

# UNL ENCYCLOPEDIA

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UNL Center / UNDL Foundation

## INTRODUCTION

The UNL Universal Encyclopedia is the collection of the empirical and scientific knowledge, wisdom and culture of all peoples expressed in UNL. With the UNL-enabled convergence of language, information and digital technologies, it is possible to assemble all forms of knowledge and culture in a common asset for humankind, while preserving “local” diversities. The merit of the UNL is that it enables each people to use its native language to share its world of knowledge and culture with other peoples in their respective languages. In this sense, the UNL Encyclopedia is truly “universal”.

In present history, interdependence among nations – enhanced by Information and Communication Technologies (ICT) – brings economies, cultures, knowledge systems and political regimes closer to each other. But language barriers prevents a fair information flow, access to knowledge, trans-cultural exchanges and mutual understanding among diverse peoples. As a result, conflicts and clashes increase as globalization threatens the identity and survival of local cultures. The UNL Encyclopedia takes advantage of the ICT media to break down barriers, and to provide all peoples with a platform for sharing their world of art, knowledge, wisdom, values, ways of life, feelings and beliefs with others. The UNL Encyclopedia therefore emerges as one of the “natural historical responses” to meet the need for fairness by promoting reciprocal knowledge while preserving cultural diversity.

Existing encyclopedias, such as the Britannica, Larousse and others, are written in English, Chinese, French, Japanese, Russian, and many other languages. The UNL Encyclopedia will be written in UNL, the language of computers. The task of developing the UNL Encyclopedia consists in enconverting in UNL the multi-diverse forms of knowledge that exist in texts or in the minds of the authors. Authors will use their own native language to write UNL documents. This task is accomplished with the support of the UNL System and the help of UNL tools. These are made available to anybody interested in taking part in this endeavor.

### 1. Structure of the UNL Encyclopedia

The UNL Encyclopedia basically describes ordinary encyclopedias in UNL and integrates those descriptions into the UNL Knowledge Base (UNLKB). People will therefore be able to see not only the UNL Encyclopedia in their own language but also the position of each concept in the conceptual hierarchy at the same time.

The UNL Encyclopedia is a multilingual encyclopedia navigating through the UNL KB for humans, with the knowledge description necessary for computers to process knowledge by providing the basis of thinking.

Figure 1 shows the structure of the UNL Encyclopedia.

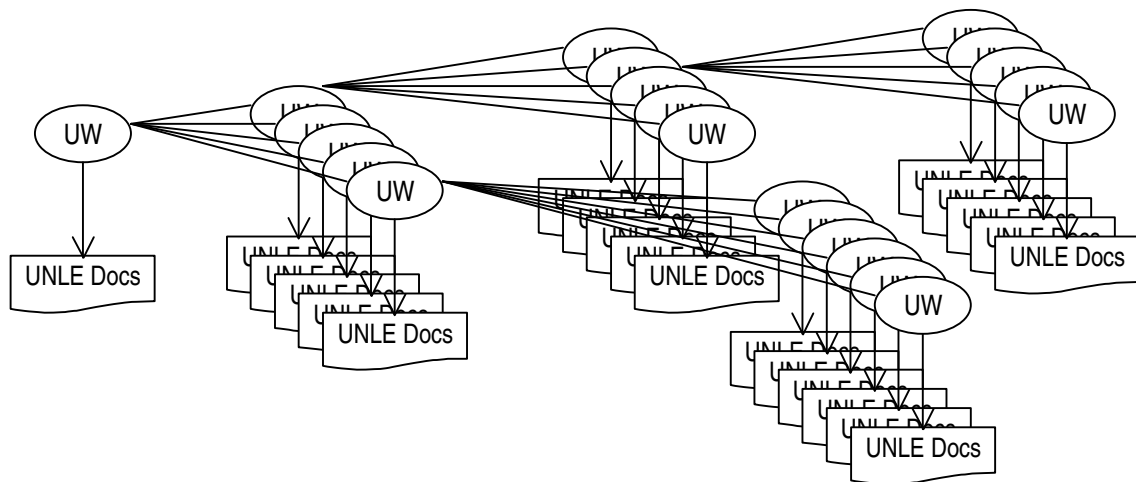


Figure 1. Structure of the UNL Encyclopedia  
 “UNLE Docs” stands for “UNL Encyclopedia Documents”

The UNL Encyclopedia consists of two parts: the UW System (concepts hierarchy) and the contents of the UNL Encyclopedia. The UW System is a hierarchy of UWs defined in the UNL Knowledge Base (UNL KB). Such UWs of the UW System are the entries to the UNL Encyclopedia. The contents of the UNL Encyclopedia are the descriptions of concepts or knowledge about UWs. Descriptions of contents are provided by sentences and written in UNL as UNL documents (UNL expressions).

