

資訊組織簡介

(Organization of Information: A Brief Introduction)

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Prelude (1)

- **Bring together human beings and recorded knowledge** in as fruitful a relationship as it is humanly possible to be – Jesse Shera (*Sociological Foundation of Librarianship*. New York: Asia Publishing House, 1970, p. 34)

- 圖書館是為資訊**建立檢索點**並為使用者提供服務的機構 – 胡述兆 (「為圖書館建構一個新的定義」，中國圖書館學會會報，第66期，2001年，頁1。)

Prelude (2)

Information Science as a **Meta-Discipline**

- Information science, education and journalism are disciplines that deal with distinct parts of the transmission of human knowledge – **information science with the storage and retrieval of it in recorded form**, education with the teaching and learning of it, and journalism with the discovery and transmission of news.
- Information science organizes that subject content for retrieval, education uses teaching skills to convey that knowledge to learners, journalism uses reporting and writing skills to convey news events to others, etc. In each case, it is not a variable that is being studied, but rather the content of all the conventional disciplines is being shaped and molded for a societal objective through different types of professional activities involving the manipulation and transmission of knowledge.

Adapted from: Bates, M. J. (1999). The invisible substrate of information science. *Journal of the American Society for Information Science*, 50(12), 1043-1050.

The Need to Organize (1)

- There seems to be a basic drive in humans to 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.
- Organization of information also allows us **to keep usable records of human endeavors for posterity.**

(Adapted from: Arlene G. Taylor. (2004). *The Organization of Information*. 2nd ed. Westport: Libraries Unlimited, pp. 1-2.)

The Need to Organize (2)

- Scholars generally agree that **the activity of knowledge organization is indispensable to society and its informational mediated forms of social organization.**

(Source: J. Andersen, & L. Skouvig. (2006). Knowledge organization: A sociohistorical analysis and critique. *Library Quarterly*, 76(3), p. 302.)

- 社會如何獲得知識，而知識又如何影響社會環境？這個問題，是有關圖書館員在社會上所扮演的角色以及圖書館為社會公器的核心問題。(Source: J. H. Shera 著；鄭肇陞譯。(民75)。圖書館學概論：圖書館服務的基本要素。新竹：楓城，頁38-9。)

資訊組織與人類知識記憶之保存與利用的關係？

The Need to Organize (3)

- **We organize because we need to retrieve.** Retrieval of information is dependent upon its having been organized. If it is not organized, it is difficult, if not impossible, to find. So we have all kinds of tools that are organized to aid in the process of finding information that we need. (Source: Arlene G. Taylor. (2004). *The Organization of Information*. 2nd ed. Westport: Libraries Unlimited, p. 1.)
- Instant electronic access to digital information is the single most distinguishing attribute of the information age. The elaborate retrieval mechanisms that support such access are a product of technology. But technology is not enough. **The effectiveness of a system for accessing information is a direct function of the intelligence put into organizing it.** (Source: Elaine Svenonius . (2001). *The Intellectual Foundation of Information Organization*. Cambridge, Mass.: The MIT Press, p. ix.)

The Need to Organize (4)

- 在整個度藏，一本書是什麼？在圖書館，一本書是什麼？
- 圖書館就如同選集，在有關選擇、安排、和詮釋的基本原則方面，需以整體來看。
- 書籍因與其他書籍相關而產生意義.....圖書館的價值，在於**群典的集體意義**。
- **圖書館員是秩序與關係的能手**，關係使一本書不僅僅是一本書，而是選來與其他書籍共同締造一個圖書館。.....最好的書也建造不了圖書館，除非他們集在一起而成為一個整體。

Source: J. H. Shera 著；鄭肇陞譯。（民75）。圖書館學概論：圖書館服務的基本要素。新竹：楓城，頁41-43, 47。

The Nature of Information

- **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.
- 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.
- 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.
- We, information professionals, organize for the benefit of other people.

Adapted from: Arlene G. Taylor. (2004). *The Organization of Information*. 2nd ed. Westport: Libraries Unlimited, pp. 2-3.

The Nature of Recorded Information (1)

- Recorded information includes much more than text. Video and audio recordings, pictures, cartographic representations, and Web pages are all examples of recorded information.
- Document – physical form information takes whether print or digital, text, audio, visual, 3-D model, etc. Consider **information as the content**, and the **document as the package**.
- Taylor (2004) uses the term *information package* to represent any form of recorded information.

Adapted from: Arlene G. Taylor. (2004). *The Organization of Information*. 2nd ed. Westport: Libraries Unlimited, p. 3.

