



# The Object is a Unit of Knowledge

Heribert Picht

Copenhagen Business School<sup>1</sup>

## Summary

After an introduction containing definitions of the terminological entity ‘object’ from national and international standards, a classification of types of objects is suggested followed by a brief statement of the nature of objects and their forms of representation. Hereafter the question ‘what can we know about objects’ is posed and the different types of objects are described and illustrated by examples. Another central question is why knowledge about objects should be stored in a terminological databank (TDB). As it is argued, objects are units of knowledge and as such, they are central units in professional communication in an array of fields of knowledge such as history and architecture. Finally, possible data categories are proposed to meet the requirements of professional knowledge storage and transfer. In the conclusion, the main points of the paper are presented in summarised form.

## Introduction

In terminological literature the concept of ‘object’ has been treated rather superficially and only as a point of departure for the formation of concepts by abstraction. The definition in ISO 1087-1 “Terminology work – Vocabulary – Part 1: Theory and application” reads:

Object: anything perceivable or conceivable

Note: Objects may be material (e.g. an engine, a sheet of paper, a diamond), immaterial (e.g. conversion ratio, a project plan) or imagined (e.g. a unicorn).

DIN 2342 (Teil 1) states:

Gegenstand (auch: Objekt): Beliebiger Ausschnitt aus der wahrnehmbaren oder vorstellbaren Welt.

Anmerkung: Auch Geschehnisse, Sachverhalte und Begriffe können Gegenstände sein.

ÖNORM A 2704:2 reads:

Gegenstand: Ausschnitt aus der sinnlich wahrnehmbaren oder gedachten Wirklichkeit mit einer Menge von Eigenschaften.

Anmerkung: Gegenstände können zueinander in Beziehung stehen oder in Beziehung gebracht werden.

On page four the same standard states:

Gegenstände können konkret oder abstrakt sein. Konkrete Gegenstände sind entweder unmittelbar oder mittelbar mit Hilfe technischer Einrichtungen wahrnehmbar.

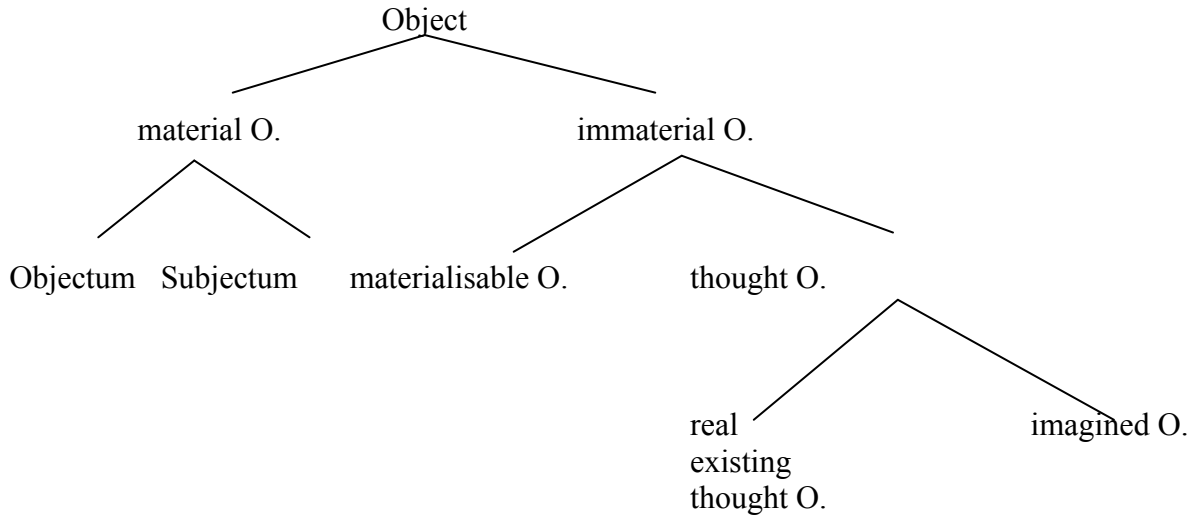
Beispiele für abstrakte Gegenstände: Zuverlässigkeit (z.B. in der Qualitätssicherung); juristische Person.

