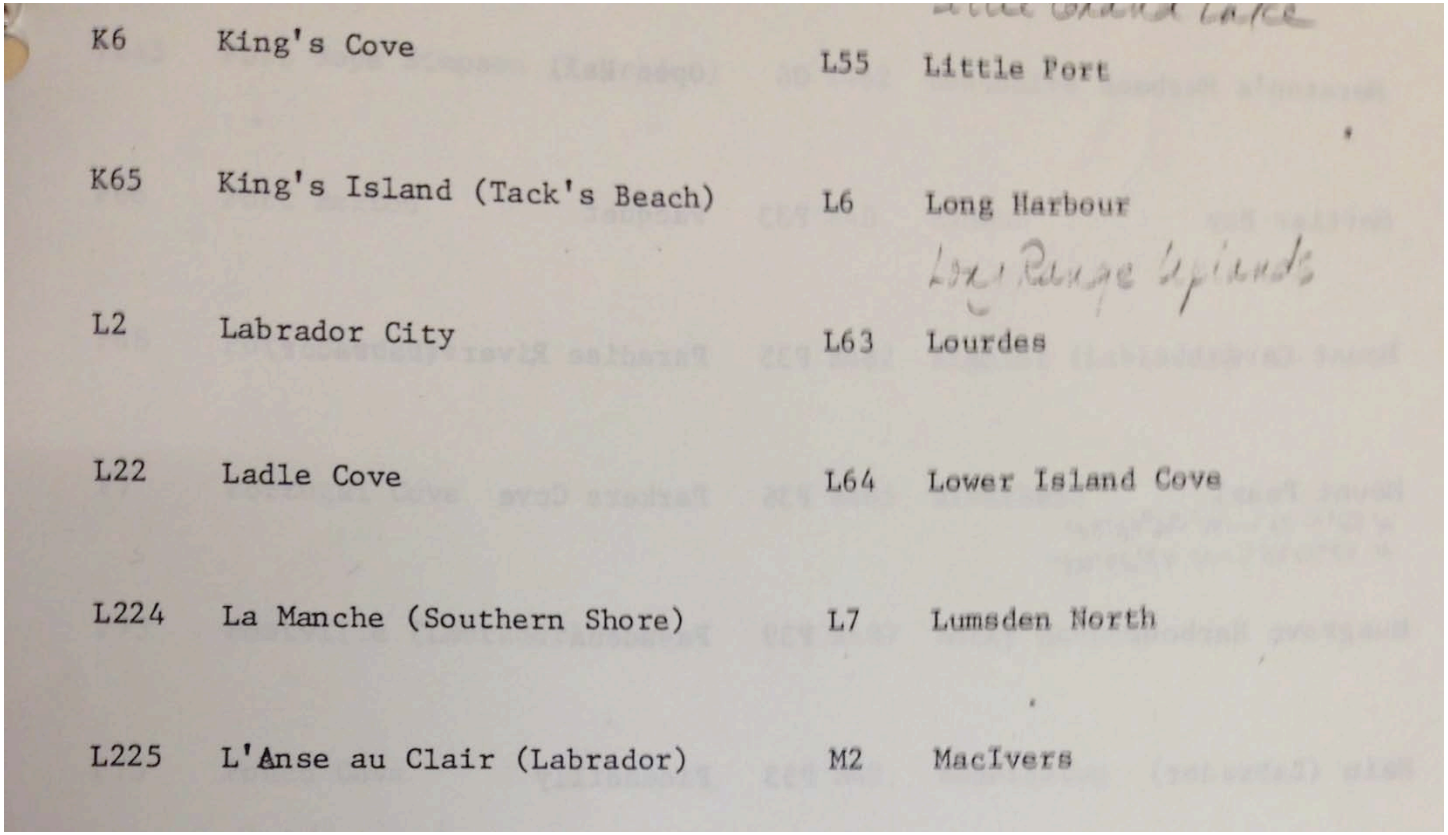
Organization

- …and by scale

Local policies in effect

- In other words, what we do differently at MDL (which I didn’t realize until I worked there for five years)

Local policies in effect



K6	King's Cove	L55	Little Port
K65	King's Island (Tack's Beach)	L6	Long Harbour
L2	Labrador City	L63	Lourdes
L22	Ladle Cove	L64	Lower Island Cove
L224	La Manche (Southern Shore)	L7	Lumsden North
L225	L'Anse au Clair (Labrador)	M2	MacIvers

- (I should really digitize this someday)

Local policies in effect

- Scale in the call number

Here's a record, a tasty record

Subjects

geographic term	Kawartha Lakes (Ont. : Lakes)--Baked products--Tourism--Maps.
	Northumberland (Ont.)--Baked products--Tourism--Maps.