The Nature of Recorded Information (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。（民90年）。圖書館學理論基礎。台北：三民，頁36-89。

Relations between Recorded Information and the Library

- 紀錄的存在是產生圖書館的必要條件，.....是積累人類智慧及文明的寶物聖品，.....是圖書館賴以維生的根本。（頁31）
- 圖書館生存的邏輯與道理完全建立在紀錄之上，具體而言有四：
 - ◆ 紀錄的產生，使圖書館「生」。
 - ◆ 紀錄的需要組織及整理，使圖書館「存」。
 - ◆ 紀錄的有機性的成長累積產生，使圖書館「活」。
 - ◆ 紀錄的消失，使圖書館「亡」。（頁33）
- 資訊紀錄的形成和它們的世代累積，便是圖書館興起和繼續存在的根本原因。（頁89）

出處：何光國。（民90年）。圖書館學理論基礎。台北：三民。

What is Information Organization(1)

- 所謂資訊組織(organization of information)，是指為資訊記錄(recorded information)或資訊物件(information objects)建立替代性的紀錄(surrogate record)，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。
- 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。
- 資訊組織就是一種書目控制(bibliographic control)

參見：陳和琴等。(2003)。資訊組織。台北市：國立空中大學，頁3。
何光國。(民79)。圖書資訊組織原理。台北：三民，第五章。

What is Information Organization(2)

- In the library community, providing access to information consists of two prongs.
- **Content information**: the first is providing some sort of topical labeling to help those who are trying to zero in on a subject.
- **Identification information**: the second is giving enough information about the item to which it pertains is a fair match to what he or she had in mind when formulating the search.

Source: Lois Mai Chan. (2007). *Cataloging and Classification: An Introduction*. 3rd ed. Lanham, MD: Scarecrow Press, p. 4.

What is Information Organization(3)

- 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: <http://courses.ischool.berkeley.edu/i202/f97/Lecture13/DatabaseDesign/Lecture13.ppt>

Bibliographic Control(1)

- **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: Arlene G. Taylor. (2006). *Introduction to Cataloging and Classification*. 10th ed. Westport: Libraries Unlimited, p. 527.

Bibliographic Control(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: Lois Mai Chan. (2007). *Cataloging and Classification: An Introduction*. 3rd ed. Lanham, MD: Scarecrow Press, p. 540.

Bibliographic Control(3)

- A broad term encompassing all the activities involved in creating, organizing, managing, and maintaining the file of bibliographic records representing the items held in a library or archival collection, or the sources listed in an index or database, to facilitate access to the information contained in them. Bibliographic control includes the standardization of bibliographic description and subject access by means of uniform catalog code, classification systems, name authorities, and preferred headings; the creation and maintenance of catalogs, union lists, and finding aids; and the provision of physical access to the items in the collection.

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

Bibliographic Control(4)

- In the universe of all knowledge ...there is a certain amount of that knowledge that has been recorded in some way – e.g., written down, printed, digitized, recorded, painted. This subset is often referred to as the bibliographic universe.
- Only the bibliographic universe can be controlled. Such control is performed by means of bibliographic tools in which each discrete item of knowledge is represented by a bibliographic record (also called **surrogate** record or metadata).

Source: Arlene G. Taylor. (2006). *Introduction to Cataloging and Classification*. 10th ed. Westport: Libraries Unlimited, pp. 3-4.

Functions of Bibliographic Control(1)

Ronald Hagler, in his book *The Bibliographic Record and Information Technology* (1997, p. 13), has identified six functions of bibliographic control:

- Identifying the **existence** of all types of information packages as they are made available.
- Identifying the **works contained** within those information packages or as parts of them.
- **Systematically pulling together** these information packages into collections in libraries, archives, museums, Internet communication files, and other such depositories.
- **Producing lists** of these information packages prepared according to standard rules for citation.
- Providing name, title, and other **useful access** to these information packages.
- Providing the means of **locating** each information package or a copy of it.

Functions of Bibliographic Control(2)

According to Arlene Taylor's *Introduction to Cataloging and Classification*, 10th ed.(2006, pp.5-6), bibliographic tools have three basic functions:

- **Identifying Function** – All tools aim at allowing a user, who has a citation or has a particular bibliographic item in mind, to match that known item with an entry in the tool.
- **Collocating /Gathering Function** – Collocation is a means for bringing together in one place in a bibliographic tool all entries for like and closely related materials.
- **Evaluation Function** – This function allows a user to choose from among many records or entries the one that best seems to represent the knowledge/information or specific physical item desired.

Functions of Bibliographic Control(3)

According to the *Statement of International Cataloguing Principles*, 2009, prepared by IFLA Cataloguing Section and IFLA Meetings of Experts on an International Cataloguing Code (http://www.ifla.org/files/cataloguing/icp/icp_2009-en.pdf), the functions of the catalogs include:

- ***Finding Objective***
- ***Collocating Objective***
- ***Choice Objective***
- ***Acquisition Objective***
- ***Navigation Objective***

Organization of Information in Different Environments

- 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: Arlene G. Taylor. (2004). *The Organization of Information*. 2nd ed. Westport: Libraries Unlimited, pp. 7-18.

The Need for Retrieval Tools

- Retrieval tools are systems created for retrieving information. They contain records that are surrogates for information packages. That is, each surrogate record (also called a description or metadata) gives enough information so that it can serve as a short representation of an information package.
- Surrogate records are arranged or retrieved by *access point*.
- Retrieval tools are essential as basic building blocks for a system that will organize as much of the world's recorded information as possible. A dream of being able to provide access to all recorded information is to create universal bibliographic control (UBC).

