資訊組織簡介

(Organization of Information: A Brief Introduction)

國家圖書館

資訊組織研習班

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大綱

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前言

目錄乃為圖書館員實務的中心，
是圖書館學的要義。

-- Jesse H. Shera著；鄭肇陛譯。圖書館學概論：圖書館服務的基本要素 (新竹：楓城，民75)，頁47。

ALA Core Competences

ALA's *Core Competences for Librarians* (2021 revision draft) 的第五項 Organization of Recorded Knowledge and Information 是與資訊組織有關的核心能力：

Rationale: All library professionals should have an understanding of principles, methods, tools, and goals of organizing and representing information and knowledge across cultures and identities. Library professionals should have essential skills to adapt to technological changes, revise descriptive/classification standards, solve problems, and make ethical decisions with recorded knowledge and information. Library professionals, regardless of their specific title and/or role, should have the foundational skills and understanding to:

ALA Core Competences (2)

5A. Understand the **principles, systems, trends, and goals** involved in the organization and representation of recorded knowledge and information.

5B. Implement the developmental, descriptive, analytical, and evaluative **skills** needed to organize recorded knowledge and information.

5C. Maintain the **systems** of cataloging, collection, metadata, indexing, and classification standards and structures, and implement methods used to apply, create, and discover recorded knowledge and information, and the weaknesses and strengths of these systems.

5D. Recognize the ways that **cultural biases** impact and influence the collection and description of recorded knowledge and information.

Source: https://www.ala.org/educationcareers/sites/ala.org.educationcareers/files/content/Education/Draft%20-%20ALA%20Core%20Competences%202021%20Update.pdf

ALCTS's Core Competencies

Association for Library Collections and Technical Services (ALCTS) 於2017年公布 *Core Competencies for Cataloging and Metadata Professional Librarians*（https://alair.ala.org/bitstream/handle/11213/7853/Core%20Competencies%20Cataloging%20Metadata%20Professional.pdf?sequence=1&isAllowed=y）具體指出編目與詮釋資料專業人員所需的三種核心能力：

1. Knowledge competencies
2. Skill and ability competencies
3. Behavioral competencies

資訊組織的核心能力包括？

綜合ALA與ALCTS的敘述（ALCTS所列的behavioral competencies暫且不論），那些**知識**與**技能**是資訊組織專業人員基本上應具備的呢？大致可歸納為：

- ✓ 掌握資訊組織的目標、理論與基本原則
- ✓ 認識各種相關規範與標準且能有效運用
- ✓ 熟悉作業流程及相關系統之操作
- ✓ 注意趨勢及技術的發展，學習新知與技能，並能適時調整因應與創新
- ✓ 留心文化偏見對資訊組織工作可能帶來的影響(diversity, equity, and inclusion，簡稱DEI，是當代的重要議題，也是編目倫理的核心議題)

資訊組織的知識與技能為何被視為圖書資訊專業的核心能力呢？

The rise of documents induced a need for a new line of technical development—known as bibliography, documentation, librarianship, information management, and by other names—**to cope with the flood and to provide for discovery of and access to desired documents** as and when needed.

– Michael Buckland (2018). Document Theory. https://www.isko.org/cyclo/document

Why?試從Popper's Three Worlds想想

Karl Popper認為known universe是由相互影響的three worlds組成，包括：

- 物質世界（World 1: the realm of states and processes as studied by the natural sciences）
- 精神世界（World 2: the realm of mental states and processes）
- 文化世界--客觀知識世界（World 3: the realm of the products of thought）→ **如何保存、組織、管理、傳播、分享、利用呢？**
  - ✓ 主觀知識是存於個人腦中的知識
  - ✓ 客觀知識是寫或印於載體上的陳述性知識
  - ✓ 客觀知識靠載體記錄，不會隨個人生命結束
  - ✓ 客觀知識在傳播上，可超越時間與空間之限制
  - ✓ 主觀知識是私人的，客觀知識是公眾的、社會的

詳見Popper所著 *Objective knowledge: An evolutionary approach.* (New York : Oxford University Press, 1979.)

1. 資訊組織的意義

請先想想下列情境

- 向他人介紹一位不在場的朋友
- PC Home或博客來網路商店如何讓買家認識商品
- 學校如何記錄學生的學籍資料
- 戶政機關如何處理國民的戶政資料
- 監理所如何管理車籍
- 通訊錄所記錄的每個人的資訊
- 球鞋店如何記錄每一雙球鞋的資訊

生活中類似的例子似乎信手可得？

→ 這些例子中有何共通性或共同需求？

資訊組織的本質就是建立替代性紀錄

為物件(object)建立

替代性記錄

(Surrogate / Representation)

Type: mug
Color: white
Text: I ♥ Taiwan
Price: NT$666
Feature: …
…
…

圖片取自: https://www.zazzle.com/i+love+taiwan+mugs

替代性紀錄搭起友誼的橋樑

objects  Users

- 替代性紀錄猶如橋樑一般，在物件與有需求的使用者之間建立起連結
- 替代性紀錄是原物件的簡要呈現(condensed/ compact representation) [例外：**文物/影像資料**可能考量不同]
- 透過替代性紀錄，協助使用者了解或認識原始物件的特性（**重點在原物件**）
- *Encyclopedia of Library and Information Science*, V.29有一篇Charles L. Bernier所撰，專門討論surrogates的文獻，可參考。

資訊組織之基本概念 (1)

- 所謂**資訊組織**(organization of information)，是指為資訊紀錄(recorded information)或資訊物件(information objects)建立替代性紀錄(surrogate record/representation)，並**以系統化的方式予以組織**，以幫助使用者能夠查詢、檢索、辨識、取得所需資料。
- **資訊組織**是指人類所有資訊紀錄的組織，包括文字印刷資料、影像資料、聲音資料、圖像資料、電子及網路資源，及不同的資訊物件 [i.e.,資訊紀錄的多樣性] 。
- 傳統上，資訊組織被稱為圖書分類編目，但是圖書分類編目較偏重在圖書館館藏目錄的編製，而資訊組織的範圍相對較廣，包括各種資訊檢索工具的製作與研發，亦即除了傳統的圖書館目錄之外，還包含了書目、索引、摘要、及檔案查詢輔助(finding aids)等。

詳見：陳和琴等。資訊組織（台北市：國立空中大學，2003)，頁3。

資訊組織之基本概念 (2)

- The processes, practices, and activities of describing and representing information content and containers, as well as identifying the connections and relationships between and among information containers, content, and the people responsible for the creation and/or production of the information.
- These processes, practices, and activities serve information users by providing them with ways to identify, locate, access, retrieve, and make judgments about information in response to their information needs.

Source: Moen, W. (2004). Information Organization Horizons (SLIS 5200 Overview Series #7)

資訊組織之基本概念 (3)

- 資訊組織是藉由描述資訊物件（information objects）之載體（media）與內容（information contents），建立代表原件之替代記錄(surrogate / representation)，並予以系統化的組織，建置成檢索工具，以幫助使用者依其資訊需求查詢、檢索、辨識、評估、及查知資料所在。
- 建立**具辨識性的替代記錄與系統性的查詢機制**，可說是資訊組織的兩項基本概念。

  Source: 藍文欽(2012)。資訊組織。圖書館學與資訊科學大辭典。檢索自：http://terms.naer.edu.tw/detail/1679206/

- 資訊組織是圖書資訊機構技術服務的重要支柱之一，係連結圖書資源與使用者的關鍵機制，也是有序化管理圖書資源的基本程序。

資訊組織以多元的樣貌、不同的名義，普遍存在我們的社會之中

資訊組織工作非圖書館所獨佔

- No one collection will contain all information or all documentary forms. There are many environments in which there is a desire to organize information so that it will be retrievable for various purposes and so that at least some of it will be kept for posterity.
- For example: libraries, archives, museums and art galleries, the Internet, digital libraries, etc.

For a detailed discussion, see: Joudrey, D. N., & Taylor, A. G. *The organization of information*, 4th ed. (Santa Barbara, Calif.: Libraries Unlimited, 2018), pp. 12-52.

資訊組織工作產出的多樣化

多元的資料類型、多元的作業與組織方式、多元的機構，產生多樣化的查詢工具，如：

- Bibliographies (e.g.,敦煌學研究論著目錄)
  - ✓ Pathfinders (see ipl2 pathfinders)
- Catalogs (e.g., OCLC World Cat, NBINet)
- Indexes (e.g.,台灣期刊論文索引系統)
- Finding aids (see LC example, Univ. of Illinois Archives)
- Registers (see Example)
- Search engines and directories (e.g., Google, Bing, Internet Public Library, etc.)
- Folksonomies (e.g., LibraryThing, flickr, Diigo, etc.)
- Various metadata (e.g., DublinCore, EAD, VRA Core, CDWA, etc.) →另有補充說明如後

See also: Joudrey, D. N., & Taylor, A. G. *The organization of information*, 4th ed. (Santa Barbara, Calif.: Libraries Unlimited, 2018), Chap. 3. Folksonomy. In *Wikipedia, The free encyclopedia*. Retrieved from https://en.wikipedia.org/w/index.php?title=Folksonomy&oldid=728608997

Metadata 詮釋/後設資料

- 依據Jane Greenberg的定義：”Metadata is structured data about an object that supports functions associated with the designated object”

  Source: Greenberg, J. (2002). Metadata and the World Wide Web. Encyclopedia of Library and Information Science, V.72, p. 245.

- Metadata schema通常是一組結構化的項目(elements)，用以描述另一物件。這些項目會有其特定的名稱，用以代表或呈示物件的某一特徵（attribute, characteristic, or facet）。
- 有些Metadata系統會包括這些項目呈現的次序(ordering)、內容規則、相關的字彙控制工具(controlled vocabulary)、及語法(syntax)等。

Metadata Schemas（舉隅）

網路資源（Web resources）

- Dublin Core Metadata Initiative (DCMI) – http://www.dublincore.org

  - 2001年9月10日經ANSI核可，成為ANSI/NISO Z39.85-2001。
  - 2003年4月8日經ISO核可，成為ISO 15836。
  - 國家圖書館編，詮釋資料格式規範 https://catweb.ncl.edu.tw/sites/default/files/upload/standard/%E8%A9%AE%E9%87%8B%E8%B3%87%E6%96%99%E6%A0%BC%E5%BC%8F%28Metadata%29%E8%A6%8F%E7%AF%84.pdf

Metadata Schemas（舉隅）(2)

- 國家圖書館Metadata研究小組編撰。中文詮釋資料（Metadata）格式彙編（台北市：國家圖書館，民89）
- 中研院後設資料工作組參考規範 http://metadata.teldap.tw/standard/standard-frame.html
- Encoded Archival Description (EAD) - http://lcweb.loc.gov/ead/
- Categories for the Description of Works of Art (CDWA) - http://www.getty.edu/research/institute/standards/cdwa/
- VRA (Visual Resources Association) Core 4.0 http://www.loc.gov/standards/vracore/ http://core.vraweb.org
- ONIX (ONline Information eXchange) - http://www.editeur.org/8/ONIx/
- SCORM (Sharable Content Object Reference Models) http://www.scormsoft.com/scorm

2. 資訊組織之目的與目錄的功能

為何需要組織？

- 「夫經籍者，開物成務，垂教作程，聖哲之能事，帝王之達典。而去聖已久，開鑿遂多，苟不剖判條源，甄明科部，則先賢遺事，有卒代而不聞；大國經書，遂終年而空泯。使學者孤舟泳海，弱羽憑天，銜石填溟，倚杖追日，莫聞名目，豈詳家代，不亦勞乎？不亦弊乎？將使書千帙於掌眸，披萬函於年祀，覽錄而知旨，觀目而悉詞，經墳之精術盡探，聖哲之睿思咸識，不見古人之面，而見古人之心，以傳後來，不愈其已。」

Source:（唐）毋煚《古今書錄・序》（此文收入《舊唐書經籍志》序文，又收入《全唐文》卷373，題目為〈撰集四部經籍序略〉）

為何需要組織？(2)

- There seems to be a basic human drive organize. → People organize information every day, whether they realize it or not.
- Human learning is based upon the ability to analyze and organize data, information, and knowledge. → Psychologically, people organize information by concepts, hierarchies, and prototypes. (Cognition is categorization.)
- Organization of information also allows us to keep usable records of human endeavors for posterity.