More Details

corporate author	Ontario. Regional Tourism Association 8.
title	Are you nuts, or just plain? : Kawarthas Northumberland butter tart tour
imprint	[Regional Tourism Association 8] : [Peterborough, Ont.], [2015].
	Scale not given (W 78°55'00"--W 77°38'00"/N 44°50'00"--N 43°54'00").
contents note	Kawarthas-Northumberland butter tart tour -- Sturgeon/Balsam Lake route -- Kawarthas route -- Tart Tour just off the 401 -- Country drive through Northumberland East.
general note	Bakeries indexed.
	Shows locations of bakeries selling butter tarts.
catalogue key	10165646

043			n-cn-on
052			3463 **|b** N6 **|b** P5 **|b** V5
072		7	M8 **|2** lcg
110	1		Ontario. **|b** Regional Tourism Association 8.
245			Are you nuts, or just plain? : **|b** Kawarthas Northumberland butter tart tour
255			Scale not given **|c** (W 78°55'00"--W 77°38'00"/N 44°50'00"--N 43°54'00").
260			[Regional Tourism Association 8] : **|b** [Peterborough, Ont.], **|c** [2015].
300			5 maps on 1 sheet : **|b** both sides, colour ; **|c** on sheet 31 x 51 cm.
336			cartographic image **|b** cri **|2** rdacontent
337			unmediated **|b** n **|2** rdamedia
338			sheet **|b** nb **|2** rdacarrier
500			Shows locations of bakeries selling butter tarts.
500			Bakeries indexed.
505	0		Kawarthas-Northumberland butter tart tour -- Sturgeon/Balsam Lake route -- Kawarthas route -- Tart Tour just off the 401 -- Country drive through Northumberland East.
596			8
651		0	Kawartha Lakes (Ont. : Lakes) **|x** Baked products **|x** Tourism **|v** Maps.

Share your feedback

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245			Are you nuts, or just plain? : |b Kawarthas Northumberland butter tart tour
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651		0	Kawartha Lakes (Ont. : Lakes) |x Baked products |x Tourism |v Maps.

Share your feedback

Tools of the trade

- LC G Schedule

G7653	INDIA. STATES, TERRITORIES, ETC.	G7653
.O7	Orissa	
.O8	Osmānābād [District]	
.P24	Pālghāt [District]	
.P25	Panchmahal [District]	
.P26	Panna [District]	
.P27	Parbhani	
.P4	Periyar [District]	
.P5	Pīlībhīt [District]	
.P6	Pondicherry	
.P63	Porbandar [District]	
.P7	Pudukkottai [District]	
.P78	Pune [District]	
.P8	Punjab	
.P88	Puri [District]	
.P89	Purūlia [District]	
.R26	Raigarh [District]	
.R28	Rājsamand [District]	
.R3	Rajasthan	
.R32	Rājkot [District]	
.R35	Rāmānathapuram [District]	
.R36	Ranchi [District]	
.R38	Ranga Reddi	
.R39	Ratlam [District]	
.R41	Ratnāgiri [District]	
.R44	Rewa [District]	