See: Arlene G. Taylor. (2004). *The Organization of Information*. 2nd ed. Westport: Libraries Unlimited, pp. 29-30.

The Basic Retrieval Tools

- Bibliographies (e.g., [四書總義著述考](#))
 - ◆ Pathfinders (see an [example](#))
- Catalogs (e.g., OCLC [World Cat](#), [NBINet](#))
- Indexes (e.g., 台灣期刊論文索引系統)
- Finding aids (see an [example](#))
- Registers (see an [example](#))
- Search engines and directories (e.g., [Google](#), [Yahoo](#), [Internet Public Library](#), etc.)

See: Arlene G. Taylor. (2004). *The Organization of Information*. 2nd ed. Westport: Libraries Unlimited, pp. 30-45.

Surrogate Production(1)

The surrogate production process consists of three distinct but related operations:

- *Description* refers to the preparation of a surrogate or a brief representation containing essential elements of the original resources.
- *Access-point provision* refers to designating selected element in the representation which the user can as means to gain entry to the representation.
- *Organization* refers to the method of arranging both surrogates and physical resources.
- These operations are carried out in accordance with **established standards**.

Source: Lois Mai Chan. (2007). *Cataloging and Classification: An Introduction*. 3rd ed. Lanham, MD: Scarecrow Press, p. 19.

Surrogate Production(2) – Description

- Resource description 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.
- The sorts of information needed in descriptions vary according to what is being cataloged.

Source: Lois Mai Chan. (2007). *Cataloging and Classification: An Introduction*. 3rd ed. Lanham, MD: Scarecrow Press, p. 19.

Surrogate Production(3) – Access

- 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 (檢索點).
- 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: Lois Mai Chan. (2007). *Cataloging and Classification: An Introduction*. 3rd ed. Lanham, MD: Scarecrow Press, p. 20.

Surrogate Production(4) – Using Cataloging Procedures as an Example

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;
- *classification*, the assignment of call number;
- *authority work*, the determination of the standardized forms of subject terms and names.
- *Code encoding* – In an automated environment, the cataloger must supply the codes and other information needed for computer processing (for example, *MARC*).

For details, see: Lois Mai Chan. (2007). *Cataloging and Classification: An Introduction*. 3rd ed. Lanham, MD: Scarecrow Press, pp. 26-28.

Forms of Surrogates

- **Book format**
- **Card**
- **Microform**
- **Online form**
- **CD-ROM**
- **Other forms**

Principles of Description

- 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: Elaine Svenonius. (2001). *The Intellectual Foundation of Information Organization*. Cambridge: MIT Press, Chap. 5.

Examples of Standards and Tools

- 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](#))
- Subject heading lists ([Library of Congress Subject Headings](#))
- MARC (Machine Readable Cataloging) format ([中國機讀編目格式](#), [MARC21](#))
- Authority files ([LC Authority](#), [中研院史語所人名權威資料庫](#))
- Filing rules
- Cataloging manuals / interpretations ([LC Cataloging Manual](#))

國際標準書目記述(ISBD)

- 國際標準書目記述 (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)。
- 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，但目前正研擬以*ISBD: International Standard Bibliographic Description - Consolidated Edition* 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://ifla.queenslibrary.org/VII/s13/pubs/ISBD_consolidated_2007.pdf
<http://www.ifla.org/publications/international-standard-bibliographic-description>)

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。
- 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)

編目規則(cont.)

著錄項目的呈現格式（以中國編目規則的第二著錄層次為例—見規則1.0.4.2）

正題名〔資料類型標示〕：副題名 = 並列題名 / 第一
著者敘述；其他次要著者敘述.-- 版本敘述 / 關係
版本之第一著者敘述.-- 資料特殊細節.-- 出版地
：出版者，出版年

數量（面、葉、冊數或其他單位）：插圖或其他稽核
細節；高廣尺寸.--（集叢正題名 / 集叢著者敘述，集
叢標準號碼；集叢號。附屬集叢名，附屬集叢標準號碼；
附屬集叢號）