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<sup>1</sup> Professor emeritus

These definitions are rather general and do not cover satisfactorily the nature, the variety and the possible subdivisions of objects. For a critical review of the above definitions and notes see Picht (2004:314ff.).

Therefore, the following subdivision has been suggested:



*Fig. 1 (Picht 2004:317)*

For definitions of the above mentioned types of objects and further subdivisions of objects see Picht (2004:317ff.).

**The nature of objects and their forms of representation**

Objects must be considered as the ‘raw material’ for concepts created by abstraction. However, any abstraction process implies a reduction, which means that not all chunks of knowledge contained in an object will be transferred to a concept. Characteristics, the building blocks of a concept that are verbalised in a definition, are only those chunks of knowledge common to all objects covered by the concept. This fact implies that an object usually is much richer of chunks of knowledge than the corresponding concept. Therefore, instead of talking about ‘characteristics’ in connection with objects the concept of ‘properties’ is used as building blocks.

Moreover, an object cannot be defined. A definition is related to a concept and composed of verbally expressed characteristics, which emerge from the abstraction process. In order to represent the knowledge contained in an object, the only way of making the knowledge accessible is to ‘describe’ the object in question, i.e. to enumerate its properties.

Furthermore, a concept is linguistically represented by a term, whereas the object, on the contrary, by a name. In addition, both concepts and objects may be represented by other semiotic means than linguistic signs; see Laurén /Myking /Picht (2008) for other forms of representation.

## What can we know about objects?

To answer this question it might be helpful to consult the above fig. 1.

*Material or physical objects* lend themselves to observations made by the senses, i.e. a wine has a certain colour, taste and smell, a certain building has a unique shape, dimension, location, colour, etc., and a piece of clothing has a colour, texture, form, style, size, etc. In addition, all objects have certain properties which distinguish them from each other, although they are closely related, e.g. my oak-tree has a different height, shape, etc. than that of my neighbour. Summing up, our knowledge about material objects can be obtained by observation regardless of the number of observers.

Common for all immaterial objects is that the mechanism of observation has to be substituted by language or other semiotic means.

A *materialisable object* such as a house to be built can be verbally described by the architect to the building owner and/or explained by drawings or a model, although the house has still not been built yet and is therefore not a material object. The non-verbal representation can vary considerably according to different purposes. One may talk about synonymy, because the drawing still represents the same object (fig. 2a & b).

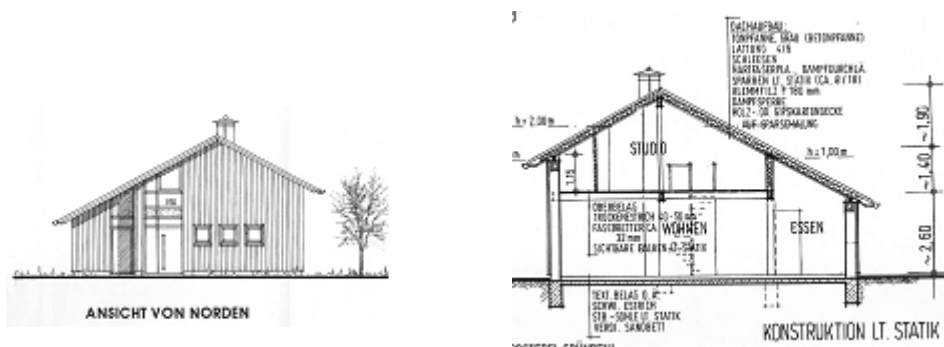


Fig. 2 a & b

A *thought object*, e.g. a new environmental tax invented by a politician, can be communicated only by verbal description of the properties the inventor has decided to equip his thought object with. The object exists only in his head. The fact that this object may be converted by a conceptualisation process into a proper concept later is irrelevant here. For conversions of this type see Laurén /Myking /Picht (1997:105).