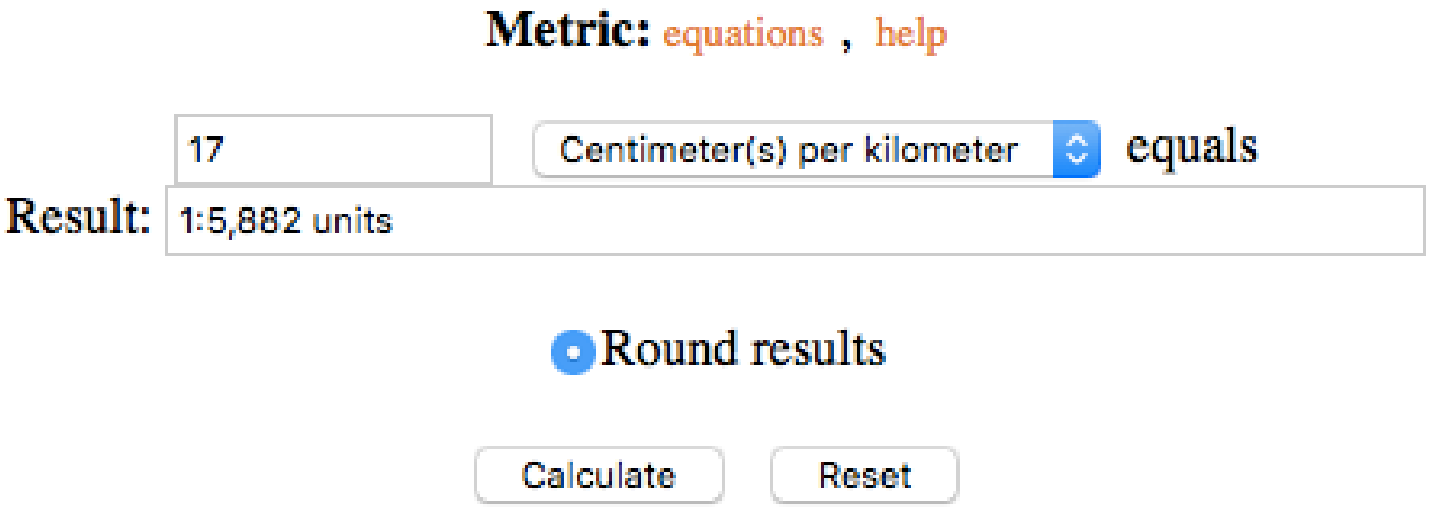
Tools of the trade

- LC Subject Cutters for Cartographic Materials

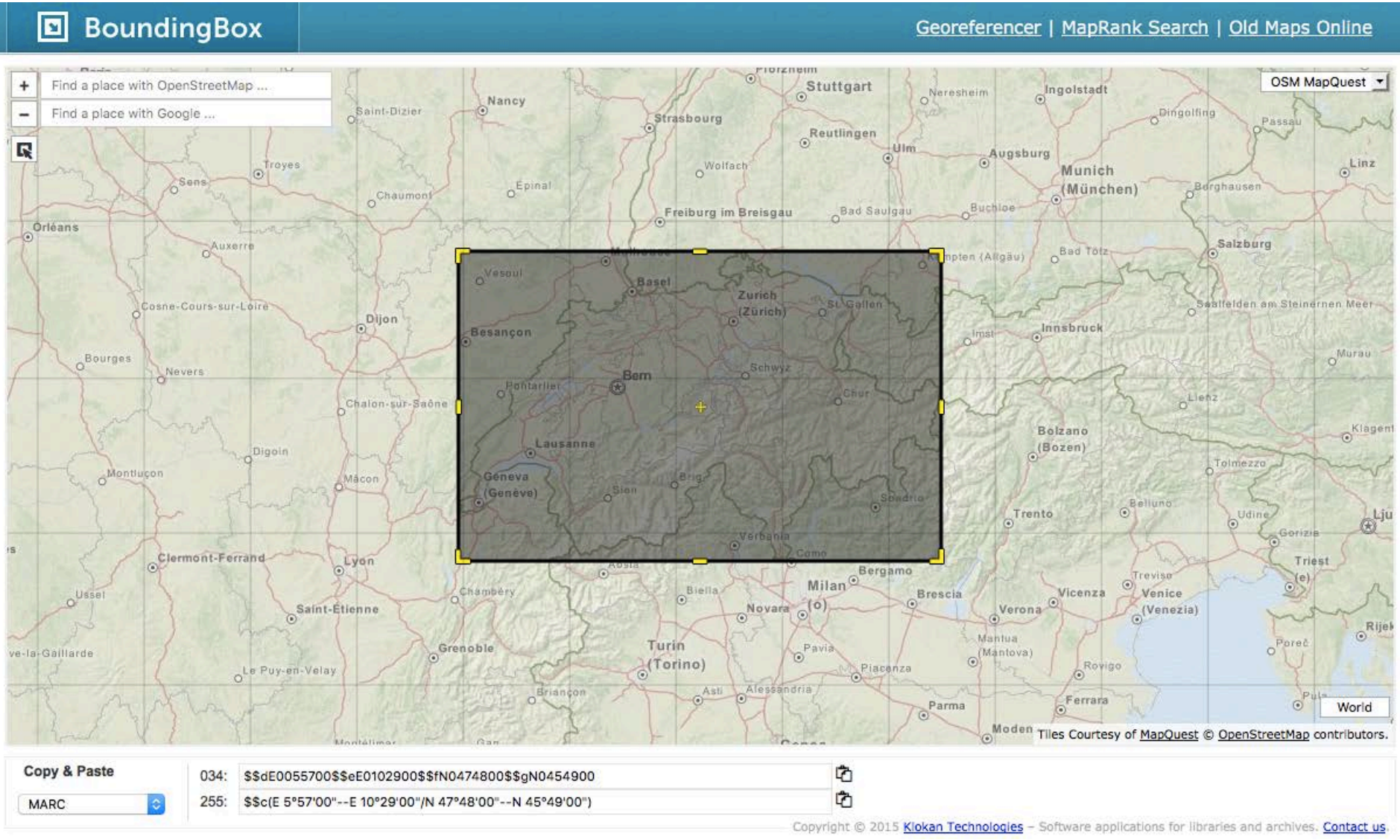
Summary of Form and Subject Subdivisions