Adapted from: Joudrey, D. N., & Taylor, A. G. *The organization of information*, 4th ed. (Santa Barbara, Calif.: Libraries Unlimited, 2018), p. 2.

為何需要組織？(3)

- In addition to the sheer pleasure of having everything in its place, we organize for more significant reasons. We organize to
  - ***Understand***: Help us to make sense of many things in daily life
  - ***Save time***: We organize to be quick and efficient
  - ***Collocate***: To bring similar things or ideas together into groups
  - ***Retrieve***: We organize because we need to retrieve.
- Efficient and effective retrieval of information is dependent upon its having been organized.
- We, information professionals, organize for the benefit of other people.

Source: Joudrey, D. N., & Taylor, A. G. *The organization of information,* 4th ed. (Santa Barbara, Calif.: Libraries Unlimited, 2018), pp. 2-3.

為何需要組織？(4)

- 組織是為了資訊的理解、聚集、與檢索。
- 替代紀錄是物件與使用者之間的橋樑，是使用者知道物件存在與否與認識評估原物件的憑藉。
- 資訊物件的替代記錄，若未經整理組織，只是一堆散亂的紀錄，效用不顯。
- 這些替代記錄必須依據某種原則（如作者、書名、分類號等）予以排列，變成系統化的組織，使用者才能 依此線索按圖索驥。
- 由系統建構端言，這項原則指的是資料排列的依據；若從使用者端言，則是檢索或查詢的切入點（因此稱為檢索點***access point***）。

目錄的功能(1)

According to the ***Statement of International Cataloguing Principles***, *2016* edition, prepared by IFLA Cataloguing Section and IFLA Meetings of Experts on an International Cataloguing Code (https://www.ifla.org/files/assets/cataloguing/icp/icp_2016-en.pdf), the functions of the catalogs include:

- to **find** bibliographic resources in a collection as the result of a search using attributes or relationships of the entities
- to **identify** a bibliographic resource or an agent
- to **select** a bibliographic resource that is appropriate to the user's needs
- to **acquire** or **obtain** access to an item described
- to **navigate** and **explore**

目錄的功能(2)

- 大抵而言，資訊組織的基本目標如下：
  - 查詢與辨識
  - 聚集（Collocating）
  - 評估與選擇
  - 瀏覽（Navigating）
- 資訊組織之主要目的，是將使用者與資源之間做有意義的連結，一方面讓使用者的資訊需求獲得滿足，節省使用者的時間；一方面讓資源組織化、系統化，而能被充分利用，發揮其效益。

Source: 張慧銖，資訊組織概論。在張慧銖等撰，資訊組織（臺北市：華藝學術，2017），頁7 。

3. 資訊組織與書目控制

書目控制的意涵

- Bibliographic Control – The process of describing items in the bibliographic universe and then providing name, title, and subject access to the descriptions, resulting in records that serve as surrogates for the actual items of recorded information.
- Bibliographic control further requires that surrogate records be placed into retrieval systems where they act as pointers to the actual information package.

Source: Taylor, A. G. *Introduction to cataloging and classification,* 10th ed. (Westport: Libraries Unlimited, 2006), p. 527.

書目控制的意涵(2)

- Bibliographic Control – The operation or process by which recorded information is organized or arranged and thereby made readily retrievable.
- The term covers a range of bibliographic activities, including complete records of bibliographic items as published; standardization of bibliographic description; and provision of physical access through consortia, networks, or other cooperative endeavors.

Source: Chan, L. M., & Salaba, A. *Cataloging and classification: An introduction,* 4th ed. (Lanhamm, Maryland: Rowman & Littlefield Publisher, 2016), p. 742.

書目控制的意涵(3)

- 書目控制意指對於每本圖書、每份文獻、甚至每種書寫的思想、有聲資料的內容、存佚及所在等，均予以妥善的登錄與組織。目的在將人類各種溝通紀錄有系統的排列，以便管理、傳遞與利用。
- 書目控制是建立、儲存、操作與檢索資料的過程，蘊含兩個層面：
  - 描述層：將收藏資源經由編目、製作索引摘要等方式予以描述，以便能適切地指引
  - 探索層：是使用者導向，協助使用者由資源中探索挖掘出符合所需的資訊

Adapted from:張慧銖，資訊組織概論，在張慧銖等撰，資訊組織（頁4），臺北市：華藝學術，2017。[參見：Wilson, Patrick. *Two kinds of power: An essay on bibliographical control.* (Berkeley, CA: University of California Press, 1968)]

書目控制的意涵(4)

- 書目控制可視為一套系統或程序，其目的在管理所有的知識與創造性活動(intellectual and creative activity)的產出
- 藉由書目工具控管各種書寫形式或正式出版的資訊紀錄
- 從操作的觀點看，書目控制即是利用書目工具有效取用各種類型與形式的資訊紀錄
- **想想**：為何失去控制和未經(或欠缺)組織的資訊不再是一種資源(或可用的資源)？

書目控制的意涵(5)

- Information that cannot be found may as well not exist. This is true in a pervasive sense (when an item has not been cataloged, no one can find it save by happenstance) and from a singular viewpoint (an information seeker does not find it, so it does not exist for that person).
- Perhaps most frustrating of all is the situation … the seeker suspects it exists, but (a) lacks the knowledge of how to search for it, or (b) the resource lacks the metadata that would make it findable. → (b)即書目控制的作用所在

Source: Holden, C., Knop, K., & Newcomer, N., (2019). Music discovery: Past, present, and future. *Notes,* 75(4), 591.

4. 資訊紀錄的意義

資訊紀錄的本質

- Knowledge exists in the mind of an individual who has studied a matter, understands it, and perhaps has added to it through research or other means. [個人的]
- Information is the communication or reception of knowledge. Such communication occurs in great part through the recording of the knowledge in some fashion. It is information that can be placed into a scheme of organization from which it can be retrieved for study by those interested in increasing their knowledge of the subject. [公開的]
- Information is organized (in an orderly, structured, and/or functional manner) – so that people can find it, read or otherwise absorb it, and use it to add to their own store of knowledge.

Adapted from: Joudrey, D. N., & Taylor, A. G. *The organization of information*, 4th ed. (Santa Barbara, Calif.: Libraries Unlimited, 2018), pp. 5-6.

資訊紀錄的本質(2)

- 資訊紀錄的三項要素：
  - 訊息
    - ✓ 訊息來源可分為：現象、經驗、理念
    - ✓ 人是訊息的捕獲者與創造者
    - ✓ 人藉五官感應、記憶、經驗、及推理以明瞭訊息
  - 表達媒體（訊息的傳遞方法與工具，如：口語、文字、圖像、二進位編碼）
  - 載體（泛指用來貯存和保留人類感覺、思想、理念、經驗的一切物體）
- 凡利用表達媒體將五官所獲的直覺感應、思想、理念、及經驗等訊息紀錄於載體中者，通稱為資訊紀錄。

詳見：何光國。圖書館學理論基礎（台北：三民，民90年），頁36-89。

資訊紀錄的本質(3)

- 文獻是指以文字、符號、圖形、聲頻、視頻等技術手段記錄的各種信息的總稱。
- 現代文獻是由四個要素構成：文獻信息、符號系統、文獻載體、記錄方式。
  - 文獻信息是文獻的內容，是以文字、符號、聲頻信號、視頻信號作為編碼的人類精神訊息。(content)
  - 符號系統是指圖畫、文字、公式、圖表、編碼、聲像和電磁信息等，是信息的攜帶者。(symbol)
  - 載體是符號賴以依附的寄主，文獻載體必須適應於文獻符號和相應的記錄方式，同時又要有利於傳播、整理和長期的保存。(media)
  - 記錄方式是指將表達的符號系統，通過特定的人工記錄方式使其附著於一定的文獻載體上，是代表文獻的符號進入載體的方法和過程。(recording process) [按：某些時候，抄本與印本需要區別]

Source: 葉鷹、潘有能、潘衛編著。情報學基礎教程(北京：科學出版社，2006)，頁86。

資訊紀錄的本質(4)

- Physical Object – 如何藉由有限的項目以有效的代表或呈現該物件（項目之充分且必要性）

  → Identification information

  - ✓ Paratext (typically include a cover, title, front matter (dedication, opening information, foreword), back matter (endpapers, colophon) footnotes, and many other materials not crafted by the author)
  - ✓ Content type (e.g., still image), Media type (e.g., video), Carrier type (e.g., videodisc, videocassette, etc.)
- Subject Matter – 如何呈現該物件的主題內容 → content information

5. 資訊組織的基本原則

資訊組織基本原則

- Bring together human beings and recorded knowledge in as fruitful a relationship as it is humanly possible to be

Source: Shera, J. H. *Sociological foundation of librarianship* (New York: Asia Publishing House, 1970), p. 34.

資訊組織基本原則 (2)

S.R. Ranganathan之圖書館五律，亦可做為資訊組織的指導原則：

- Books are for use
- Every reader his book
- Every book its reader
- Save the time of the reader
- Library is a growing organism

(詳見Ranganathan, S. R. *Prolegomena to library classification*, 3rd ed. (Bombay: Asia Publishing House, 1967), Part D.

資訊組織基本原則 (3)

- Principle of user convenience
  - ✓ Principle of common usage
- Principle of representation
  - ✓ Principle of accuracy
- Principle of sufficiency and necessity
  - ✓ Principle of significance
- Principle of standardization
- Principle of integration

Source: Svenonius, E. *The intellectual foundation of information organization* (Cambridge: MIT Press, 2001), Chap. 5.

資訊組織基本原則 (4)

The ***Statement of International Cataloguing Principles***, *2016* edition (以下簡稱ICP-2016)第二節General Principles 指出：

- The following principles direct the construction and development of cataloguing codes, the decisions that cataloguers make and policies on access to and exchange of data.
- **The convenience of the user is the most important**, while principles 2.2 through 2.13 are in no particular order. If there is a conflict among principles 2.2-2.13, the principle of **interoperability** should be rated higher than others.

