The CODEN System

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The CODEN system, which is currently being used as a machine readable key to periodicals, is described.

The American Society for Testing and Materials is known throughout the world for its more than 4800 standards on characteristics and performance of materials, products, systems, and services. Among the standards for systems is E 250, the Recommended Practice for Use of CODEN for Periodical Title Abbreviations.

A CODEN is defined as a five character code designating the title of a specific serial publication. Insofar as it is possible these codes consist of 4 mnemonic alphabetic characters for the periodical titles. To facilitate the use of the mnemonic form, a fifth character has been added which is either an A, B, or C. The use of this A, B, or C series increases the number of CODEN combinations, and must be included in the CODEN citation as it is possible that the first four letters will be identical. For example, JACP-A refers to an entirely different journal from JACP-B.

Example:

JACP-A *Journal of the American Academy of Child Psychiatry* (New York)

JACP-B *Jahrbuch fuer Chemiker und Physiker* (Munich)

It is also to be noted that the codes are unique to each serial, and a serial has only one CODEN. Codes have also been created which consist of two digits and two alphabetic characters and the A, B, or C; these codes are used for "nonperiodicals." A CODEN is always cited in upper case letters; for legibility, a hyphen is included here between the fourth and fifth characters, but it is up to the user whether he wishes to use the hyphen in his citations.

A directory (DS 23B and DS 23B-S1) contains listings of a wide variety of serial publications including periodicals, reports, and annuals generally appearing at regularly stated intervals. Commercial, society, and government publications are all to be found in this directory. There is no restriction as to the historical period of publication; both old as well as current titles are found here. There is also no restriction as to the language of publication although all titles have been transliterated into the Latin alphabet.

The "nonperiodicals" listed fall within the same subject, language, and historical period categories as the serials. These citations pertain to congresses, conferences, and symposia occurring at a specific time in history. Thus, each citation includes a specific date and place where the conferences or symposium took place. If such meetings occur frequently and with essentially the same name, they may also be assigned a serial CODEN and may be referred to as such by the user.

Most titles were submitted for CODEN assignment by users of the system; these users were asked to submit photocopies of the title page and masthead along with their orders to ensure the accuracy of the listing. Should title pages not be available, verification in a standard bibliography was sought.

The practical use of the directory will be greatly facilitated if the following features and conventions are borne in mind:

> Should journal covers not be available to the CODEN staff in their original form, the style of entry chosen for the titles may not be necessarily that given on the title page. In this case, the corporate entry form is generally chosen in agreement with most library procedures. When the title of the publication would be meaningful enough to be cited alone in some circumstances, a cross reference is added under the title of the periodical itself with the CODEN assigned from the corporate entry form.
>
> For example:
>
> MUDC-A McGill University, Department of Geography, *Climatological Bulletin* (Montreal)
>
> MUDC-A *Climatological Bulletin.* McGill University, Department of Geography (Montreal)

In this way, it is felt that users may more readily ascertain the CODEN for their serial.

All diacritical marks normally included in the spelling of non-English words have been eliminated as the mechanized processes used in the production of the directory do not allow for them. In general, these marks have simply been dropped as in the case of cedillas, tildes, accents acute and grave. However, when the umlaut is dropped, the a, o, or u over which it occurs is changed to ae, oe, or ue. Thus, if one is searching for Osterreichische Papier (Vienna) one should search for it with the spelling Oesterreichische Papier (Vienna).

Journals in languages using an alphabet other than Latin, such as Russian, or ideographs such as Japanese and Chinese, have been transliterated using a standard transliteration scheme. In the case of Japanese, the Hepburn transliteration system has been chosen. The Cyrillic languages are transliterated following the practices of the Library of Congress. Where languages other than the transliterated one appear on the title pages, they are used as cross references. In other words, a Japanese journal published in Tokyo with a title in ideographs and a title in

English receives a CODEN taken from the transliterated ideographs and a cross reference is made for the English title.

Example:

KGNB-A *Kenritsu Gann Center Niigata Byoin* (Niigata, Japan)

KGNB-A *Journal of the Cancer Center* (Niigata, Japan)

Cover-to-cover translations of a foreign journal receive their own CODEN, and a note is added referencing the user to the main journal. Also, notes included under the CODEN of the main foreign journal tell the user that such a translation exists.