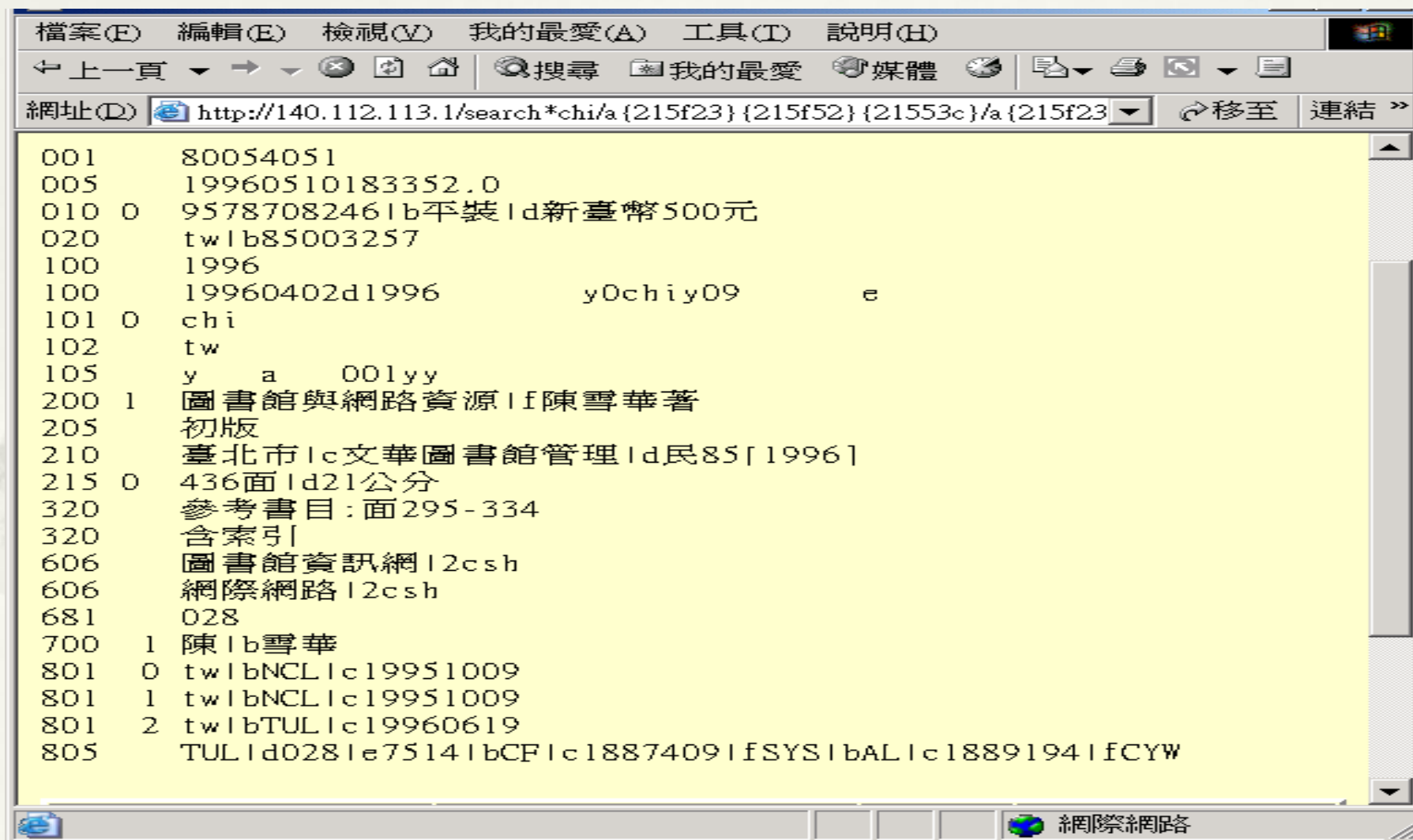
附註

標準號碼

機讀編目格式 (Machine Readable Cataloging)

- 機讀編目格式(MARC)是書目記錄的container。
- 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記錄，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的主要結構：記錄標示(Leader)、指引(Directory)、書目資料登錄欄(Data field)。

機讀編目格式實例



其他領域的Metadata（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。

其他領域的Metadata（舉隅）(cont.)

檔案資料（Archives）

- International Standard Archival Description (ISAD) -
http://www.ica.org/sites/default/files/isad_g_2e.pdf
- Encoded Archival Description (EAD) -
<http://lcweb.loc.gov/ead/>
- Rules for Archival Description (RAD) --
<http://www.cdncouncilarchives.ca/archdesrules.html>
- 內閣大庫檔案著錄格式 -
<http://metadata.teldap.tw/standard/standard-frame.html>

其他領域的Metadata（舉隅）(cont.)

博物館典藏品

- Categories for the Description of Works of Art (CDWA) -
<http://www.getty.edu/research/institute/standards/cdwa/>
- SPECTRUM – the UK and international standard for Collections Management --
<http://www.collectionstrust.org.uk/specfaq>
- The CIDOC Conceptual Reference Model --
<http://www.cidoc-crm.org/downloads.html>

長久保存

- PREMIS (Preservation metadata)
<http://www.loc.gov/standards/premis/>

其他領域的Metadata（舉隅）(cont.)