A Special category maps and atlases
B Mathematical geography
C Physical sciences
D Biogeography
E Human and cultural geography. Anthropogeography. Human ecology
F Political geography
G Economic geography
H Mines and mineral resources
J Agriculture
K Forests and forestry
L Aquatic biological resources
M Manufacturing and processing. Service industries
N Technology Engineering. Public works
P Transportation and communication
Q Commerce and trade. Finance
R Military and naval geography
S Historical geography

Tools of the trade



Tools of the trade



Issues with this workflow

- What does it recognize? What does it erase? Both places and states of being.

Shuswap Nation Residential Schools

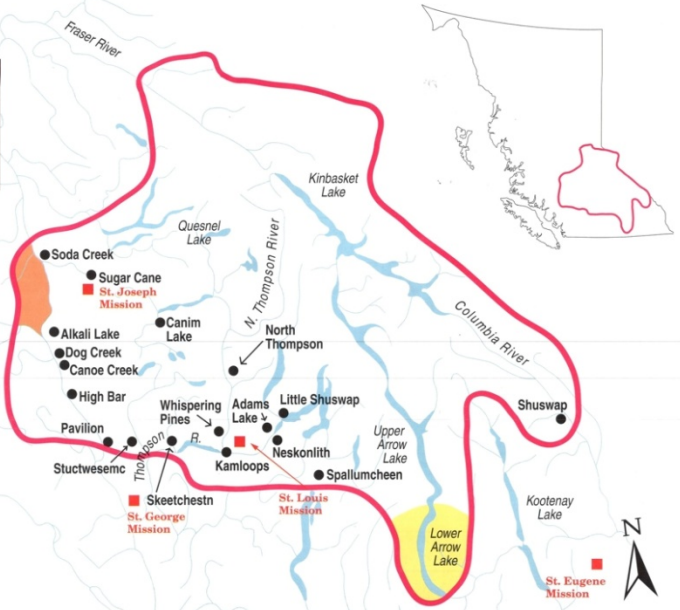
Kamloops residential school Mexican Dance.

Kamloops residential school, 1942.

Girls in uniforms at school at St. Joseph's Mission, Williams Lake. This school was located south of the Sugar Cane Band.

Industrial School showing Mount Paul in the background.