Example:

SJOT-B *Soviet Journal of Optical Technology* (Washington/Lancaster, Pa.) English Translation of OPMP-A)

OPMP-A *Optiko-mekhanicheskaia Promyshlennost'* (Leningrad) English Translation at SJOT-B

Where journals have acronyms or abbreviations included in the title, complete meanings are included in the citation, and cross references to the meaning are made.

Example:

AAMA-B *A.A.M.A. Bulletin* (American Association of Medical Assistants) (Chicago)

AAMA-B *American Association of Medical Assistants Bulletin* (Chicago)

The initial letter X in a CODEN is used to mean "United States." The letters XX in the third and fourth position indicate that the item is a patent.

Example:

XBRP-A United States Bureau of Sport Fisheries and Wildlife, Resource Publication (Washington)

New CODEN are assigned to all significant title changes. Whenever such a change occurs, a note is added to both the new title and the old title indicating that one has changed to the other or that one was formerly the other. It frequently happens that two journals merge, or one journal splits into several parts; each occurrence of this nature is indicated by a note at the end of the citation.

Example:

JMPH-B *Journal of Macromolecular Physics* (New York) (Changed to JMSP-B)

JMSP-B *Journal of Macromolecular Science, Part B, Physics* (New York) (Formerly JMPH-B) (Changed to JMAP-B)

JMAP-B *Journal of Macromolecular Science, Physics* (New York) (Formerly JMSP-B)

Notes are also included to indicate that a translation of a journal exists or that a journal is a translation of another one. Notes also indicate where supplements exist if the title of the supplement is significantly different from the parent volume. Occasionally the dates for the period of publication are included if there is no other way to distinguish between two identically titled journals published in the same city. In all cases, these bibliographic notes refer to the other journal or journals by CODEN; thus, to identify the referenced journal one must use the alphabetic listings by CODEN. In no sense do these notes indicate that a single journal has more than one CODEN, but that each time a journal changes its name and continues publishing a new CODEN is assigned and referenced to the old one.

The journal citations listed include several parts: Part 1 consists of the title with subtitle if necessary; Part 2 consists of the place of publication which includes the state in the United States or province of Canada or the country, if the city is not well known. Part 3 consists of any history notes or other information about the title such as supplements or translations.

Example:

IJOB-B *International Journal of Offender Therapy* (New York) (Formerly JOFT-A)

Cross references are included only if they are strictly essential. Thus, the number of title inversion cross references is limited. Most cross references result from the transliterated journals plus their English titles or from the fully spelled out form of journals using acronyms. The user is inivted to look first under the corporate form of a journal title and then under the other forms of the title to facilitate locating the CODEN. The cross references are grouped with the main entry in the alphabetic by CODEN listing.

The titles are alphabetized in the directory using a word-by-word arrangement. Prepositions, articles, and conjunctions are disregarded in the filing order except when a preposition comes at the beginning of the title. Hyphenated words are treated as if there were no hyphen and filed as one word. Initials and acronyms are filed at the beginning of each letter of the alphabet. They are easily identifiable owing to placing of periods after each letter of the acronym even if the journal or society would not ordinarily use the periods. Journals including digits in the title are filed as if the digits were spelled out in the language of the periodical; thus, a French journal using 8 in the title is filed under H for huit. One should also remember that the umlauts have been eliminated and the vowels spelled as diphthongs.

Chemical Abstracts uses CODEN with check characters. Its purpose is to provide a letter or digit which, when properly calculated, will eliminate errors in CODEN notation in the keyboarding stage.

The initial suggestion for the use of a machine-generated check-letter for controlling errors in CODEN came from A. D. Pratt at the School of Library Science, University of Indiana, Bloomington. F. E. Hajjar is responsible for reducing the idea to practice for Chemical Abstracts Service. The check-character becomes a sixth letter or digit whose value depends upon value and order of the five elements of the CODEN. Any error in a single letter or an inversion of letters, plus most other types of errors, will produce a check character that is inconsistent with the correct one and expose the error. Following is a brief description of the system as used at Chemical Abstracts Service.