地理空間資訊

- U.S. Federal Geographic Data Committee (FGDC). **Content Standards for Digital Geospatial Metadata (CSDGM)** -
<http://www.fgdc.gov/>
<http://www.mpcer.nau.edu/metadata/CSDGM.htm>

文化資料

- 文化資料詮釋資料格式 - <http://km.cca.gov.tw/>

中文詮釋資料（Metadata）格式彙編 / 國家圖書館
Metadata研究小組編撰（台北市：國家圖書館，民89）

其他領域的Metadata（舉隅）（cont.）

圖像、視聽及多媒體資料

- Technical Metadata for Digital Still Images (NISO Z39.87-2002)-
http://web.archive.org/web/20070205142416/http://www.niso.org/standards/resources/Z39_87_trial_use.pdf
- VRA (Visual Resources Association) Core 4.0
<http://www.vraweb.org/projects/vracore4/index.html>
- PBCore (Public Broadcasting Metadata Dictionary) <http://pbcore.org/2.0/>
- MPEG-7 <http://mpeg.chiariglione.org/standards/mpeg-7/mpeg-7.htm>
- MPEG-21 <http://mpeg.chiariglione.org/standards/mpeg-21/mpeg-21.htm>
- BBC Standard Media Exchange Framework Data Model
<http://www.bbc.co.uk/guidelines/smef/>
- SMPTE (Society of Motion Picture and Television Engineers) Standards
<http://www.smpte.org/standards/>

其他領域的Metadata (舉隅) (cont.)

- IMS Learning Resource Meta-data
<http://www.imsglobal.org/metadata/index.html>
- SCORM (Sharable Content Object Reference Models)
<http://www.adlnet.gov/Technologies/scorm/SCORMSDocuments/2004%2004th%20Edition/Documentation.aspx>
- IEEE LOM (Learning Object Metadata) <http://ltsc.ieee.org/wg12/>
- e-Government Metadata Standard GILS Core Elements -
<http://www.dtic.mil/gils/documents/naradoc/cg.html>
- NBII (National Biological Information Infrastructure) Metadata Standards -
<http://www.nbio.gov/datainfo/metadata/standards/index.html>
- PICS (Platform for Internet Content Selection) - <http://www.w3.org/PICS/>
- ONIX (ONline Information eXchange) - <http://www.editeur.org/8/ONIX/>
- DOI (Digital Object Identifier) <http://www.doi.org/>

還有許多許多

Authority Control(1)

- Why authority control? → 語彙有同形異義 (homograph, homonym) 與同義異詞 (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：Lois Mai Chan. (2007). *Cataloging and Classification: An Introduction*. 3rd ed. Lanham, MD: Scarecrow Press, Chap. 6.)

Authority Control(2)

- 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**; 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. If every variant name, title, or term is given equal status, then one form is chosen for default display. Whether or not an authorized form is chosen to represent the name, title, or term, a searcher may use any of the forms in the authority record to gain access to information packages related to the name, title, or subject.

Source: Arlene G. Taylor. (2006). *Introduction to Cataloging and Classification*. 10th ed. Westport: Libraries Unlimited, p. 527.

Systems of Knowledge Organization

According to Gail Hodge (2000), *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>),

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

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

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: Lois Mai Chan. (2007). *Cataloging and Classification: An Introduction*. 3rd ed. Lanham, MD: Scarecrow Press, p.309.

What Is Classification? (2)

- 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。

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 <http://catweb.ncl.edu.tw/class2007/96-1-1.htm>
 - Dewey Decimal Classification (DDC) <http://catweb.ncl.edu.tw/dewey.htm>
 - Library of Congress Classification (LCC) <http://catweb.ncl.edu.tw/2-2-6.htm>

分類表實例一

中華民國行業標準分類 (第八次修訂)

- 第A大類—農、林、漁、牧業
- 第B大類—礦業及土石採取業
- 第C大類—製造業
- 第D大類—電力及燃氣供應業
- 第E大類—用水供應及污染整治業
- 第F大類—營造業
- 第G大類—批發及零售業
- 第H大類—運輸、倉儲及通信業
- 第I大類—住宿及餐飲業
- 第J大類—資訊及通訊傳播業
- 第K大類—金融及保險業
- 第L大類—不動產業
- 第M大類—專業、科學及技術服務業
- 第N大類—支援服務業
- 第O大類—公共行政及國防；強制性社會安全
- 第P大類—教育服務業
- 第Q大類—醫療保健及社會工作服務業
- 第R大類—藝術、娛樂及休閒服務業
- 第S大類—其他服務業

中華民國行業標準分類（第八次修訂）- 圖書館員之行業分類

R 藝術、娛樂及休閒服務業

91 圖書館、檔案保存、博物館及類似機構

910 圖書館、檔案保存、博物館及類似 機構

9101 圖書館及檔案保存業

9102 植物園、動物園及自然生態保護 機構

9103 博物館、歷史遺址及其他類似機 構

分類表實例-

中華民國職業標準分類 (第六次修訂)

- 1 民意代表、主管及經理人員
- 2 專業人員
- 3 技術員及助理專業人員
- 4 事務支援人員
- 5 服務及銷售工作人員
- 6 農、林、漁、牧業生產人員
- 7 技藝有關工作人員
- 8 機械設備操作及組裝人員
- 9 基層技術工及勞力工
- 0 軍人

(Source: <http://www.stat.gov.tw/ct.asp?xItem=18814&ctNode=3214>)

