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IMD
INTERDISCIPLINARY MULTILINGUAL DICTIONARY
A NEW ONLINE TOOL FOR COMMUNICATION

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Abstract

The concept for a bilingual dictionary of art restoration emerged from the need for professional dictionaries to ease the process of translation and speed communication between scientific disciplines. The Art Restoration Dictionary (ARD) is a bi-lingual set of glossaries of terms, currently in English and Polish, with Latin terms in certain chapters. It is essentially a dictionary of restoration-conservation terms, but it also provides a practical method of dealing with the vocabulary of other complex scientific disciplines within the multilingual context, through employment of modern techniques and tools. The current phase of the project is supported through grant funding by the Polish National Science Centre and will encompass new branches of art restoration and further languages.

Keywords: *Art restoration; Glossary; Translation; Multilingual scientific dictionary.*

Introduction

The key scientific objective of the project was the creation of a database of art restoration terminology together with a specially designed interface to provide multilingual dictionary facilities [1-3]. During the initial stage, the content was intended to consist of material relating to the restoration of easel paintings only. This software tool was central to the terminological research subsequently performed. The shortage of multilingual thesauri hampers international scientific contact and causes numerous problems with translation [3-10]. The extant dictionaries on conservation-restoration have multiple limitations: printed versions are difficult to access and impossible to modify, most glossaries have no representative collection of terms, there is a lack of equivalents between different languages and a lack of coherence amongst scientific terminology.

Method

Problem

Language is the basic tool of information exchange. Information must be precise, especially within the arts and sciences. Unambiguous meaning is central to the accurate translation of scientific texts. Multilingual dictionaries are the main source of equivalents. In

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this respect (translation and equivalence) we may divide scientific disciplines between those that use interlingua (e.g. biology uses Latin as interlingua), sciences that use terms directly adopted from other languages (e.g. 'IT' was adopted from English), and finally, those that use specific vocabulary which are difficult or even impossible to translate (e.g. humanities, but also technical and technological disciplines related to historic craft). The last group may be generally described as ‘arts and sciences which are culturally and historically related’. Terminology used within this group is especially difficult to interpret.

Art restoration is an interdisciplinary science. It incorporates variety of crafts and visual arts, the humanities (e.g. aesthetics, art history), technique (e.g. applied physics), technology (e.g. materials, construction) and natural sciences (e.g. biology, petrography) etc. This means that certain chapters of the dictionary needed to be shaped and structured individually. It also means that when creating the database; we had to cope with a wide variety of sciences and their specific professional language, which was a serious obstacle and a key challenge for the authors.

3D matrix

The first step in the project was to structure the system in such a way as to make it possible to collect data (terms) such that the whole chosen specialization (i.e. restoration of easel painting) could be introduced effectively. The most popular model for dictionaries is often referred to as ‘linear’. In such a structure, terms are arranged in alphabetical order. This is a traditional model suitable for printed material, however some electronic glossaries also adopt it. There are also dictionaries which are subdivided according to specific themes in which the terms are arranged in relation to the defined issue. This model adopts thematic order. Yet another system is ‘hierarchic”, i.e. terms are arranged from the more general to more specific. It should be noted that although alphabetical order was historically useful for constructing hand-written dictionaries, nowadays electronic dictionaries necessarily use different methods. However, the greatest problem was that there are few dictionaries on art restoration which could be used as a lexical source for ARD. Most of them are based on linear structure and encompass a limited number of entries (and topics). As it is hard to imagine building an electronic database of terms beginning with the letter A and ending with Z - a model which would ease systematization of entries was required.

For this reason; a new system for arranging issues related to art restoration-conservation was developed. As the discipline deals with material objects existing over time, we may assume that any item and any activity within this discipline may be placed within a coordinate system in which one axis refers to time and the other to matter (Fig. 1).