資訊組織基本原則 (5)

ICP-2016 General Principles

- Convenience of the user
- Common usage
- Representation
- Accuracy
- Sufficiency and necessity
- Significance
- Economy
- Consistency and standardization
- Integration
- Interoperability
- Openness
- Accessibility
- Rationality

資訊組織基本原則 (6)

FAIR Principles

In 2016, the FAIR Guiding Principles for Scientific Data Management and Stewardship, written by Mark D. Wilkinson and others, was published in *Scientific Data*. The guiding principles include:

- ***Findable***: Metadata and data should be **easy to find** for both humans and computers
- ***Accessible***: Once the user finds the required data, they need to know how data can be accessed, possibly including authentication and authorization
- ***Interoperable***: The data usually need to be integrated with other data. The data need to interoperate with applications or workflows for analysis, storage, and processing.
- ***Reusable***: The ultimate goal of FAIR is to optimize the reuse of data. To achieve this, metadata and data should be well-described so that they can be replicated and/or combined in different settings.

詳見：Go-FAIR https://www.go-fair.org/fair-principles/

6. 資訊組織工作的主要內容與流程

資訊組織的主要內容

第一章 資訊組織概論
第二章 編目規範之內容與發展
第三章 編目規則
第四章 資源描述與檢索（RDA）
第五章 機讀編目格式
第六章 電子及網路資源描述與詮釋資料概論
第七章 合作編目與資源共享
第八章 書目關係與鏈結資料

第一章 主題分析概論
第二章 知識組織系統
第三章 圖書分類理論及圖書分類原則
第四章 中文圖書分類法
第五章 杜威十進分類法
第六章 美國國會圖書館分類法
第七章 標題法
第八章 索引典
第九章 新興知識組織機制

編目工作流程

圖書館編目部門的主要工作，可概分為下列三項：

- 編目前查核：檢查是否為複本書？查詢是否有現成書目紀錄可供抄錄編目參考？
- 分類編目：
  - 分類編目過程通常始於記述編目（圖書資源的描述與檢索點的擇定），繼之主題分析（分析圖書資源的主題，轉換為分類號及標題），而權威控制則涉及兩者。
  - 索書號之核對與完成
  - 編碼（encoding）
- 處理加工，如：列印書標、貼書標、貼書標護膜、條碼列印黏貼、貼安全詞條等（各館工作內容或有出入）
- 詳細言之，包括：資料點收、確認急件及複本、線上編目建檔、核對索書號、審核及修正書目紀錄、列印書標及各項報表、加工、移送閱覽組

Adapted from:張慧銖，資訊組織概論。在張慧銖等撰，資訊組織（臺北市：華藝學術，2017），頁16-17。

編目工作流程(2)

Several distinct cataloging procedures are part of preparing an individual bibliographic record for a library:

- *resource description*, the preparation of bibliographic descriptions and the determination of access points;
- *subject analysis*, identifying and representing the subject matter of the original object; [亦有主張主題分析下包含標題與分類]
- *classification*, the assignment of call number;
- *authority work*, the determination of the standardized forms of subject terms and names.
- *MARC taggin (Code encoding)* – In an automated environment, the cataloger must supply the codes and other information needed for computer processing (for example, *MARC*). 以下依此五項目概述之。

For details see: Chan, L. M., & Salaba, A. Cataloging and classification: An introduction, 4th ed. (Lanhamm, Maryland: Rowman & Littlefield Publisher, 2016), p. 28-31.

編目工作流程(4a) – Resource Description 資源描述

- Resource description, also called descriptive cataloging, refers to the process and the product of presenting in a record, drawn up according to established standards, the essential facts concerning an information item.
- The resulting record in turn serves as the surrogate in the file or catalog for the full item itself.
- The purpose of resource description is to tell what the resource is, in enough detail to distinguish it from other items.
- Different levels of description are appropriate to different situations. (如：中國編目規則提出簡單、標準、詳細三層次)
- The sorts of information needed in descriptions vary according to what is being cataloged.

Source: Chan, L. M., & Salaba, A. *Cataloging and classification: An introduction*, 4th ed. (Lanhamm, Maryland: Rowman & Littlefield Publisher, 2016), pp. 21, 29.

編目工作流程(4b) – Resource Description

- To aid retrieval in surrogate-based databases, the record elements that are most frequently used by users to identify resources have traditionally been designated as access points → deciding what elements in the description should be the basis for access points, and including relationships linking to other entities; and determining the proper form for the names and titles selected as authorized access points.
- Typical access points include subject terms and non-subject elements such as the title, the name of the author(s), editor(s), translator(s), etc.
- To ensure consistency, *standards* concerning the designation or assignment of access points are followed.

Source: Chan, L. M., & Salaba, A. *Cataloging and classification: An introduction*, 4th ed. (Lanhamm, Maryland: Rowman & Littlefield Publisher, 2016), pp. 22, 29.

編目工作流程(5a) – Subject Analysis 主題分析

- Subject Analysis: The part of indexing or cataloging that deals with the conceptual analysis of an information package; translating that conceptual analysis into a framework for a particular classification, subject heading, or indexing system; and then using the framework to assign specific notations or terminology to the information package and its surrogate record. (參見圖例)
- 概念分析 + 語彙翻譯

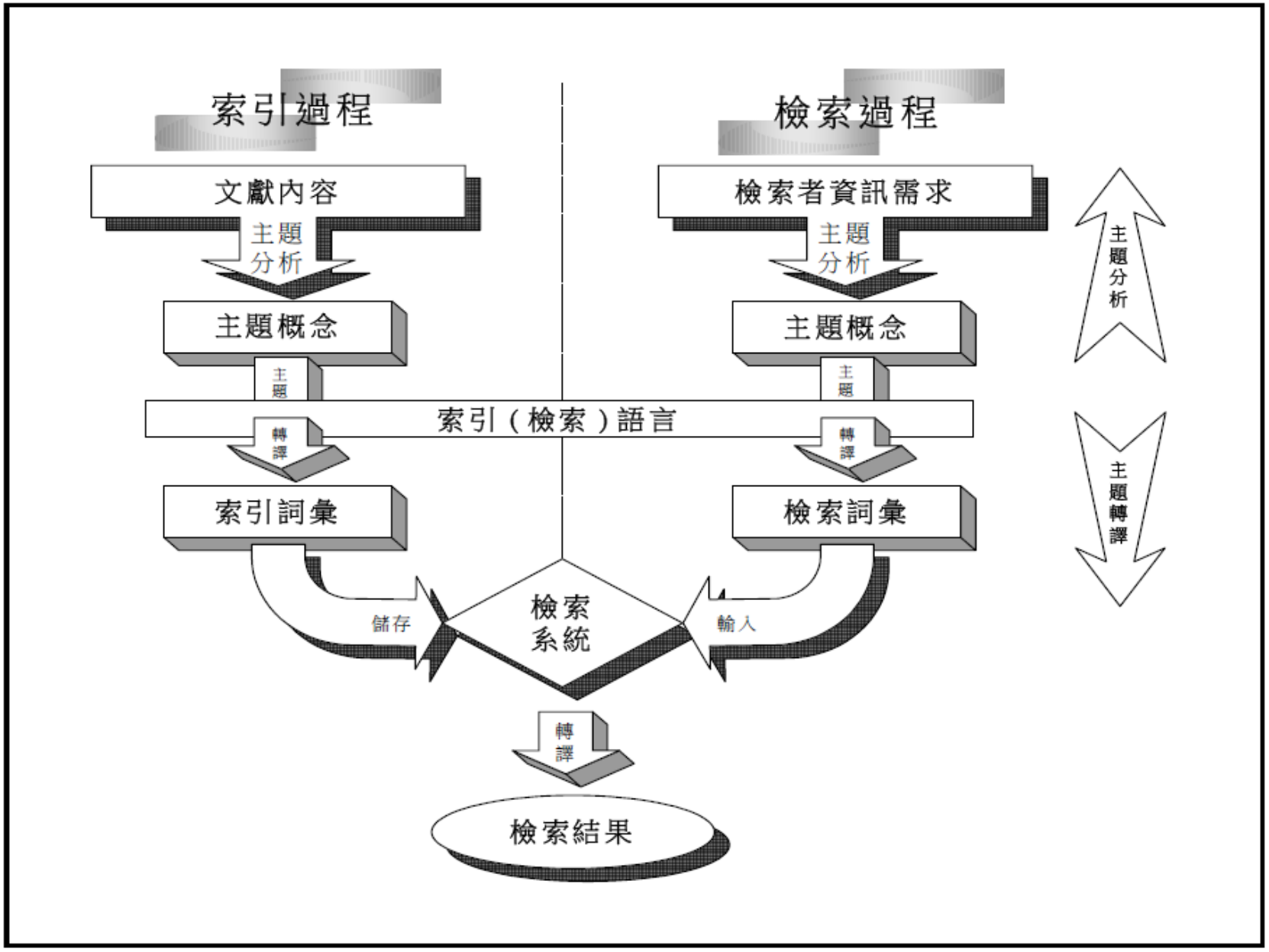
Source: Taylor, A. G. *Introduction to cataloging and classification,* 10th ed. (Westport, Conn.: Libraries Unlimited, 2016), p.545.

編目工作流程(5b) – Subject Analysis 主題分析

Subject Analysis: The part of ***indexing*** or ***subject analysis*** is an essential part of the information organization process, which is a foundational function in the LIS discipline. The subject analysis process comprises two phases: conceptual analysis and translation. Aboutness is a fundamental concept in both.

- **Conceptual analysis** is concerned with analyzing resources, determining the aboutness of those resources, and describing it in the form of an aboutness statement.
- **Translation** entails taking an understanding of the aboutness of a resource and converting it to one or more artificial subject languages, such as a classification scheme and/or standardized controlled vocabularies (e.g., a subject heading list or a thesaurus). A successful translation is dependent on having a solid understanding of what the resource is and what the resource is about. In other words, a thorough and thoughtful conceptual analysis must be performed first.

Source: Holley, R. M., & Joudrey, D. N. (2020): Aboutness and conceptual analysis: A review. *Cataloging & Classification Quarterly*, 59(2/3), 159-160.



取自：張慧銖（民**93**）。主題分析。http://catweb.ncl.edu.tw/datas/3-1-009-9.pdf

編目工作流程(5c) – Subject Analysis 主題分析

- For each bibliographic record, appropriate **subject headings** representing the "aboutness" of a resource's intellectual content are chosen from an authorized list (e.g., 中文主題詞表, Library of Congress Subject Heading, Sears Subject Heading).
- Traditionally, subject headings have been assigned from authorized lists only.
- In online catalogs, subject terms not derived from an authorized list are sometimes assigned to augment, or to take the place of, the authorized terms → Tagging & Folksonomy.

Source: Chan, L. M., & Salaba, A. *Cataloging and classification: An introduction*, 4th ed. (Lanhamm, Maryland: Rowman & Littlefield Publisher, 2016), p. 29.