中華民國職業標準分類（第六次修訂）－ 圖書館員之職業分類

2 專業人員

26 法律、社會及文化專業人員

262 檔案、文物及圖書館管理專業人員

2621 檔案及文物管理專業人員

2622 圖書館管理專業人員

分類表實例—

North American Industry Classification System (NAICS), 2007

<http://www.census.gov/cgi-bin/sssd/naics/naicsrch?chart=2007>

11 Agriculture, Forestry, Fishing and Hunting

21 Mining, Quarrying, and Oil and Gas Extraction

22 Utilities

23 Construction

31-33 Manufacturing

42 Wholesale Trade

44-45 Retail Trade

48-49 Transportation and Warehousing

51 Information

52 Finance and Insurance

53 Real Estate and Rental and Leasing

54 Professional, Scientific, and Technical Services

55 Management of Companies and Enterprises

56 Administrative and Support and Waste Management and Remediation Services

61 Educational Services

62 Health Care and Social Assistance

71 Arts, Entertainment, and Recreation

72 Accommodation and Food Services

81 Other Services (except Public Administration)

92 Public Administration

分類表實例-

中華民國輸出入貨品分類表

(<http://fbfh.trade.gov.tw/rich/test/fhj/asp/FHJI010L.asp>)

中華民國輸出入貨品分類表	
各類章別	內 容
第一類	活動物；動物產品
第一章	活動物
第二章	肉及食用雜碎
第三章	魚類、甲殼類、軟體類及其他水產無脊椎動物
第四章	乳製品；禽蛋；天然蜜；未列名食用動物產品
第五章	未列名動物產品
第二類	植物產品
第六章	活樹及其他植物；球莖、根及類似品；切花及裝飾用葉
第七章	食用蔬菜及部份根菜與塊莖菜類
第八章	食用果實及堅果；柑橘屬果實或甜瓜之外皮
第九章	咖啡、茶、馬黛茶及香料
第十章	穀類
第十一章	製粉工業產品；麥芽；澱粉；菊糖；麵筋
第十二章	油料種子及含油質果實；雜項穀粒、種子及果實；工業用或藥用植物；芻草及飼料
第十三章	蟲漆；植物膠、樹脂、其他植物汁液及萃取物
第十四章	編結用植物性材料；未列名植物產品
第三類	動植物油脂及其分解物；調製食用油脂；動植物蠟
第十五章	動植物油脂及其分解物；調製食用油脂；動植物蠟
第四類	調製食品；飲料；酒類及醋；菸類及已製菸類代用品
第十六章	肉、魚或甲殼、軟體或其他水產無脊椎動物等之調製品
第十七章	糖及糖果
第十八章	可及可可製品
第十九章	穀類、粉、澱粉或奶之調製食品；糕餅類食品
第二十章	蔬菜、果實、堅果或植物其他部份之調製品
第二十一章	雜項調製食品
第二十二章	飲料、酒類及醋
第二十三章	食品工業產製過程之殘渣及廢品；調製動物飼料
第二十四章	菸（包括菸葉及菸類）及菸葉代用品
第五類	礦產品
第二十五章	鹽；硫磺；土及石料；塗牆料，石灰及水泥

分類表實例-

United Nations. National Classifications

National Classifications

The following table lists national classifications (mostly for activities and products) for which basic information is available.

Follow the links to see information collected through the UN questionnaire on country practices in classifications and similar sources.

All countries

- Africa (37 classifications)
- North America (44 classifications)
- South America (22 classifications)
- Asia (100 classifications)
- Europe (203 classifications)
- Oceania (16 classifications)



Select a region to see a list of countries for which information is available.

Total number of classifications included: 422.

Total number of countries covered: 118.

Source: <http://unstats.un.org/unsd/cr/ctryreg/default.asp?Lg=1>












分類表實例—

國際專利分類表(International Pattern Classification; IPC)

WIPO [To the IPC official web site](#)



IPC [Definitions](#) [Illustrations](#) [RCL](#) [Catchwords](#) [Compilation](#) [Corrigendum](#) [Help](#) [Options](#) **2010.**

	A	SECTION A — HUMAN NECESSITIES	
	B	SECTION B — PERFORMING OPERATIONS; TRANSPORTING	
	C	SECTION C — CHEMISTRY; METALLURGY	
	D	SECTION D — TEXTILES; PAPER	
	E	SECTION E — FIXED CONSTRUCTIONS	
	F	SECTION F — MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING	
	G	SECTION G — PHYSICS	
	H	SECTION H — ELECTRICITY	

Version: Version 2010.01
Current symbol:
Jump Print
[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#)
Level core adv.
Lang. En. Fr.
View mode path full hierarchic
Standard seq. yes no
Display deleted
Search:
- By text categorization (IPCCAT).
- By Natural language processing (TACSY).