1. CODEN may be entered as a 5- or 6-character field
   (a) If the CODEN in entered as a 5-character field, then a check-character is generated and added as a sixth character.
   (b) If the CODEN is entered as a 6-character field, then a check-character is generated from the first five and matched with the sixth. If the check-characters match, the CODEN is verified as being valid. If the check-characters do not match, then the generated character replaces the original check-character, and a switch is turned on to be interrogated by the operating program.
2. The check-character is generated as follows:
   (a) Each alpha-numeric character of the CODEN is replaced with an equivalent value. The equivalents are:

CODEN:	A, B, ... Y, Z, 1, 2, ... 9, 0
Equivalent:	1,2, ... 25, 26, 27, 28, ... 35, 36

   (b) The equation used to generate the check-character is:

$$(11\times N) + (7\times N) + (5\times N) + (3\times N) + (1\times N) = \frac{34}{34}X + \text{remainder}$$

Where N, N, etc. are the equivalents of the CODEN characters in order of their appearance in the CODEN and X is a whole number that is discarded.

(c) The remainder is converted to a check-character by the following set of equivalents:

remainder: 1, 2, . . . 25, 26, 27, 28, 29, . . . 33, 34
Check-character: A, B, . . . Y, Z, 2, 3, 4, . . . 8, 9
(or zero)

The numeric check-characters one (1) and zero (0) have been eliminated to avoid confusion with the alphabetic characters I and O.

(d) Sample calculation of a check character for the CODEN JACS-A;

N = J = 10
N = A = 1
N = C = 3
N = S = 19
N = A = 1

Substituting these equivalents for the characters in the CODEN into the equation yields an "X" of 5 and a Remainder of 20. The check-character equivalent of 20 is T. Thus, the complete CODEN with check-character is JACS-AT.

To obtain the sixth or check character of a CODEN assignment, look up the character in each position of the CODEN (proceeding from left to right) in the "CHARACTER" column of Table one. Move right to the appropriate value column for the particular position of CODEN under consideration. Add the numeric value found to a cumulative total for all positions of the CODEN under consideration. When all five (5) positions have been handled and their values accumulated, search for the accumulated value in the "TOTAL" column of the "CHECK CHARACTER" in Table 2. The correct check character is to the immediate right of the "TOTAL" value. This character is placed in the sixth column of the CODEN assignment.

Example: The check character for the CODEN BOOKA is found by calculating the sum of the position values for the characters of the CODEN as follows:

B = 22
O = 3
O = 7
K = 33
A = 1
TOTAL = 66, whose check character = 7
CODEN is then BOOKA 7

The CODEN system is currently used as a machine readable system for abstracts, citations, filing systems, and union lists. It is used throughout the world and is maintained and updated at the CODEN Project, Science Information Service, The Franklin Institute Research Laboratories, 20th and Race Streets, Philadelphia, Pa. 19103, on behalf of the American Society for Testing and Materials, the sponsor.

A Survey on the Use of Scientific and Technical News Periodicals by Chemists

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A methodology developed for the investigation of the use and usefulness of science news magazines is described. Detailed findings on various aspects of the use of *Chemical and Engineering News* by members of the Chemical Society (London) and the Royal Institute of Chemistry are presented.

Empirical studies of the use of, the demand or the need for information, usually termed user studies, are customarily traced back to those reported by Bernal[1] and Urquhart[2] in 1948. Since then, the results of several hundred user studies have been published[3] and have provided an informed basis for making decisions about what new information services are needed and how existing services can be tailored more closely to users' requirements.

The conclusions drawn from such studies need, however, to be examined critically. In some cases, they may be of limited applicability either because of sample composition or because the process of data collection has altered the situation that previously existed. In other cases, they may represent only one of several interpretations of the findings and may reflect the preconceptions of the investigators and the subsequent survey design. Nonetheless, such studies do represent a substantial body of knowledge and are essential to the effective planning of information activities.

User studies can be divided into:

So-called channel studies—those which focus on a single channel or medium, often without providing comparative data on the use of other channels or media.[4,5]

General studies of information-gathering behavior—no matter what channels are involved.[6-8]

So far, we have found no published channel studies of semiformal media, such as trade periodicals, controlled circulation journals, house journals, and science news magazines which publish topical information and comment on research developments and scientific affairs in newspaper-type style. Such studies are difficult to trace for two main reasons. First, reviewers sometimes exclude them from the field, known as information needs and uses, on the grounds that the sample and data collection procedures in such studies are idiosyncratic.[9] Second, the results of such studies are often confidential to the publishers. Some miscellaneous results of unpublished reader-

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