編目工作流程(6a) – Classification 分類 [亦可視為主題分析工作]

- 分類就是依照Object的性質、用途、或特徵等作為分別異同的標準，再據以將符合同一標準的Object歸在一處，不同的則加以分開。
- 符合同一標準的Object構成一個群組(group)或類別(class or category)。
- 將群組或類別依其關連性組織成系統化的結構，就是分類系統(classification system/ scheme)。
- 分類不僅將物件歸類，同時也將物件納入一個有組織的架構之中，使物件間產生脈絡化的關聯。透過分類，不僅顯示物件的內容性質，也呈現物件間的關係。

編目工作流程(6b) – Classification 分類

- Classification requires fitting the primary topic of a work to the provisions of whatever classification scheme is being used (e.g., 中文圖書分類法、杜威十進分類法、國會圖書館分類法等).
- After the appropriate class number has been chosen, an **item number** is added to form a call number. This too is done according to standard patterns, somewhat different for each system.
- The act of classifying also calls for adjusting the numbers indicated in the standards to fit the new item into the shelf array of existing items in each collection.

Source: Chan, L. M., & Salaba, A. *Cataloging and classification: An introduction*, 4th ed. (Lanhamm, Maryland: Rowman & Littlefield Publisher, 2016), p. 29.

編目工作流程(7a) – Authority Control 權威控制

「無論是文言文或白話文、東方或西方語言都存在『**多義性**』，聲同義近、一音多義或一字多義的情況屢見不鮮。」（鄭毓瑜，民112。多義性與如何現代—二十世紀初漢字轉型的思考。https://research.sinica.edu.tw/polysemicity/ ）

- **同實異名**
  - 例如：腳踏車、自行車、單車、孔明車、鐵馬、鋼絲車、洋車子、bike、bicycle、pedal cycle
  - 例如：火柴、自來火、洋火棍、番仔火、發燭、條燭，淬兒、引光奴、取燈兒
- **同名異實**
  - 例如：竹圍，在新北市淡水區、桃園市大園區、苗栗縣銅鑼鄉、台南市玉井區等地，均有稱為「竹圍」的地名
  - 像是《計算機概論》就有許多同名著作，如：「趙坤茂、張雅惠、黃俊穎、黃寶萱合著」，「趙坤茂、張雅惠、黃寶萱合著」，「林騰蛟、曹祥雲合著」、「林國平譯本」、「胡昭民著」、「蔡穎、茆政吉合編」……

編目工作流程(7b) – Authority Control 權威控制

- Why authority control? → 語彙有同名異實(homograph, homonym)與同實異名(synonym)的現象，所以需要經過標準化(standardization)或正規化(normalization)的處理。
- One of the objects of a catalog is to **collocate** all works by a given author or on a given subject under the same access point. The mechanism for achieving this *gathering function* is authority control (or access control).

(詳見：Chan, L. M. *Cataloging and classification: An introduction*, 3rd ed. (Lanham, MD: Scarecrow Press, 2007), Chap. 6.

編目工作流程(7c) – Authority Control

- Authority work entails a **procedure** that spans both descriptive and subject cataloging.
- In order to fulfill the objective of the catalog as a tool for retrieving all works by a given author or all works on a given subject, the access points to bibliographic records are **normalized** and **standardized**.
- To this end, each author's name or each subject's name is "established" when used for the first time, and the decision is recorded in a record called the authority record.
- To allow access through variant names and different forms of a name or a subject, **cross-references** to a given heading are provided in the catalog and also recorded in the authority record for that heading.

Source: Chan, L. M., & Salaba, A. *Cataloging and classification: An introduction*, 4th ed. (Lanhamm, Maryland: Rowman & Littlefield Publisher, 2016), p. 39.

編目工作流程(7d) – Authority Control

- Authority control: The result of the process of **maintaining consistency in the verbal form** used to represent an access point and the further process of showing the relationships among names, works, and subjects—all for the purpose of **collocation**; also, the result of the process of doing authority work with or without the necessity of choosing one form of name or title or one subject term to be the authorized selection.

Source: Joudrey, D. N., & Taylor, A. G. *The organization of information,* 4th ed. (Santa Barbara, Calif.: Libraries Unlimited, 2018), p. 621.

編目工作流程(7e) – Authority Control

- 權威控制的目的，在提昇標目之一致性與減少歧異，讓詞彙與概念間有明確的對應關係。換言之，權威控制試圖為檢索點建立標準且一致的格式，讓概念與詞彙間建立**一對一**（或近於一對一）的關係。而這個標準且具唯一性的詞彙格式（unique heading），是以人為的方式選定。
- 在日常語言當中，書名、人名、地名、主題等均可能出現同名異實與同實異名，這會造成使用者查找資料的困擾
- 針對同實異名，選定其中之一作為代表，其餘則與代表詞建立連結，成為檢索時的線索，如：以紅樓夢作為石頭記、金玉緣、風月寶鑑等異稱之代表
- 針對同名異實，則為每個詞彙用圓括弧加上限定詞（qualifier），框限其對應的意義範圍，如：竹圍（桃園市）、竹圍（新北市）

LC Authority File
Laozi (老子)之權威紀錄

LC control no.: n 80044882
LCCN Permalink: https://lccn.loc.gov/n80044882
HEADING: Laozi

000 02548cz a2200805n 450
001 4229986
005 20150828073754.0
008 800415nc azannaabn |b aaa
010 __ |**a** n 80044882
035 __ |**a** (OCoLC)oca00426866
040 __ |**a** DLC |**b** eng |**e** rda |**c** DLC |**d** DLC |**d** NjP |**d** DLC |**d** DLC-R |**d** NjP |**d** DLC |**d** OCoLC |**d** DLC |**d** OCoLC |**d** DLC-R |**d** SG-SiILA |**d** OCoLC |**d** HkUST |**d** InU |**d** HU
100 0_ |**a** Laozi
400 0_ |**w** nne |**a** Lao-tzu
400 0_ |**a** Lao Dan
400 1_ |**a** Li, Er
400 1_ |**a** Zu, Lao
400 1_ |**a** Zi, Lao
400 0_ |**a** Lauze
400 0_ |**a** Lau-Tsze
400 0_ |**a** Laou Keun
400 0_ |**a** Lao-Tse
400 0_ |**a** Lao-Chün
400 0_ |**a** Laou-Tsze
400 0_ |**a** Laudse
400 0_ |**a** Lao-Tze
400 0_ |**a** Laotzu

Source: https://authorities.loc.gov/cgi-bin/Pwebrecon.cgi?AuthRecID=4229986&v1=1&HC=1&SEQ=20180816045958&PID=45QZHInUiUQgL3GbNjoI9crVIF-eN

編目工作流程(7f) – Authority Control→Identity Management

- ***Authority control*** manages access to entities by authorizing a specific form of name or other term for access use and bibliographic file maintenance. A distinguishing feature of authority control is **its focus on a preferred, unique, human-friendly access point**.
- ***Identity management*** operates by **associating a registered identifier** with characterizing data which specify a single identity or identified entity. It is distinguished by its focus on differentiating entities through the use of identifiers. Differentiation of entity names is of secondary importance and may be accomplished by assigning numbering to or concatenating identifying information with instances of the same name in presentation contexts.

(Source: Stalberg, E. et al. (2020). Exploring models for shared identity management at a global scale: The work of the PCC Task Group on Identity Management in NACO. *Cataloging & Classification Quarterly, 58*(3/4), 430.)

編目工作流程(7g) – Authority Control→Identity Management

- 身分/識別管理的操作，是藉已註冊的識別符與呈現個別身分或可確認實體之特徵的資料連結。它的重點在藉由識別符的使用，達到區辨實體的作用。實體名稱的區別是次要工作，可藉賦予編號或將識別資訊與文本中相同名稱的實例串連。
- 身分/識別管理的目標，是藉識別符連結與其相應的個人或實體，至於個人或實體要叫什麼名稱，並不影響其操作。權威控制重在提供檢索點，身分管理則注重資源實體的描述與其關係及連結的建立。
- 身分/識別管理是以資源描述框架（Resource Description Framework, RDF）及鏈結資料（Linked Data）為基礎，藉識別符表述identity/entity的特徵資訊。Identity management is the process of associating a registered identifier (or a URI) with a single entity.

編目工作流程(8a) – Encoding編碼

- 編碼，簡言之，就是將資料項目以特定格式呈現，或是指將資料由一種格式轉換為另一格式的程序，例如：將書目資料以機讀格式（MARC）著錄
- The marking of the individual parts or elements of a record according to specific schemas to enable computer manipulation of the parts or elements for display and retrieval.

Source: Chan, L. M., & Salaba, A. *Cataloging and classification: An introduction,* 4th ed. (Lanhamm, Maryland: Rowman & Littlefield Publisher, 2016), p.746.

編目工作流程(8b) – Encoding

- Using a record syntax or a coding scheme to make bibliographic records electronically accessible.
- Encoding ensures that bibliographic record is **structured logically** and that it may be communicated, shared, and displayed easily.
- Encoding entails the setting off of each part of a record so that (1) each of the parts can be identified clearly; (2) the parts or statements may be displayed in certain positions according to the wishes of those creating a display mechanism; and (3) certain parts of a record can be searchable.

Adapted from: Joudrey, D. N., & Taylor, A. G. *The organization of information*, 4th ed. (Santa Barbara, Calif.: Libraries Unlimited, 2018), p. 636.

7.資訊組織工作之相關規範

7.1 ISBD、FRBR、IFLA LRM
7.2 編目規則
7.3 分類表（系統主題法）
7.4 標題表、索引典（字順主題法）
7.5 機讀格式與BIBFRAME
7.6 RDF與鏈結資料 (Linked Data)

資訊組織工作的相關標準

- 若是個人試圖組織整理自己的物件，可以採用任何他認為合適的方法來處理。
- 當資訊組織工作涉及到機構及公眾使用時，為了讓作業有一致性，採用某種作業規範與標準工具或有其必要。
- 圖書館的資訊組織工作，一般是遵照或依據既定的（established）標準來進行。
- 圖書館資訊組織工作，簡言之，即學習如何運用相關的規範與標準，以完成圖書資源的surrogate與systematic arrangement。

資訊組織工作的相關標準(2) - 實例

- Conceptual Models (FRBR, IFLA LRM)
- International Standard Bibliographic Description (ISBD)
- Cataloging rules / Metadata schemes (中國編目規則, Resource Description and Access, Dublin Core)
- Classification schemes(中文圖書分類法, DDC, LC Classification, LCC PDF Files)
- Subject heading lists (Library of Congress Subject Headings, LCSH PDF Files, MeSH)
- MARC (Machine Readable Cataloging) and other format（中國機讀編目格式, MARC21, MARC 21書目紀錄中文手冊：圖書、連續出版品（修訂版）, BIBFRAME ）

資訊組織工作的相關標準(3) - 實例

- Authority files (e.g., LC Authority, NBINet 人名權威查詢系統、中研院史語所人名權威資料庫)
- Filing rules (e.g., LC Filing Rules G100)
- Guidelines (e.g., IFLA出版之 Guidelines for Subject Access in National Bibliographies, Guidelines for Authority Records and References)
- Cataloging manuals / interpretations (e.g., 中國編目規則第三版使用手冊, RDA中文手冊初稿, LC Rules Interpretation (LCRI), LC Descriptive Cataloging Manual (DCM), LC Subject Headings Manual (SHM), LC Classification and Shelflisting Manual (CSM))

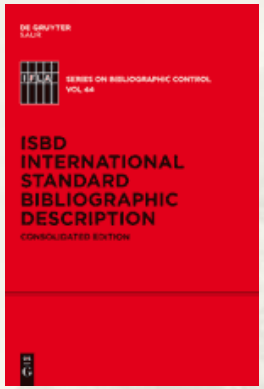
國際標準書目著錄(ISBD)

- 國際標準書目著錄（ISBD）是由IFLA編訂的書目記述規範，旨在作為書目記述的共通架構與標準。ISBD主要在界定書目記述的項目、它們的出現次序、及呈述方式（標點符號）。如：中國編目規則、AACR2等均遵照ISBD設計的書目項目、標點及格式。
- 以ISBD(G)為基礎，針對不同的資料類型，原各有其適用的ISBD規範，如：ISBD(M)、ISBD(S) 、ISBD(NBM) 、ISBD(PM) 、ISBD(ER)等，但最新的*International Standard Bibliographic Description - Consolidated Edition*，則將各種類型的資源 (books, maps, serials, sound recordings, computer files and other electronic resources, etc.)整合成單一格式。

（詳見 http://www.ifla.org/files/assets/cataloguing/isbd/isbd-cons_20110321.pdf
http://www.ifla.org/publications/international-standard-bibliographic-description）

ISBD Consolidated Edition

- ISBD: International Standard Bibliographic Description - Consolidated Edition



Munich: K.G. Saur, 2007.