Source: <http://www.wipo.int/classifications/ipc/ipc8/?lang=en>

IPC	Definitions	Illustrations	RCL	Catchwords	Compilation	Corrigendum	Help	Options
H04	ELECTRIC COMMUNICATION TECHNIQUE							
	<p>Note(s)</p> <p>This class <u>covers</u> electrical communication systems with propagation paths employing beams of corpuscular radiation, acoustic waves or electromagnetic waves, e.g. radio or optical communication. [4]</p>							
H04M	TELEPHONIC COMMUNICATION (circuits for controlling other apparatus <u>via</u> a telephone cable and not involving telephone switching apparatus G08)							
	<p>Note(s)</p> <ol style="list-style-type: none"> This subclass <u>covers</u> : <ul style="list-style-type: none"> telephonic communication systems combined with other electrical systems; testing arrangements specially adapted for telephonic communication systems. In this subclass, the following terms or expressions are used with the meanings indicated: <ul style="list-style-type: none"> "subscriber" is a general term for terminal equipment, e.g. telephones for public use; "substation" means subscriber or monitoring equipment which may connect a single subscriber to a line without choice as to subscriber; "satellite" is a type of exchange the operation of which depends upon control signals received from a supervisory exchange; "switching centres" includes exchanges and satellites. 							
H04M 1/00	Substation equipment, e.g. for use by subscribers (subscriber services or facilities provided at exchanges H04M 3/00; prepayment telephone coin boxes H04M 17/00; current supply arrangements H04M 19/08) [1,7]							
H04M 1/02	• Constructional features of telephone sets							
H04M 1/03	• • Constructional features of telephone transmitters or receivers, e.g. telephone hand-sets [2]							
H04M 1/04	• • Supports for telephone transmitters or receivers							
H04M 1/05	• • • specially adapted for use on head, throat or breast							
H04M 1/06	• • • Hooks; Cradles							
H04M 1/08	• • • • associated with switches operated by the weight of the receiver or hand-set							
H04M 1/10	• • • • associated with switches operated by magnetic effect due to proximity of receiver or hand-set							
H04M 1/11	• • Supports for sets, e.g. incorporating armrests							
H04M 1/12	• • • Adjustable supports, e.g. extensible							
H04M 1/13	• • • • pantographic							
H04M 1/14	• • • with resilient means to eliminate extraneous vibrations							
H04M 1/15	• • Protecting or guiding telephone cords [5]							
H04M 1/17	• • Hygienic or sanitary devices on telephone equipment (for mouthpieces or earpieces H04R 1/12) [2]							
H04M 1/18	• • Telephone sets specially adapted for use in ships, mines, or other places exposed to adverse environment (H04M 1/19 takes precedence)							
H04M 1/19	• • Arrangements of transmitters, receivers, or complete sets to prevent eavesdropping, to attenuate local noise or to prevent undesired transmission; Mouthpieces or receivers specially adapted therefor (circuit arrangements for preventing eavesdropping H04M 1/68; telephone cabinets E04H 1/14)							
H04M 1/20	• • Arrangements for preventing acoustic feedback (H04M 1/62 takes precedence)							
H04M 1/21	• • Combinations with auxiliary equipment, e.g. with clocks or memoranda pads							

分類表實例—

Mathematics Subject Classification (MSC)

- 00-xx General
- 01-xx History and biography [See also the classification number - 03 in the other sections]
- 03-xx Mathematical logic and foundations
- 04-xx
- 05-xx Combinatorics
- 06-xx Order, lattices, ordered algebraic structures
- 08-xx General algebraic systems
- 11-xx Number theory
- 12-xx Field theory and polynomials
- 13-xx Commutative rings and algebras
(more

Source: <http://www.ams.org/msc/>

分類表實例—

Mathematics Subject Classification (cont.)

- **01-xx**
- **History and biography**
- **[See also the classification number -03 in the other sections]**

01-00 General reference works (handbooks, dictionaries, bibliographies, etc.)

01-01 Instructional exposition (textbooks, tutorial papers, etc.)

01-02 Research exposition (monographs, survey articles)

01-06 Proceedings, conferences, collections, etc.

01-08 Computational methods

01Axx History of mathematics and mathematicians

分類表實例—

Physics and Astronomy Classification Scheme (PACS)

- 00: General
- 10: The Physics of Elementary Particles and Fields
- 20: Nuclear Physics
- 30: Atomic and Molecular Physics
- 40: Electromagnetism, Optics, Acoustics, Heat Transfer, Classical Mechanics, and Fluid Dynamics
- 50: Physics of Gases, Plasmas, and Electric Discharges
- 60: Condensed Matter: Structure, Mechanical and Thermal Properties
- 70: Condensed Matter: Electronic Structure, Electrical, Magnetic, and Optical Properties
- 80: Interdisciplinary Physics and Related Areas of Science and Technology
- 90: Geophysics, Astronomy, and Astrophysics

Source: <http://www.aip.org/pacs/>

http://www.aip.org/pacs/pacs03/pacs0310-ext.html - Microsoft Internet Explorer

檔案(F) 編輯(E) 檢視(V) 我的最愛(A) 工具(T) 說明(H)