Williams Lake



The Shuswap people live in the Interior of British Columbia. This area has been their home for over 20,000 years. In the past they were a self-governing nation with their own traditional form of education.

The traditional lifestyle of the Shuswap depended on skills and knowledge handed down through the generations. Young people learned by watching and imitating others. They also listened to the stories and experiences of the elders. In this traditional way, Shuswap children were educated. They learned how to live in harmony with the land, using natural resources for all their needs. This way of life all changed with the appearance of the fur traders, missionaries, gold miners and settlers.

The Roman Catholic missionaries had the most drastic effect on the education of the Shuswap. In 1842, the first missionary, Father DeSmet, arrived in Shuswap Territory. The goal of the missionaries was to convert the Indian people to Christianity and a European way of life. They wanted to "civilize" the Indians. They did not understand that the Shuswap already held beliefs that helped them live a harmonious life.

The missionaries started day schools near Williams Lake and Kamloops. They believed that they could force Indian children to adopt a totally new and foreign way of life. Yet the children returned home each day and did not give up Shuswap culture. Schools where the children lived away from their families were then seen as the answer. The church then built industrial schools, where the children spent more time working than they did getting and education.

Two Roman Catholic industrial schools were established in Shuswap Territory. The school at the St. Louis mission was opened in 1890. It was located on the north shore of the Thompson River east of Kamloops. A year later, the school at the St. Joseph mission near Williams Lake was built. The historical photographs show these two schools. Shuswap children were also sent to the industrial schools of the St. Eugene mission in Cranbrook and the St. George mission in Lytton.

Once the industrial schools were built, children from communities throughout Shuswap Territory were taken from their parents and forced to attend the boarding schools. The students attended year-round and rarely went home to see their families. In this way, the schools led to a tragic breakdown of the family unit, the core of Shuswap society.

In the industrial schools, the children spent half a day at work, a quarter of a day on religious instruction, and a quarter of a day on education. After 1920, the work decreased to a quarter of a day, and students then increased the time spent on education to half a day. These schools were called residential schools.

Discipline at the residential schools was very strict. Native culture was criticized, and Shuswap children were taught to look down on the traditions of their families. Children were quickly and severely punished for speaking their own language or practising their native culture. Strapping, head shaving, and bread-and-water diets were commonplace. The missionaries believed such punishments were necessary to rid the Shuswap of their language and traditions. The schools wanted children to accept the "benefits" of white society.

The school kept the children only up to grade 8 in the early days. Boys were taught skills for basic trades or farm labour. Girls learned housekeeping. When they left school, children were not prepared to fit into their traditional Shuswap life or into other Canadian communities.

The Shuswap people wanted a better education for their children and their future generations. They persuaded the government and the church to close the residential schools. The residential school in Kamloops was closed in 1974. The school near Williams Lake was closed down in 1979. By 1980, all the residential schools in the province were closed.

Shuswap students now attend public school or band-operated schools. Shuswap people want a good education for their children, but not at the expense of their language and culture.

In spite of the many attempts to suppress its traditions and beliefs, the Shuswap culture was strong enough to survive. Traditions and customs were practised in secret. The people kept alive their relationship to the land. Their sense of community remained strong. The spirit of the people prevailed.

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Secwepemc Cultural Education Society. 1994. *Shuswap Nation Residential Schools*. Kamloops, BC: Secwepemc Cultural Education Society.

Issues with this workflow

G3512	BRITISH COLUMBIA. REGIONS, NATURAL FEATURES, ETC.	G3512
.F7	Fraser River	
.G3	Galiano Island	
.G34	Garibaldi, Mount	
.G35	Garibaldi Provincial Park	
.G4	Georgia, Strait of	
.G45	Georgia Basin [B.C. and Wash.]	
.G5	Glacier National Park	
.G6	Golden Ears Park	
.G7	Grenville Channel	
.G8	Gulf Islands	
.H3	Haro Strait [B.C. and Wash.]	
.H35	Harris Creek [Lumby]	
.H4	Hecate Strait	
.H55	Hornby Island [Island]	
.H6	Howe Sound	
.I5	Indian Arm	
.J4	Jervis Inlet	
.J73	Johnstone Strait	