The ISBD Consolidated Edition merges the texts of seven specialized ISBDs (for books, maps, serials, sound recordings, computer files and other electronic resources, etc.) into a single text.

- 2011 Consolidated Edition http://www.ifla.org/files/assets/cataloguing/isbd/isbd-cons_20110321.pdf
- 2021 Update to the 2011 Consolidated Edition (online version)
- Superseded ISBDs – http://www.ifla.org/en/isbd-rg/superseded-isbd-s

Functional Requirements for Bibliographic Records (FRBR)

- FRBR是一個關於書目世界(bibliographic universe)的概念模式(conceptual model)。
- IFLA的FRBR研究小組自1992年9月起開始運作，其提出的FRBR模式於1997年經IFLA Cataloguing Section 核可，並於1998年出版定稿版。目前最新版，是2009年修訂版(https://repository.ifla.org/bitstream/123456789/811/2/ifla-functional-requirements-for-bibliographic-records-frbr.pdf)。
- FRBR採取使用者導向的設計(未實際調查)，考量使用者利用目錄的功能需求(即所謂user tasks)，包括：find、 identify、select、acquire/obtain，再據此思考目錄如何滿足這樣的基本需求。

FRBR (2)

- FRBR採實體關係模式(entity-relationship model，簡稱E-R Model)，分析書目世界中的基本實體，進而描述各實體之屬性(attributes)、界定實體與實體之間的關係(relationships)。
- FRBR將書目世界中的實體分為三個群組，包括：
- **Group 1**: represents the different aspects of user interests in the products of intellectual or artistic endeavor，包括**work**、**expression**、**manifestation**、**item** (簡稱**WEMI**)。
- **Group 2**: represents those responsible for the intellectual or artistic content, the physical production and dissemination, or the custodianship of the entities in the first group，包括**person**及**corporate body**。[FRAD另增family實體]
- **Group 3**: represents an additional set of entities that serve as the subjects of works，包括**concept**、**object**、**event**、**place**及**Group 1 & 2中的所有實體**。

FRBR (3)

參見：張慧銖(2014)，FRBR的發展與應用。中華民國圖書館學會103年度資訊組織進階班講義

- FRBR是資訊組織領域近二十多年來發展的轉捩點，其後，FRBR家族逐步建構完成，編目原則、編目規範、書目框架等也因而徹底翻新。
- IFLA's Bibliographic Conceptual Models: (詳見：https://www.ifla.org/g/cataloguing/ifla-s-bibliographic-conceptual-models/)
  - *Functional Requirements for Bibliographic Records* (FRBR), published in 1998
  - *Functional Requirements for Authority Data* (FRAD), published in 2009
  - *Functional Requirements for Subject Authority Data* (FRSAD), published in 2010
  - *Functional Requirements for Bibliographic Records – Object Oriented* (FRBRoo), published in 2016
  - *PRESSoo*, version 1.2, published in 2016.
  - *IFLA Library Reference Model* (IFLA LRM), August 2017 final version, endorsed by the IFLA Professional Committee

IFLA Library Reference Model (LRM)

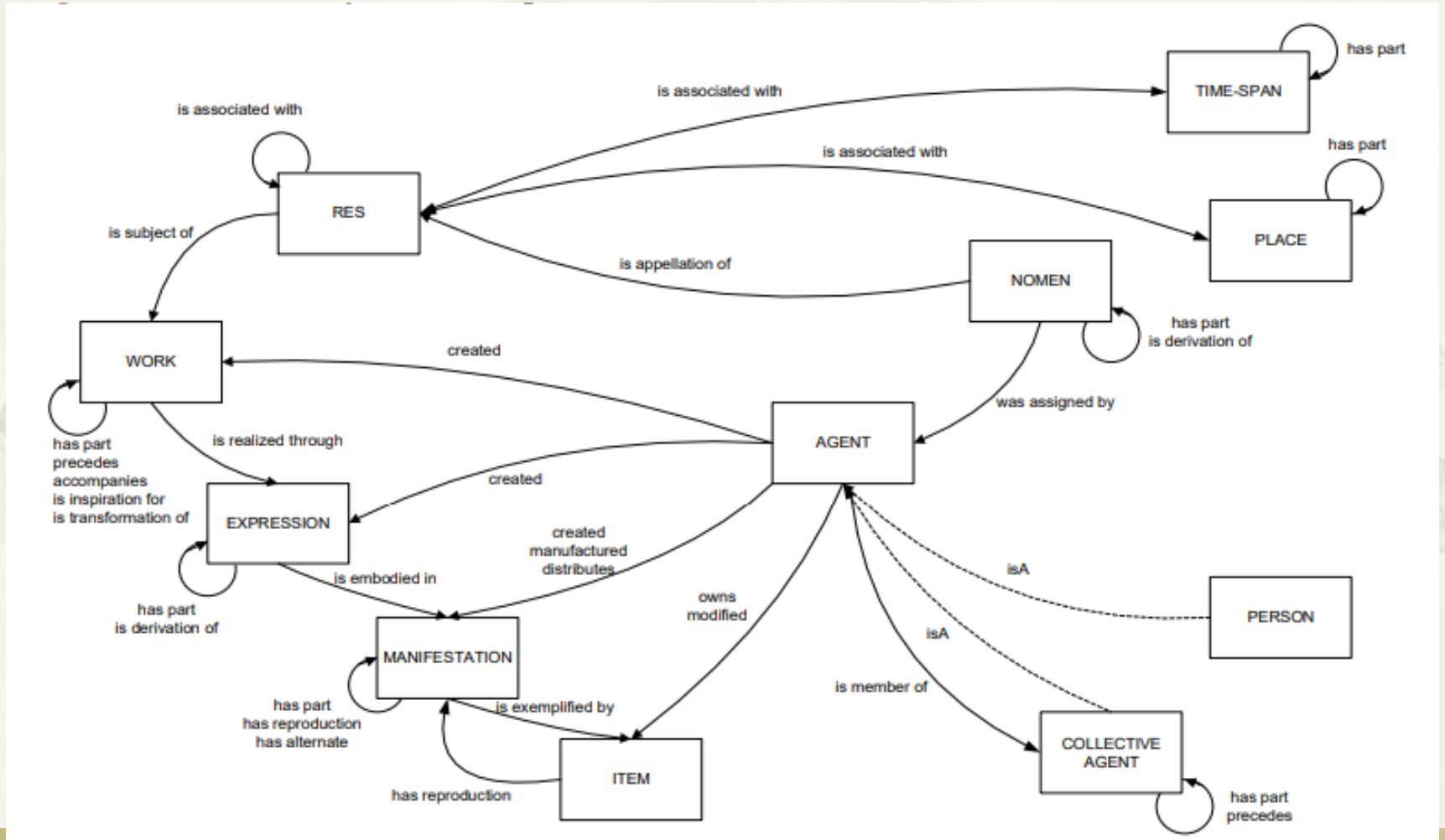
參見陳和琴教授簡報：http://www.lac.org.tw/files/ifla-lrmjian_jie_.pdf

- IFLA LRM is a high-level conceptual reference model developed within an entity-relationship modelling framework. It is the consolidation of the separately developed IFLA conceptual models: FRBR, FRAD, FRSAD.
- IFLA LRM was developed to resolve inconsistencies between the three separate models. Every user task, entity, attribute and relationship from the original three models was examined, definitions had to be revised, but also some remodeling was required in order to develop a meaningful consolidation. The result is a single, streamlined, and logically consistent model that covers all aspects of bibliographic data and that at the same time brings the modelling up-to-date with current conceptual modelling practices. (source: https://www.ifla.org/publications/node/11412)

IFLA LRM (2)

Available: https://repository.ifla.org/bitstream/123456789/40/1/ifla-lrm-august-2017_rev201712.pdf

IFLA LRM Overview (IFLA Library Reference Model, p.87)



編目規則(Cataloging Rules or Codes)

- 編目規則是圖書館從事書目記述的準據，它確立了書目記錄的著錄項目、次序、與格式。
- 目的：

1. To provide consistency within a single library
2. To provide consistency between libraries
3. To reduce time involved in cataloging
4. To provide ease of use for library users using more than one library
5. To ensure that the purposes of the catalog are achieved

Source: Mortimer, M. *Learn descriptive cataloging* (Friendswood, Tex. : TotalRecall Publications, 2007), p. 11.

編目規則 (2)

以中國編目規則與AACR2R為例，其著錄項目與次序如下：

(1) 題名及著者敘述項 (Title and statement of responsibility)

(2) 版本項 (Edition)

(3) 資料特殊細節項 (Material specific details)

(4) 出版項 (Imprint / Publication, distribution, etc.)