← 上一頁 → 搜尋 我的最愛 媒體

網址(D) http://www.aip.org/pacs/pacs03/pacs0310-ext.html 移至 連結 >>

10. THE PHYSICS OF ELEMENTARY PARTICLES AND FIELDS

11. General theory of fields and particles

11.10.-z Field theory

11.10.Cd Axiomatic approach in field theory

11.10.Ef Lagrangian and Hamiltonian approach in field theory

11.10.Gh Renormalization in quantum field theory

11.10.Hi Renormalization group evolution of field theory parameters

11.10.Jj Asymptotic problems and properties in quantum field theories

11.10.Kk Field theories in dimensions other than four

11.10.Lm Nonlinear or nonlocal field theories and models

11.10.Nx Noncommutative field theory

11.10.St Bound and unstable states; Bethe-Salpeter equations

11.10.Wx Finite-temperature field theory

11.15.-q Gauge field theories

11.15.Bt General properties of perturbation theory in gauge theories

11.15.Ex Spontaneous breaking of gauge symmetries

11.15.Ha Lattice gauge theory

11.15.Kc Classical and semiclassical techniques in gauge theories

完成 網際網路

分類表實例-

The ACM Computing Classification System (1998)

- A. General Literature
- B. Hardware
- C. Computer Systems Organization
- D. Software
- E. Data
- F. Theory of Computation
- G. Mathematics of Computing
- H. Information Systems
- I. Computing Methodologies
- J. Computer Applications
- K. Computing Milieux

Source: <http://www.acm.org/class/1998/TOP.html>

分類表實例—

The ACM Computing Classification System (1998)(cont.)

- **C. Computer Systems Organization**
 - C.0 GENERAL
 - C.1 PROCESSOR ARCHITECTURES
 - C.2 COMPUTER-COMMUNICATION NETWORKS
 - C.3 SPECIAL-PURPOSE AND APPLICATION-BASED SYSTEMS
 - C.4 PERFORMANCE OF SYSTEMS
 - C.5 COMPUTER SYSTEM IMPLEMENTATION
 - C.m MISCELLANEOUS

分類表實例— The Classification of Stellar Spectra

The Classification of Stellar Spectra - Microsoft Internet Explorer

檔案(E) 編輯(E) 檢視(V) 我的最愛(A) 工具(T) 說明(H)

← 上一頁 → 搜尋 我的最愛 媒體

網址(D) http://theawwww.gsfc.nasa.gov/users/allen/spectral_classification.html 移至 連結 >>

Type	Color	Approximate Surface Temperature	Main Characteristics	Examples
O	Blue	> 25,000 K	Singly ionized helium lines either in emission or absorption. Strong ultraviolet continuum.	10 Lacertra
B	Blue	11,000 - 25,000	Neutral helium lines in absorption.	Rigel Spica
A	Blue	7,500 - 11,000	Hydrogen lines at maximum strength for A0 stars, decreasing thereafter.	Sirius Vega
F	Blue to White	6,000 - 7,500	Metallic lines become noticeable.	Canopus Procyon
G	White to Yellow	5,000 - 6,000	Solar-type spectra. Absorption lines of neutral metallic atoms and ions (e.g. once-ionized calcium) grow in strength.	Sun Capella
K	Orange to Red	3,500 - 5,000	Metallic lines dominate. Weak blue continuum.	Arcturus Aldebaran
M	Red	< 3,500	Molecular bands of titanium oxide noticeable.	Betelgeuse Antares

完成 網際網路

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。
- 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。
- 主題詞彙一般常見的形式有：標題(subject heading)、單元詞(unit term)、敘述詞(descriptor)、及關鍵詞(keyword)

Subject Vocabularies(2)

- 依subject vocabulary的來源
 - 要字索引法 (word indexing, extraction indexing, derived indexing)
 - 概念索引法 (concept indexing, assigned indexing)
- 是否使用字彙控制工具
 - 自然語言 (natural language)
 - 控制字彙 (controlled vocabulary)
- 依據概念組合的先後
 - 前組合索引(pre-coordinated)
 - 後組合索引(post-coordinated)

Subject Vocabularies (3)

- Library catalogs and other retrieval systems provide a subject approach to the records in their systems through access points based on the subject content of the documents.
- Most libraries usually assume a controlled vocabulary approach. In this case, specific words or phrases designated as subject index terms are assigned to each bibliographic record, each term normally represents only one subject, and a given subject is normally represented by only one term.

Subject Vocabularies (4)

- A controlled vocabulary system depends on a master list of predetermined terms that can be assigned to documents. For most library catalogs these are called *subject headings*; for many abstracting and indexing system they are called *descriptors* or perhaps simply *preferred or authorized terms*.

Source: Lois Mai Chan. (2007). *Cataloging and Classification: An Introduction*. 3rd ed. Lanham, MD: Scarecrow Press, p. 196.

Subject Vocabularies(5)

- 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，標題亦有標題表(subject heading list)作為規範。
- 國內圖書館常用的標題表有：
 - 中文主題詞表
<http://catweb.ncl.edu.tw/2-1-16.htm>
 - Library of Congress Subject Headings
<http://catweb.ncl.edu.tw/lcsh.htm>
 - Sears List of Subject Headings
http://www.hwwilson.com/print/searslst_19th.cfm