In the UNL Encyclopedia, each UW is linked with its content by the relation ‘cnt’. In figure 1, arrows show the links between each UW and its content, and “UNLE Docs”, which stands for “UNL Encyclopedia Documents”, shows the content of each UW.

### **The characteristics of the UNL Encyclopedia:**

#### **Coverage of Extensive Knowledge**

The UNL Encyclopedia covers extensive knowledge at different levels. In the upper levels of the UW System, knowledge on general concepts, which is considered to be the core of the UNL Encyclopedia, is described. Descriptions of concepts are mainly about what they are, how to make or use them, when they are true, and so on. In the lower levels of the UW System, it is possible to describe not only ordinary specific concepts but also the contents of archives and books. Whole contents of archives or books are considered as compound concepts. This knowledge constitutes parts of the UNL Encyclopedia: the UNL Archives and the UNL library.

## Interconnectivity of UWs and content descriptions of the Encyclopedia

In the UNL Encyclopedia, knowledge (the encyclopedia) about each concept identified by a UW is described in UNL expressions. Every UW included in the description of UNL expressions also takes a position in the UW System. These UWs will therefore become entries of the UNL Encyclopedia, and knowledge about them is also described in the UNL Encyclopedia. This architecture guarantees every description of knowledge for using other pre-described knowledge, and users can easily find the new knowledge that is necessary for unknown concepts included in an encyclopedia description.

### Multilingual navigability

Knowledge is described as UNL expressions in the UNL Encyclopedia. Once a new knowledge is registered in the UNL Encyclopedia, it is possible to search and view the knowledge in a desired language using the UNL system.

## 2. The UW System

The general structure of the UW System has the following hierarchy of UWs:

In the topmost level of the UW hierarchy, there is a UW that copes with the concept of the "Universal Word" itself. Hence, this UW 'Universal Word' is the broadest UW among all, for it denotes a concept that includes every other concept, i.e., it does not take an 'icl' relation with any other existing UW.

The UW 'uw' follows immediately under 'Universal Word'. It is the abbreviated citation form of the UW 'Universal Word', to which it is related by means of 'equ': 'equ(uw, Universal Word)=1'.

Under the UW 'uw', there are four UWs, directly related to 'uw' through 'icl'. These four UWs are the following: 'nominal concept', 'verbal concept', 'adjectival concept' and 'adverbial concept'. They represent the four uppermost general categories under which the other UWs are to be represented inside.

Each of these four uppermost UWs is subdivided into other different lower UWs.

Figure 2 shows the top levels structure of UWs in the UW System.

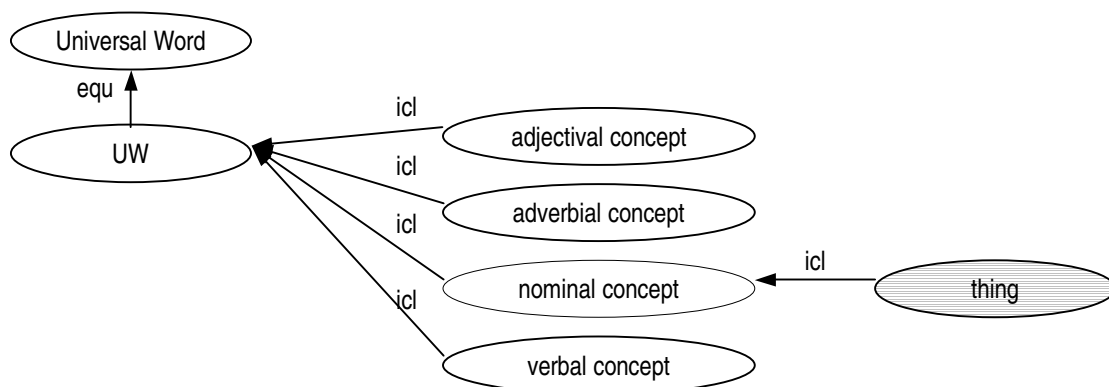


Figure 2. Top levels structure of UWs in the UW System

'equ' stands for "equivalent of" or "equal to", 'icl' stands for "included" and means "is a kind of"

Since an encyclopedia deals with knowledge of “things” including “matters” or “affairs”, UW ‘thing’ under ‘nominal concept’ in the UW System will be the topmost UW of concept in the UNL Encyclopedia. Figure 3 shows UWs classifying the UW ‘thing’ at the fourth level.