Issues with this workflow

G3513	BRITISH COLUMBIA. REGIONAL DISTRICTS	G3513
.A43	Alberni-Clayoquot	
.B85	Bulkley-Nechako	
.C36	Capital	
.C37	Cariboo	
.C45	Central Coast	
.C46	Central Kootenay	
.C47	Central Okanagan	
.C65	Columbia-Shuswap	
.C66	Comox-Strathcona	
.C69	Cowichan Valley	
.E27	East Kootenay	
.F73	Fraser-Fort George	
.G74	Greater Vancouver	
.K58	Kitimat-Stikine	
.K66	Kootenay Boundary	
.N36	Nanaimo	
.N67	Northern Rockies	

Issues with this workflow

G3514	BRITISH COLUMBIA. CITIES AND TOWNS, ETC.	G3514
.A2	Abbotsford	
.A3	Agassiz	
.A4	Alberni	
.A42	Alert Bay	
.A5	Anmore	
.A85	Atlin	
.B37	Belcarra	
.B4	Bella Coola	
.B8	Burnaby	
.C3	Campbell River	
.C32	Cawston	
.C34	Chemainus	
.C35	Chilcotin Forest	
.C35:2C3	Canada. Canadian Forces Training Area [Chilcotin Forest]	
.C4	Chilliwack	
.C42	Coalmont	
.C43	Comox	

Issues with this workflow

E Human and Cultural Geography. Anthropogeogaphy. Human ecology

Class here works that are concerned with man as a physical and social being

.E1 General
Including ethnology, tribes, ethnic groups, etc.
.E15 Archaeological sites. Cities and towns which are ruined, extinct, etc.
.E2 Population
.E24 Vital statistics. Population increase and decrease. Birth control
.E25 Statistical areas. Census tracts
.E27 Movements of population (Voluntary)
Class here works on emigration, immigration, nomadism, tribal migration, transhumance, etc.
.E272 Regulation. Quotas
.E29 Demographic aspects of disasters
For technical aspects, see special fields, e.g. .C55 Earthquakes; .C32, Floods; .E59, Famine; etc.

Issues with this workflow

.E62 Customs and folklore
.E622 Social customs (Social and ethnic aspects). Eating and drinking habits. Clothing
For technical and industrial aspects, see .M1-.M95
.E6225 Genealogy. Families
.E623 Heraldry
.E624 Social organizations
.E625 Social problems
Class here works on problems arising from the interplay of social forces, e. g. crime, narcotics traffic, slavery, race relations, school integration efforts, efforts at revamping educational systems, confrontations, demonstrations, etc.
.E627 Folklore. Mythology
.E628 Astrology
.E63 Recreation. Sports
Including recreational trails and specific recreational activities, e.g. hiking, camping, hunting, fishing, etc.
Class individual trails as geographic features
For historic trails, see .P25

Issues with this workflow

.F8 Government
.F81 Forms of government
Class here works on the distribution of governing systems within a given area
Departments, agencies, bureaus, commissions
see .F7 or appropriate topical subdivision
.F85 Laws and law enforcement
Class here works on the location of courts, judicial divisions, penal institutions, legal societies, etc.
.F86 Concentration camps. Detention centers, etc.
.F9 Political campaigns. Election results. Votes in legislature. Political results

Issues with this workflow

- The broader question I'd like to take with this research: what does this say about the Library of Congress' understandings of what geography is and can be?

- But, for now:
  what could linked data do?

Geo-ontologies in linked data

- How can we conceive of space and place, and their relationships to natural, social, and other phenomena, in a linked data model?
- How do we create a linked data model for thinking about space that can be extended across place and time?
- What gets left out?

Expanding singular notions of place

- Alternate toponyms
- Expanding on colonial histories
- Locating places within bounding coordinates
- Uncovering violence

LOD: a space for resistance?

- Building LOD infrastructures
- Will “experts” eradicate the work of those telling alternate histories?
  - “Well actually”

LOD: a space for resistance?

- Building LOD infrastructures
- Will “experts” eradicate the work of those telling alternate histories?
  - “Well actually”

Thanks!

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