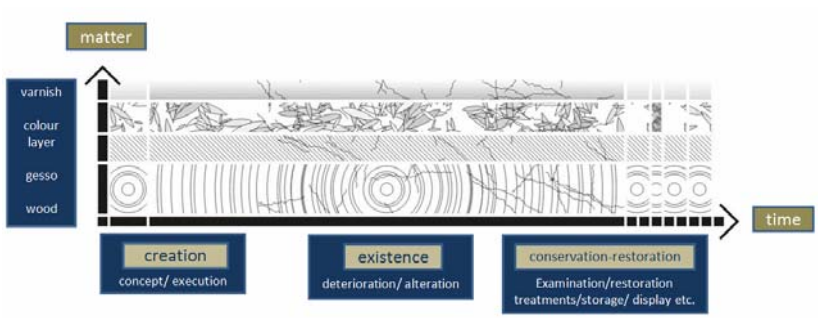

Fig. 1. In the two dimensional model for collecting terminology on restoration of paintings, each term related to the procedures of the manufacture of an artwork may be found within the first section (e.g. creation of a panel, varnish application). The second section represents the existence of an artwork over time during which it was subjected to various factors causing ageing, alteration, damage, deterioration (e.g. woodworm attack, varnish yellowing, layer separation, over-painting). The third section is related to all possible conservation-restoration treatments and it may be subdivided according to the typical scheme of procedures (e.g. documentation – pictorial, descriptive, examination, initial protection, treatment, storage, display) which again may be related to certain technological strata.

This system became a model for: 'the two dimensional dictionary' and it eased the process of collecting data (terminology) for a specific object. However, when we discuss art restoration as a set of terms in various languages, we have to add a third coordinate which illustrates space. The consequent coordinate system has a three dimensional structure which was called 'the 3D matrix'. Within the 3D matrix, it is possible to find a place for any term related to art restoration in any language. This structure was adopted in order to construct the multilingual art restoration dictionary's database (Fig. 2).

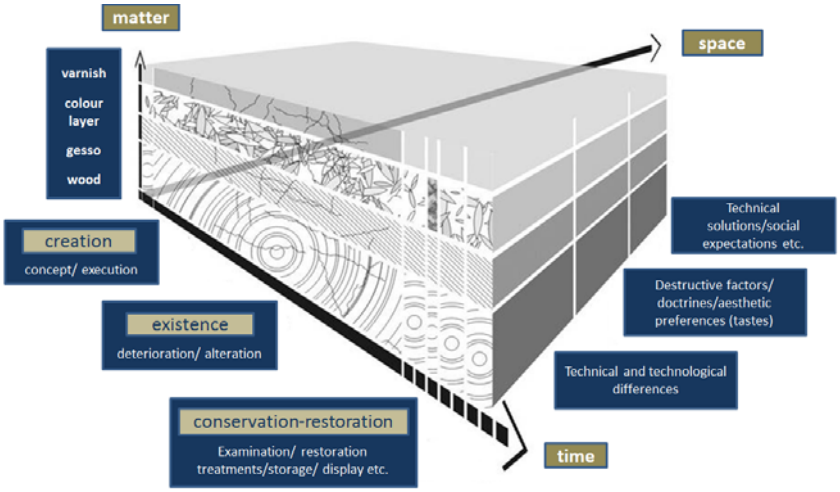

Fig. 2. The 3D matrix model allows for descriptive processes, procedures and phenomena related to any item in respect of its existence within the local context. Thus, it allows for the introduction of terms, along with their equivalents (if they exist) in other languages. This was the key concept used while structuring ARD

The structure of the user interface reflects the underlying hierarchical structure of ARD. The general concept is to group art restoration topics together where they share methods or terminology. These are referred to as '*nests*' and they are supplemented with appropriate and useful terms (entries). Whilst the data is not held in a conventional linear way, e.g. in alphabetical order, ARD content may be structured in any chosen way. Any number of entries can be added along with any number of new *nests* and each entry may be linked with any other; constituting what we refer to as '*net relations*'. The set of net relations associated with an entry provides the correct context of that term – thus one word may appear in several parts of the dictionary, where it is used in a different context and therefore has a different meaning. For instance, the word 'water' may be found under 'Deterioration Factors', 'Damage and Decay' (water damage), 'Biology in Restoration' (capillary water), 'Solvents', etc.

The hierarchical system mentioned earlier may be illustrated as a tree (Fig.3). Once we have a general theme 'tree', it may be sub-divided into chapters and subchapters, which finally leads us to a specific term – a 'leaf'. This ideogram may be transferred to a table (Table 1). Divisions of the table follow the parallel relationships between structural elements of a tree, general hierarchy of a given discipline, documents stored in a computer file structure and finally example terms from art restoration terminology.

One of the most complex tasks in the construction of a dictionary is translation of complex terms which represent concepts. The solution proposed in the ARD scheme is called the 'Safe Range of Meaning'. We may say that equivalence exists only within a specific overlapping range of meaning, but there are also areas of meaning without equivalence, which are usually culturally or historically related. In this case, we may either impose one generally

agreed definition on all nations, or accept 'the safe range of meaning' providing an understanding of a term across cultural divides (Fig. 4).

Table 1. The tree of conservation-restoration in a tabular form, with parallel terminology examples.