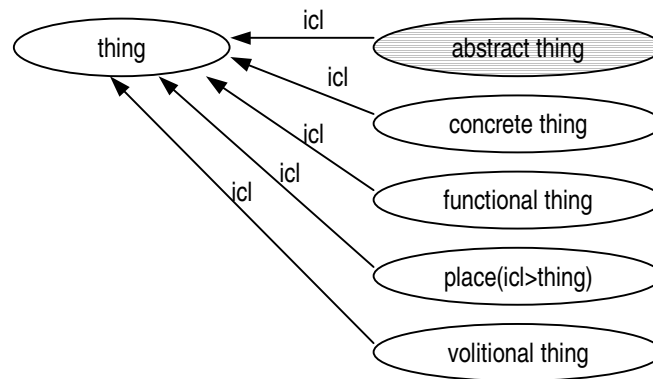


Figure 3. UWs under ‘thing’

Each of these UWs comprises further subdivisions, and so forth, so as to compose the UW System. To define a UW in the UW System entails deciding not only to which of these UWs the concept must be related, but also at which level it should be situated, and under which subordinate UW it should be set, in order to accomplish the principle of interpretability (i.e., that a UW must be replaceable by its upper UWs), as a means to inherit as much information as necessary from the immediate upper level.

For instance, the UW for the meaning of “a collection of documents” is ‘archive(icl>document)’, which is located under UW ‘document(icl>information)’; this in turn is under UW ‘information’, and ‘information’ is under ‘abstract thing’, as shown in figure 4.

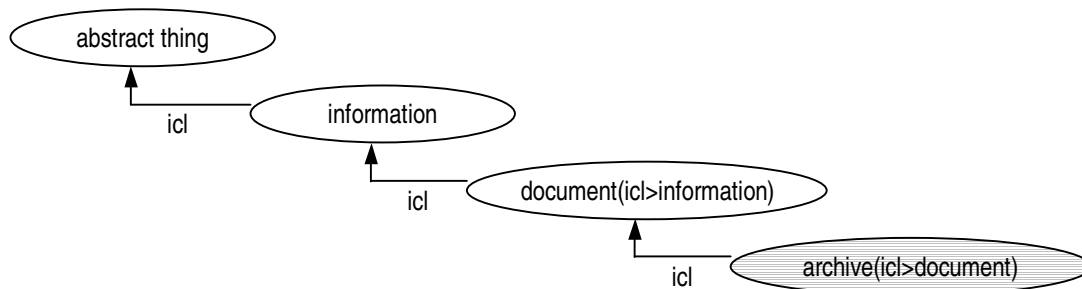


Figure 4. Position of UW ‘archive(icl>document)’ in the UW System

Under ‘archive(icl>document)’, four documents entitled “Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property”, “General Conference Adopts Universal Declaration on Cultural Diversity”, “The Intergovernmental Conference on Cultural Policies for Development, held at Stockholm (30 March-2 April 1998)”, and “Recommendation on International Principles Applicable to Archaeological Excavations” are registered. The titles of these documents are treated as UWs, the entries to the UNL Encyclopaedia of

their contents, which are described in UNL expressions.