(5) 稽核項 (Collation / Physical description)

(6) 集叢項 (Series)

(7) 附註項 (Note)

(8) 標準號碼及其他必要記載項 (Standard number and terms of availability)

RDA Toolkit

(https://www.rdatoolkit.org/)

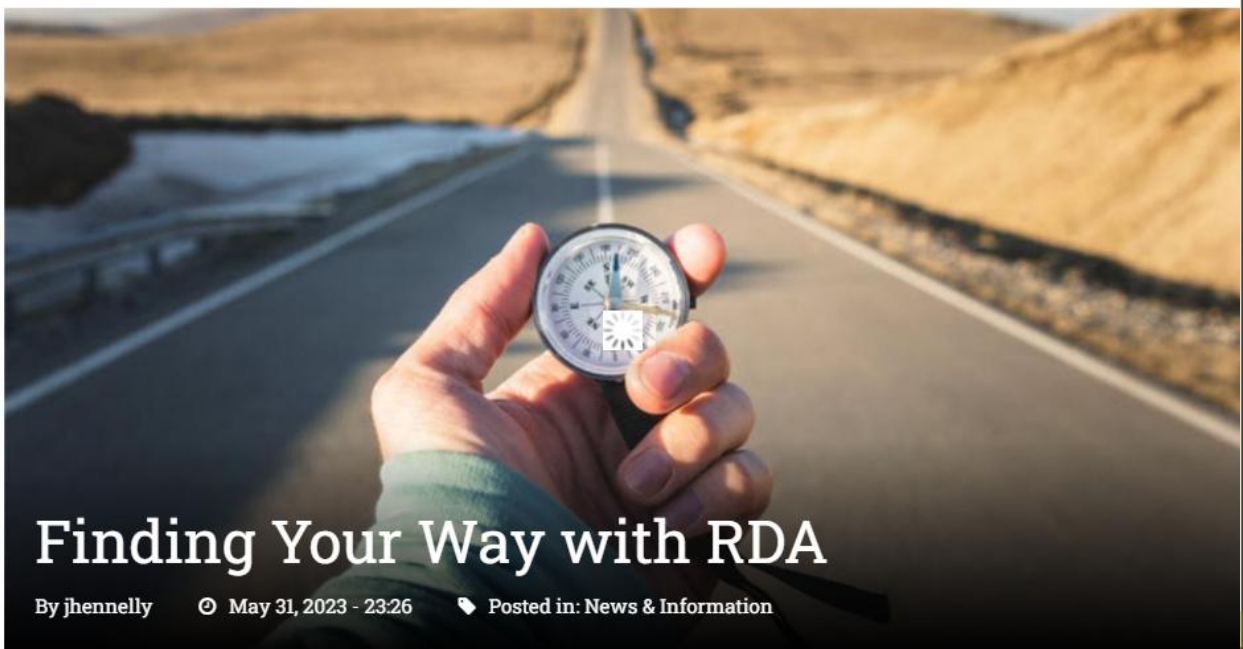
HOME SUBSCRIBE NEWS & INFORMATION LEARNING RESOURCES RDA IN TRANSLATION MARKETING RESOURCES

Access RDA Toolkit

Free Trial

RSC RDA Steering Committee

RDA Discussion List



RDA

- ***RDA: Resource Description and Access*** is a package of data elements, guidelines, and instructions for creating library and cultural heritage resource metadata that are well-formed according to international models for user-focused linked data applications.
- RDA was created by the RDA Steering Committee (formerly the Joint Steering Committee for the Development of RDA) as part of its strategic plan (2005-2009) to replace the Anglo-American Cataloguing Rules, 2nd Edition Revised, which were first published in 1978. (source: https://www.rdatoolkit.org/about)
- Original RDA Toolkit於2010年6月發行線上版，美國國會圖書館則於2013年3 月31 日起正式改用RDA編目 。
- 隨著IFLA LRM之發布，RDA Toolkit經3R Project (RDA Toolkit Restructure and Redesign)，推出新版RDA，於2020/12/15啟用 。

KOS 概說

- *Knowledge organization system* (*KOS*) is a generic term used for referring to a wide range of items (e.g. subject headings, thesauri, classification schemes and ontologies), which have been conceived with respect to different purposes, in distinct historical moments.
- They are characterized by different specific structures and functions, varied ways of relating to technology, and used in a plurality of contexts by diverse communities. → 目前在詞彙及範圍方面尚未達成共識
- What they all have in common is that they have been **designed to support** the organization of knowledge and information in order to make their management and retrieval easier. (Source: Mazzocchi, F. (2018). Knowledge organization system (KOS): An introductory critical account. http://www.isko.org/cyclo/kos)

KOS 概說 (2)

- There are two main items that characterize KO: (i) **knowledge organization processes** (KOPs), such as abstracting, indexing, cataloging, subject analysis, classifying, and (ii) **knowledge organization systems** (KOSs), i.e. tools designed for the above described general purpose, which will be analyzed here.
- An important issue to be underscored is that, while their basic scope has remained unvaried over time, the **environment** in which KOSs have to operate has instead drastically changed, and it will continue to change: from the world of physical libraries, for whose purpose grand classification schemes were created, to databases, the digital environment, and the Internet.

(Source: Mazzocchi, F. (2018). Knowledge organization system (KOS): An introductory critical account. http://www.isko.org/cyclo/kos)

Systems of Knowledge Organization

According to Gail Hodge (2000), there are three types of knowledge organization systems (KOS):

Term Lists

- Authority files
- Glossaries
- Dictionaries
- Gazetteers

Classification and Categories

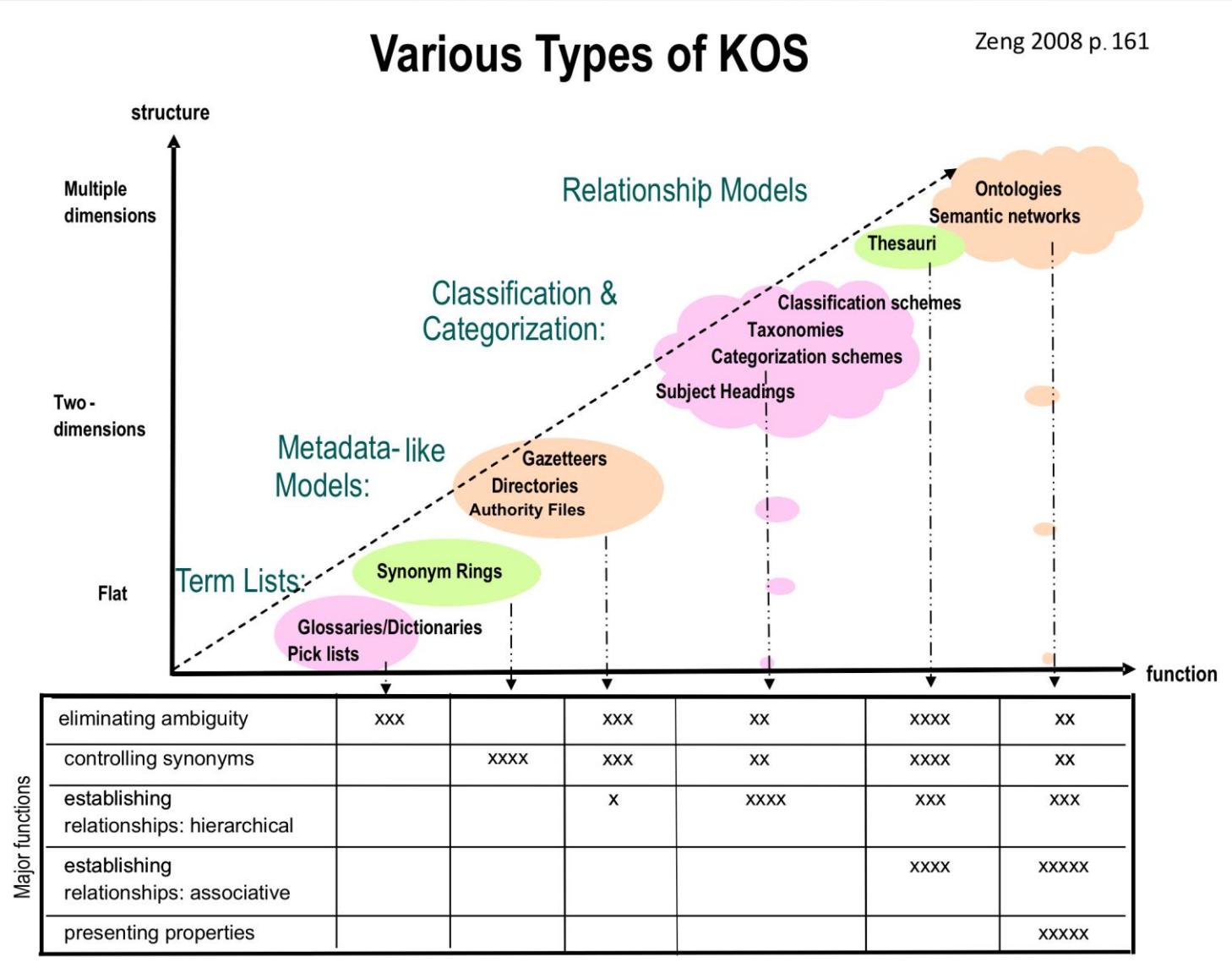
- Subject headings
- Classification schemes, taxonomies, and category schemes

Relationship Lists

- Thesauri
- Semantic Networks
- Ontology

Source: *Systems of knowledge organization for digital libraries: Beyond traditional authority files.* (http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.33.593&rep=rep1&type=pdf)

Types of KOS



Major functions

eliminating ambiguity	xxx		xxx	xx	xxxx	xx
controlling synonyms		xxxx	xxx	xx	xxxx	xx
establishing relationships: hierarchical			x	xxxx	xxx	xxx
establishing relationships: associative					xxxx	xxxxx
presenting properties						xxxxx

Source: Zeng, M. L. (2008). Knowledge organization systems (KOS). *Knowledge Organization, 35*(2/3), 160-82.

圖書館普遍採用的KOS

- Classification scheme – A list of classes arranged according to a set of pre-established principles for the purpose of organizing items in a collection, or entries in an index, bibliography, or catalog, into groups based on their similarities and differences, to facilitate access and retrieval. Classification systems can be enumerative or hierarchical, broad or close.

  Source: *Online Dictionary for Library and Information Science* http://lu.com/odlis/odlis_b.cfm

- Subject heading list – A list of authorized controlled vocabulary terms or phrases together with any references, scope notes, and subdivisions associated with each term or phrase.

  Source: Taylor, A. G. *Introduction to Cataloging and Classification*, 10th ed. (Westport: Libraries Unlimited, 2006), p. 545.

- Thesauri – 索引典的性質與標題表類似，但標題表含括的主題較廣泛，索引典則以特定主題為主。標題表多應用於圖書館，索引典則多應用於資料庫系統

What Is Classification? (1)

- Classification, broadly defined, is the act of organizing the universe of knowledge into some systematic order. It has been considered the most fundamental activity of the human mind. The essential act of classification is the multistage process of deciding on a property or characteristic of interest, distinguishing things or objects that possess that property from those which lack it, and grouping things or objects that have the property or characteristic in common into a class. Other essential aspects of classification are establishing relationships among classes and making distinctions within classes to arrive at subclasses and finer divisions.

Source: Chan, L. M. *Cataloging and classification: An introduction*, 3rd ed. (Lanham, MD: Scarecrow Press, 2007), p.309.

分類表（Classification Scheme）

- 分類不能憑空進行，作為分類依據的工具，就是所謂的分類表或類目表或類表（classification table or classification table）。
- 分類表是分類體系的具體表現，是由許多類目依一定的原則組織起來的一個體系。
- 國內圖書館普遍採用之分類系統：
  - 中文圖書分類法
  - 中國圖書十進分類法 [使用該法之圖書館多已改用他法]
  - Dewey Decimal Classification (DDC 23rd Introduction)
  - Library of Congress Classification (LC網頁上簡介)

Subject Vocabularies (1)

- 分類透過體系將資料系統化的組織起來，但對分類架構不熟悉的話，使用上就有困難。
- 主題詞彙就是採用詞語表達主題概念，可以較直觀的方式查詢資料，亦可藉此將特定主題的資料聚集。
- 分類著重結構，主題詞彙則以個別概念為單元，而且是以詞語表示，不需轉換為分類系統的標記。
- 主題詞彙常見的形式有：標題(subject heading)、單元詞(unit term)、敘述詞(descriptor)、及關鍵字(keyword)

Subject Vocabularies(2)

- 圖書館通常採用標題法，如同分類藉分類表達到一致的效用，標題(subject heading)亦有標題表(subject heading list)作為規範。
- Subject heading: a term or phrase used in a subject heading list to represent a concept, event, or name
- Subject heading list – A list of authorized controlled vocabulary terms or phrases together with any references, scope notes, and subdivisions associated with each term or phrase.