Structural analogy	General hierarchy	Windows file structure terminology	Art restoration terminology examples
tree	discipline	folder	restoration of paintings
bough	specialization	sub-folder	restoration of easel paintings
branch	sub-specialization	document	restoration of canvas paintings
twig	procedures, materials etc.	table	lining
leaf	term/entry	word	heated table

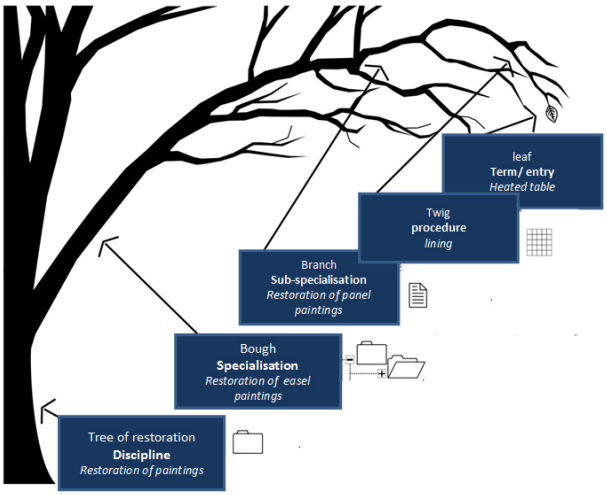

Fig. 3. The tree of conservation-restoration illustrates the hierarchic order of the dictionary in respect to the structural analogy of a tree, general hierarchy of scientific disciplines and the Windows file structure. It is illustrated with examples of terms showing their location in hierarchy.

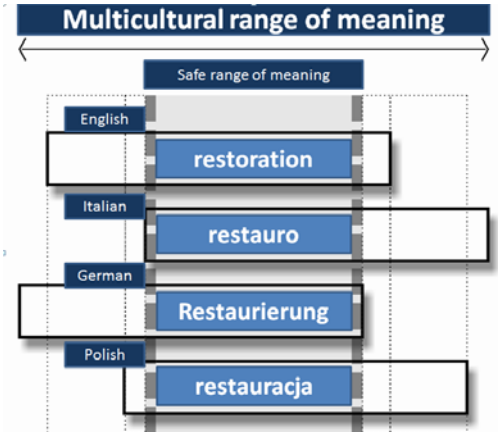

Fig. 4. When comparing terms in various languages, we note that there is a zone within which meanings overlap and areas where they do not, due to cultural and historical factors. This calls for cross-translation of agreed and accepted definitions, allowing a user to compare meanings across languages.

The concept of the "Safe Range of Meaning" resulted in yet another interesting solution implemented in ARD, which is a system of cross-translation of definitions. Knowing the definition of a term in one language, a user may learn to what extent it coincides with the understanding of a term in another language.

Results

Software

When building this new communication tool, modern techniques were applied to construct original software. Once the initial phase of the project was completed in 2010, the description of the prototype dictionary was published in a book accompanied by the database and associated interface software recorded on CD. It encompassed about 5 thousand terms in English translated to Polish, along with a set of biology terms translated to Latin and was arranged in 23 main chapters subdivided into sections and subsections. The software interface provides users with a search engine and a means to display entries and modify them. One of the unique features of the system is that any part of the dictionary (or the whole) can be quickly exported in MS Word format and thus it can easily be printed. This is a completely new facility amongst electronic dictionaries.

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Conclusion

As a prototype system, ARD helped reveal some of the difficulties within the initial concept. The central issue was whether it would be suitable for more than two languages and whether it is possible to find term equivalence within any number of languages. Within the few years since ARD was published in 2010, developments in technology have provided new options. With regard to translation, we still need to continue to develop tools to ease collaboration between nations and support the preparation of European Standards by the European Commission on restoration-conservation. The wide variety of outstanding issues related to this area proves the issue and the need for further enhancements.

In 2012 a team of two art restorers (Monika Bogdanowska and Andreas Komodziński) supported by two translators (Erik Kuipers and Catherina Squellice) set out to test this premise. Thanks to a grant they were able to expand and modify the initial database by translating it into German and Italian and added a new chapter for the restoration of wall paintings. The pending project - 'Multilingual Dictionary of Art Restoration', should be completed in 2015 and the final version of the dictionary will be made available online. It is intended that many terms will be visually illustrated, in order to improve clarity of meaning. In addition, there will be a forum to facilitate exchange of concepts and the discovery of equivalents between specialists of various disciplines and countries. When this phase of the project is complete, it is intended that other topics and languages will be added. We intend that this process of expansion will continue onwards towards the ultimate goal of the 'Interdisciplinary Multilingual Dictionary' (IMD), which will encompass all sciences and all languages.

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