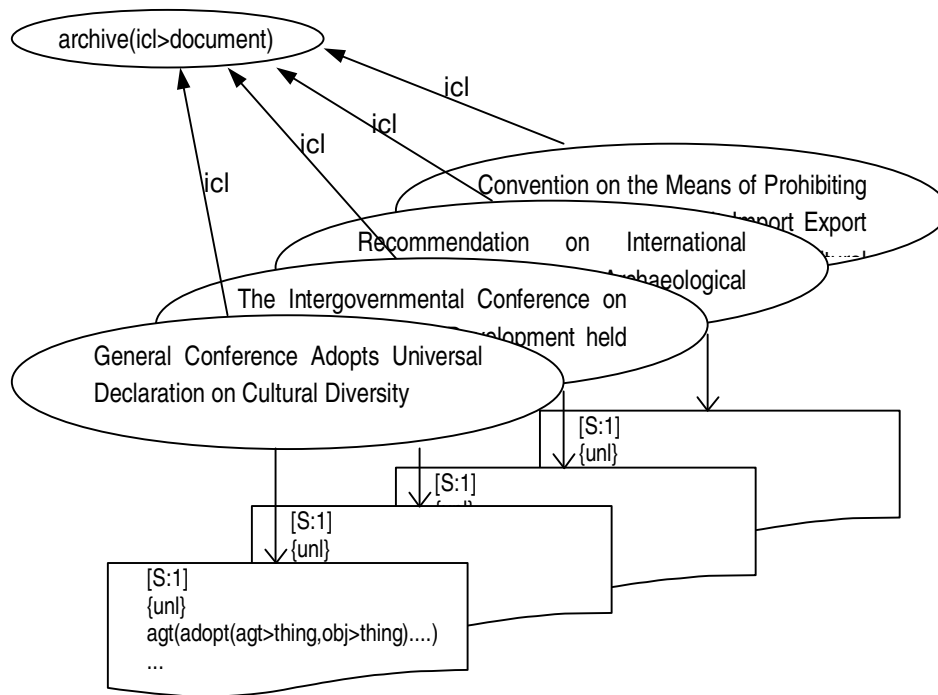


Figure 5. Archive holder in the UNL Encyclopedia

For further information on the UW System, please refer to the UW Manual and UNL KB at <http://www.undl.org/unlsys/>.

### 3. How to develop the UNL Encyclopedia

Development of the UNL Encyclopedia is open to various developers from different languages and cultures. The task of UNL Encyclopedia development is to add concept descriptions for all UWs defined in the UW System. The concept description must be provided in UNL. If a UW that is necessary for describing a concept does not exist in the UW System, such a UW must be added to the UW System. The way to develop a UW is explained in the UW Manual (it can be consulted at <http://www.undl.org/unlsys/>).

#### 3.1 Physical data structure of the UNL Encyclopedia

Every concept description is stored in an independent file. This file must be located under a directory with its UW as the name. The developer name is used as the file name, which must be defined in the initial file (“UNLExpE.ini”) following “EDITOR\_USERNAME=”.

As “<” and “>” included in a UW label is not allowed in a file or directory name, the name of the directory corresponding to a UW is made in the following way:

- [1] “<” in a UW is changed to “{“,
- [2] “>” in a UW is changed to “}”, and
- [3] the other character is used as it is.

For instance, the description file for the UW ‘manmal(icl>aminal)’ is stored under the directory of the name “manmal(icl}aminal)”. This directory must be located under either a local directory like “c:/UNL Encyclopedia/Local” or the central place of “<http://www.undl.org/UNL-Explorer/Knowledge/Local>”. To upload the description file to the central place, <ftp://undl.org/~unlexp/Explorer/Knowledge/Local> must be defined in the initial file (“UNLExpE.ini”) following “BASE\_URL\_FTP=”.

[UNLEXP\_EDITOR]

BASE\_URL\_FTP=<ftp://undl.org/~unlexp/Explorer/Knowledge/Local>

EDITOR\_USERNAME=developer-name

### 3.2 Information that must be included in the concept description

What kind of information is necessary for describing a concept? We propose that each concept description in the UNL Encyclopedia should include the following information:

- o What it is
- o The term of validity (valid time period), if necessary
- o The scene, situation or place of validity, if necessary
- o The criteria of the knowledge, if necessary
- o Developer’s information (name, contact, organization, occupation, etc) and date
- o Etc.

### Related Documents

- [1] UNL Explorer, [www.undl.org/publications/UNLExpexplorer-e.pdf](http://www.undl.org/publications/UNLExpexplorer-e.pdf), UNL Center / UNDL Foundation, March 2004
- [2] UNL Editor, [www.undl.org/publications/UNLEditor-e.pdf](http://www.undl.org/publications/UNLEditor-e.pdf), UNL Center / UNDL Foundation, 2004
- [3] UNL System, [www.undl.org/unlsys/](http://www.undl.org/unlsys/), UNL Center / UNDL Foundation