Source: Taylor, A. G. *Introduction to cataloging and classification,* 10th ed. (Westport: Libraries Unlimited, 2006), p. 545.

Subject Vocabularies (3)

- **Subject headings** are uniform words or phrases intended to be assigned to books, articles, or other documents in order to describe the subject or topic of the texts and to group them with texts having similar subjects.
- **Subject heading lists** are typically arranged in alphabetical order, with cross-references between the preferred, non-preferred, and other related headings.
- Subject headings differ from the other vocabularies in the following fundamental way: **pre-coordination** of terminology is a characteristic of subject headings in that they combine several unique concepts together in a string.

參見: Harpring, P. *Introduction to controlled vocabularies* (Revised edition). (Los Angeles: Getty Research Institute, 2013.)

Subject Vocabularies(4)

- 國內圖書館常用的標題表有：
  - 中文主題詞表
  - Library of Congress Subject Headings (LCSH) [簡介]（已收入LC之Classification Web）
    - PDF Version (44th ed.) https://www.loc.gov/aba/publications/FreeLCSH/freelcsh.html
  - Sears List of Subject Headings [簡介] [概述]
    (22nd ed. 2018 PDF)
    (23rd ed. 2022 Sample pages)

Subject Vocabularies (5)

- 醫學圖書館：
  - Medical Subject Headings (MeSH) https://www.nlm.nih.gov/mesh/meshhome.html
  - Unified Medical Language System (UMLS) https://www.nlm.nih.gov/research/umls/
- Thesauri (examples)
  - Art & Architecture Thesaurus (AAT)
  - AAT-Taiwan 藝術與建築索引典
  - Thesaurus of ERIC Descriptors
  - AGROVOC
  - Foodsubs (formerly The Cook's Thesaurus)

機讀編目格式 (Machine Readable Cataloging)

- 機讀編目格式(MARC)是書目紀錄的container。MARC is a standard for entering bibliographic information into a computer record that can be used by a library automation system to provide a library catalog.
- MARC藉著代碼及特定結構格式將書目記錄儲存於電腦硬碟或磁帶中，透過專用程式電腦得以識別與檢索這些紀錄，並輸出所需的目錄格式。
- MARC亦是系統間交換及傳輸書目資料的通用記錄格式。 MARC formats are standards for the representation and communication of bibliographic and related information in machine-readable form.
- MARC provides the mechanism by which computers exchange, use, and interpret bibliographic information, and its data elements make up the foundation of most library catalogs used today.
- MARC的主要結構：紀錄標示(Leader)、指引(Directory) 、書目資料登錄欄(Data field)。

參見：Furrie, B. (2009). Understanding MARC Bibliographic: Machine- Readable Cataloging (8th ed.). https://www.loc.gov/marc/umb/

MARC 21 Example

000 01343cam a2200325 a 4500

001 14833150

005 20080604171437.0

008 070503s2007 mdua b 001 0 eng

906 ___ |**a** 7 |**b** cbc |**c** orignew |**d** 1 |**e** ecip |**f** 20 |**g** y-gencatlg

925 0_ |**a** acquire |**b** 2 shelf copies |**x** policy default

955 ___ |**a** lh44 2007-05-03 |**i** lh44 2007-05-03 |**e** lh44 2007-05-03 to CIP (Dewey complete) |**a** ps12 2008-03-11 1 copy rec'd., to CIP ver. |**f** ld11 2008-03-13 Z-CipVer |**g** ld11 2008-03-13 to BCCD |**a** ld11 2008-06-04 copy 2 to BCCD

010 ___ |**a** 2007018729

020 ___ |**a** 9780810859449 (alk. paper)

020 ___ |**a** 9780810860001 (pbk. : alk. paper)

020 ___ |**a** 0810859440 (alk. paper)

020 ___ |**a** 0810860007 (pbk. : alk. paper)

035 ___ |**a** (OCoLC)ocn124031949

035 ___ |**a** (OCoLC)124031949

040 ___ |**a** DLC |**c** DLC |**d** BAKER |**d** BTCTA |**d** C#P |**d** YDXCP |**d** MUQ |**d** DLC

050 00 |**a** Z693.5.U6 |**b** C48 2007

082 00 |**a** 025.3 |**2** 22

100 1_ |**a** Chan, Lois Mai.

245 10 |**a** Cataloging and classification : |**b** an introduction / |**c** Lois Mai Chan ; with the assistance of Theodora L. Hodges.

250 ___ |**a** 3rd ed.

260 ___ |**a** Lanham, Md. : |**b** Scarecrow Press, |**c** 2007.

300 ___ |**a** xix, 580 p. : |**b** ill. ; |**c** 23 cm.

504 ___ |**a** Includes bibliographical references (p. 553-565) and index.

650 _0 |**a** Cataloging |**z** United States.

650 _0 |**a** Classification |**x** Books.

700 1_ |**a** Hodges, Theodora, |**d** 1922-

機讀格式（2）

- MARC是基於卡片目錄電腦化所做的設計，其結構複雜、老舊、缺乏彈性，又只能應用於圖書館社群的封閉系統，所以改革MARC的聲音始終不斷，像Tennant (2002) 曾呼籲應將MARC 判死(MARC must die)。
- 為了讓MARC與圖書館以外的世界接軌，將MARC格式改以網路適用的XML標誌語言表示，LC發展出MARCXML。讓MARC轉為XML，雖協助MARC走向開放，但其結構與欄號並未改變。
- 圖書館界也嘗試在MARC 21 中新增分欄，為MARC紀錄轉換為鏈結資料作準備，但MARC的結構問題並無法因此改善。
- 隨著RDA的發展與試用，MARC 21 格式無法實現RDA願景的窘境逐漸浮現，故LC 於2011 年5 月啟動書目框架初始計畫Bibliographic Framework Initiative) 。

BIBFRAME

- BIBFRAME Initiative is the foundation for the future of bibliographic description that happens on the web and in the networked world.
- It is designed to integrate with and engage in the wider information community and still serve the very specific needs of libraries.
- As an initiative, it is investigating all aspects of bibliographic description, data creation, and data exchange. In addition to replacing the MARC format, this includes accommodating different content models and cataloging rules, exploring new methods of data entry, and evaluating current exchange protocols.
- The BIBFRAME Model relies heavily on relationships between resources. It manages this by using controlled identifiers for things (people, places, languages, etc).
- In short, the BIBFRAME Model is the library community's formal entry point for becoming part of a much larger web of data, where the links between things are paramount.

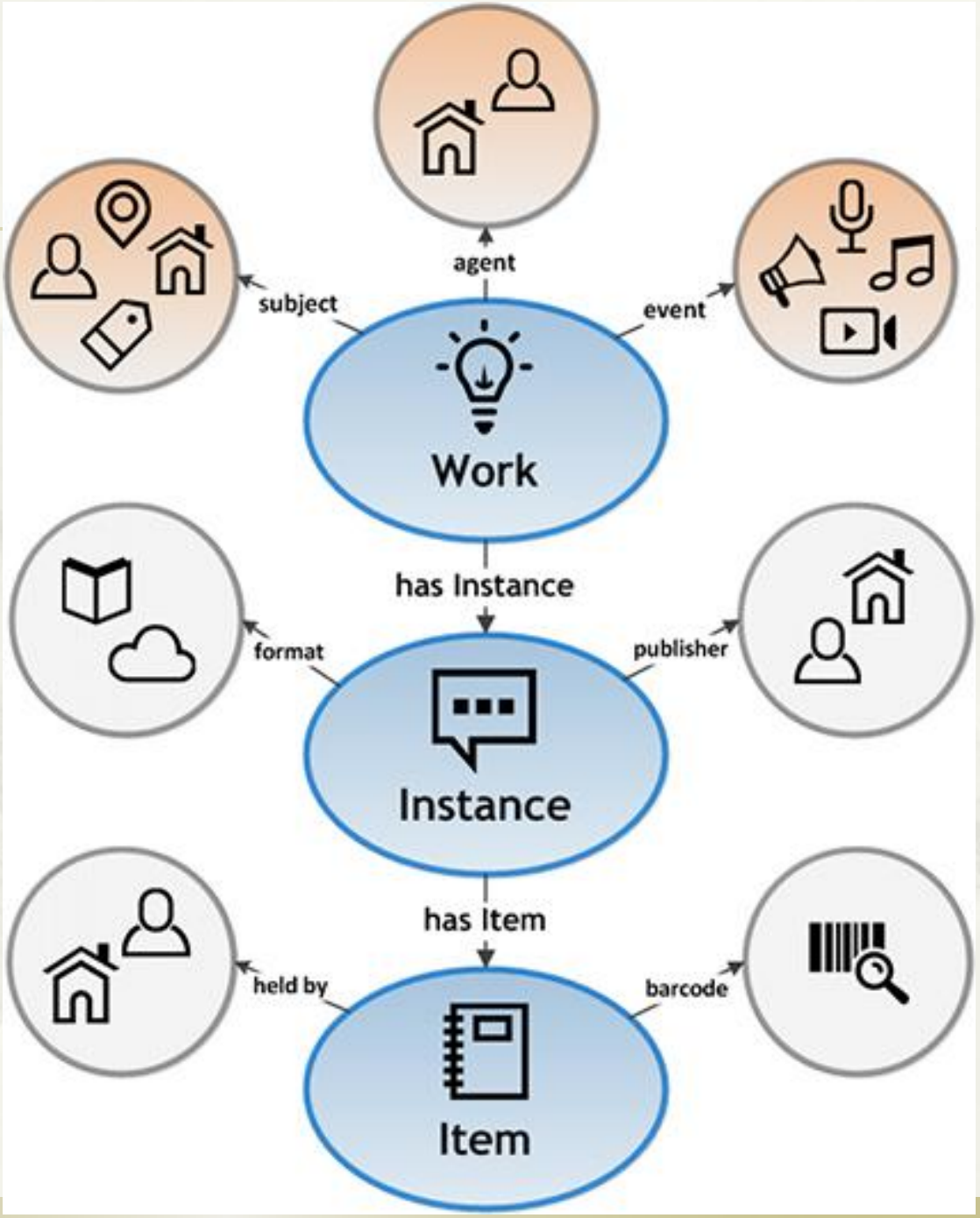
詳見：BIBFRAME: A manual for understanding version 2.0 and related tools.
https://guides.loc.gov/bibframe-manual/introduction

BIBFRAME → BIBFRAME 2.0

- BIBFRAME is a tool through which we are utilizing linked data techniques to increase the visibility and usage of library data on the Web. With BIBFRAME and linked data, the library community has an opportunity to make its controlled and well-crafted bibliographic data accessible to a global audience. (Source: 同前頁所列)
- 2015年9 月至2016年3 月間， LC邀集約40所圖書館參與BIBFRAME先導計畫，測試的回饋與評論促使LC修訂BIBFRAME，並於2016年發表BIBFRAME 2.0 (舊版改稱BIBFRAME 1.0)
- BIBFRAME 2.0就是基於鏈結資料的書目框架，是為網路世界而設計的新一代書目格式。
- BIBFRAME 2.0主要類別有work 、instance、item，其下可分子類別，另有agents 、subjects 、events等附加關鍵概念，屬性則用於描述資源的特徵與資源間的關係。（參見下頁圖例）

BIBFRAME 2.0 Overview

(Source: https://loc.gov/bibframe/docs/bibframe2-model.html)



MARC 21 vs. BIBFRAME

MARC

```
01035cam a2200325 a 4500
001    5226
005    20081223095049.0
008    940817s1983    nyua   j      000 1 eng
010    $a   82060878
020    $a0394856309
035    $9(DLC)   82060878
040    $aDLC$cDLC$dDLC
042    $alcac
050 00 $aPZ7.F598295$bSn 1993
082 00 $a[E]$220
100 1  $aFlanagan, Terry.
245 10 $aSnoopy on wheels /$c[designed by Terry Flanagan].
260    $a[New York] :$bRandom House,$cc1983.
300    $a1 v. (unpaged) :$bcol. ill. ;$c88 mm.
490 0  $aA chunky book
500    $a"Based on the Charles M. Schulz characters"--P. 4 of
 cover.
500    $aOn board pages.
650  0 $aMiniature books$vSpecimens.
650  1 $aWheels$vFiction.
650  1 $aDogs$vFiction.
650  1 $aMiniature books.
```

BIBFRAME (Turtle)

```
@prefix bf: <http://id.loc.gov/ontologies/bibframe/> .
@prefix bflc: <http://id.loc.gov/ontologies/bflc/> .
@prefix madsrdf: <http://www.loc.gov/mads/rdf/v1#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix xml: <http://www.w3.org/XML/1998/namespace> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .
@prefix zs: <http://docs.oasis-open.org/ns/search-ws/sruRespo
nse> .

<http://bibframe.example.org/5226#Item050-12> a bf:Item ;
    bf:itemOf <http://bibframe.example.org/5226#Instance> ;
    bf:shelfMark [ a bf:ShelfMarkLcc ;
            rdfs:label "PZ7.F598295 Sn 1993" ;
            bf:source <http://id.loc.gov/vocabulary/organizat
ions/dlc> ] .

<http://bibframe.example.org/5226#Topic650-22> a bf:Topic,
        madsrdf:ComplexSubject ;
    rdfs:label "Wheels--Fiction." ;
    bf:source [ a bf:Source ;
            bf:code "lcshac" ] ;
    madsrdf:authoritativeLabel "Wheels--Fiction." ;
```

Source: https://id.loc.gov/tools/bibframe/compare-id/full-rdf?find=5226

Resource Description Framework (RDF)

- RDF is the W3C standard for encoding knowledge. RDF was originally created in 1999 as a standard on top of XML for encoding metadata.
- The most exciting uses of RDF aren't in encoding information about web resources, but information about and relations between things in the real world: people, places, concepts, etc.
- RDF provides a general, flexible method to decompose any knowledge into small pieces, called **triples**, with some rules about the semantics (meaning) of those pieces.
- Entities are named by Uniform Resource Identifiers (URIs), and this provides the globally unique, distributed naming system we need for distributed knowledge.

(Source: Tauberer, J. (2006). What is RDF? https://www.xml.com/pub/a/2001/01/24/rdf.html)

RDF (2)

Most of the abstract model of RDF comes down to four simple rules: (Tauberer, 2006)

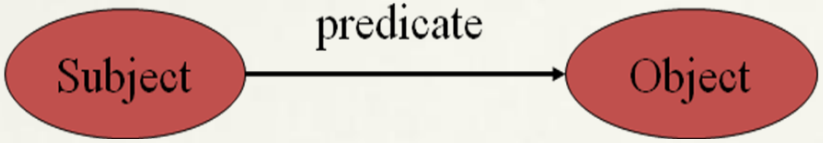
1. A fact is expressed as a **Subject-Predicate-Object triple**, also known as a statement. It's like a little English sentence.

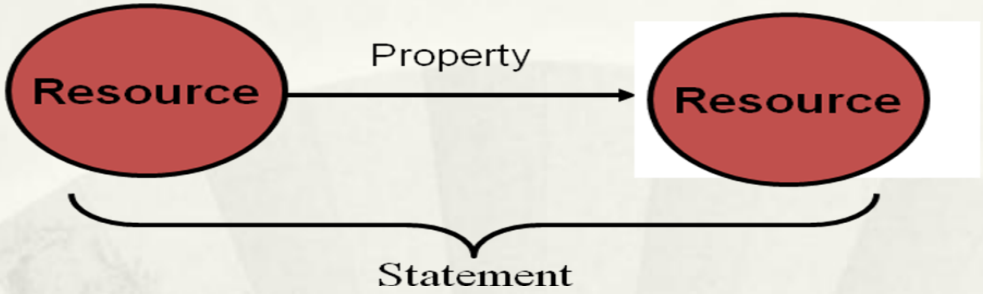
2. Subjects, predicates, and objects are given as names for entities, also called resources (dating back to RDF's application to metadata for web resources) or nodes (from graph terminology). Entities represent something, a person, website, or something more abstract like states and relations.

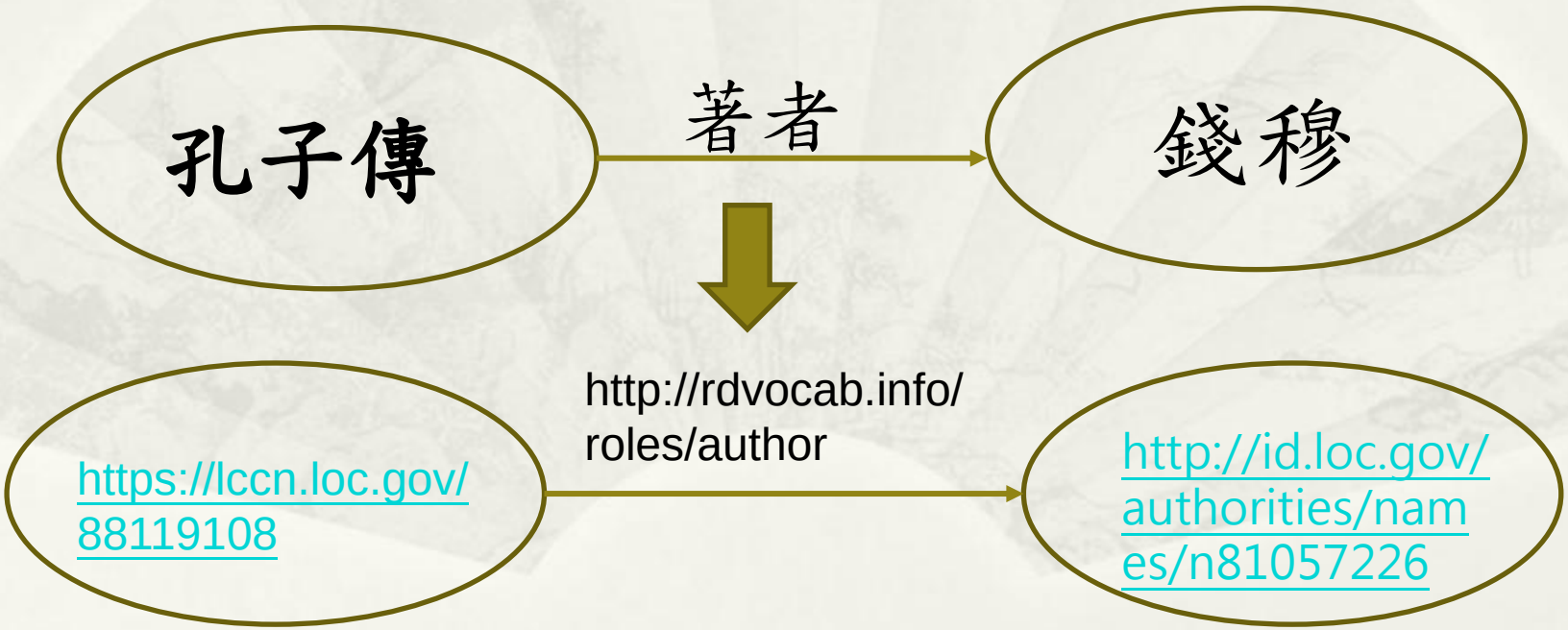
3. Names are URIs, which are global in scope, always referring to the same entity in any RDF document in which they appear.

4. Objects can also be given as text values, called **literal values**, which may or may not be typed using XML Schema datatypes.

RDF Triple







參見：RDF Tutorial http://www.w3schools.com/rdf/default.asp

鏈結資料 Linked Data

- The term Linked Data refers to a set of best practices for publishing and interlinking structured data on the Web.
- These best practices were introduced by Tim Berners-Lee in his Web architecture note Linked Data (http://www.w3.org/Designissues/LinkedData.html) and have become known as the Linked Data principles. These principles are the following:
  - Use URIs as names for things.
  - Use HTTP URIs, so that people can look up those names.
  - When someone looks up a URI, provide useful information, using the standards (RDF, SPARQL).
  - Include links to other URIs, so that they can discover more things.
- The basic idea of Linked Data is to apply the general architecture of the World Wide Web to the task of sharing structured data on global scale. (Source: http://linkeddatabook.com/editions/1.0/#)

鏈結資料 Linked Data (2)

- Linking data distributed across the Web requires a standard mechanism for specifying the existence and meaning of connections between items described in this data. This mechanism is provided by the Resource Description Framework (RDF). RDF provides a flexible way to describe things in the world – such as people, locations, or abstract concepts – and how they relate to other things.
- RDF links are typed. RDF enables the data publisher to state explicitly the nature of the connection.
- The document Web is built on a small set of simple standards: Uniform Resource Identifiers (URIs) as globally unique identification mechanism, the Hypertext Transfer Protocol (HTTP) as universal access mechanism, and the Hypertext Markup Language (HTML) as a widely used content format. In addition, the Web is built on the idea of setting hyperlinks between Web documents that may reside on different Web servers. (Source: http://linkeddatabook.com/editions/1.0/#)

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- van Hooland, S. and Verborgh, R. (2017). Linked Data for Librarians. https://course.freeyourmetadata.org/
- 臺灣鏈結資源系統 LDT@Library https://ld.ncl.edu.tw/
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- Library of Congress. Linked Data Services: Authorities and Vocabularies https://id.loc.gov/
- Getty Vocabularies as Linked Open Data https://www.getty.edu/research/tools/vocabularies/lod/
- OCLC Linked Data https://www.oclc.org/developer/develop/linked-data.en.html
- VIAF Linked Data https://viaf.org/viaf/data/
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