A *real existing thought object*, e.g. a contract between A and B (we are not referring to the document as a material object), contains all necessary properties fixed in verbal form. It has no physical existence, however, but exists in the real world with all its legal effects and consequences.

*Imagined objects* do not exist in the real world. They are the products of human imagination only. They may have a proper name, e.g. 'Odin' or 'Grail', and, depending on the figurative imagination of human beings, several of the imagined objects have a non-verbal form of representation. Here we must distinguish between figurative non-symbolic (a), figurative

symbolic (b) and mere symbolic forms of representation (c). Fig 3 a – c presents an example of each category, respectively.



Fig. 3a



Fig. 3b



Fig. 3c

### Why store knowledge about objects in terminological databanks (TDB)?

It is obvious that not all objects of the world are of interest; only very few of all objects have names or other representations. For instance, all the grains of sand of the Sahara are objects, but none of them is ‘registered’ with a name nor as a unit of knowledge.

One may argue that there is hardly any need for storing objects in a TDB because encyclopaedic works and the internet contain lots of information about objects. However, if we consider objects units of knowledge belonging to corresponding subject fields, we will find that considerable numbers of objects compose the knowledge of certain subject fields. For example in history, although there are many theoretical concepts and others related to empirical research and didactics, most of the units of knowledge are objects (persons, events, treaties, etc.). No reasonable professional communication would be possible without knowledge about these objects – history would just be an empty theoretical and methodological framework without content. Other subject fields such as music, archaeology, geology, cartography, architecture – just to mention some of them – have similar characteristics with regard to their units of knowledge.

Moreover, taking the multilingual professional communication in consideration, many of the names of objects are quite different in different languages, e.g. :

Regensburg (de)		Ratisbone (en)	–	Ratisbona (es)
Aachen (de)		Aix-la-Chapelle (fr)	–	Aquisgrán (es)
Fyn (da)	–	Fünen (de)	–	Fionia (es)
Karl der Große (de)	–	Charlemagne (en)	–	Carlomagno (es)
Norge (no)	–	Norway (en)	–	Norwegen (de)
Goldene Bulle (de)	–	Golden Bull (en)	–	Bula de Oro (es)
Reichsdeputationshauptschluss (de)	–	Principal Decree of the Imperial Deputation (en)		

Some of the names are just literal translations, however, others are not and it seems rather unpredictable whether a literal translation of a name is acceptable or a proper name exists in a given language. Equally unpredictable is the case of adopting the written form of a name unaltered or not, e.g.

London (en) – London (de) – but Londres (es)

The uncertainty of how names are rendered in other languages justifies a multilingual approach to objects in a TDB.

### **Possible data categories for objects in a TDB**

The ISO standard 12620 “Computer applications in terminology – Data categories” does not contain data categories appropriate for the representation of objects – the focus is merely on the classical terminological units, i.e. the concept, concept representation forms such as the term, definition, explanation, illustration, etc., concept relations, concept classification and administrative data categories.

In order to represent objects the following data categories are proposed as an addition for storing object knowledge:

*Name.* In accordance with the architecture of the record, the name is rendered in all languages of the TDB.

*Synonyms:* If synonyms in one or more of the represented languages exist, they have to be stored with indications of use.

*Description:* Since objects cannot be defined but only described, the description should contain the most central properties of the object. However, the choice of properties and the depth of description (degree of precision) depend on the purpose of the TDB and the requirements of the users.

*Illustration:* Since material and immaterial objects can have graphic nonverbal representations with high explanatory and didactic value, this data category is of special relevance. The selection of graphic representations should be made according to the purpose, i.e. the expected users and their pre-knowledge. Moreover, multiple representations (e.g. different angles, enlargement of certain parts, etc.) or even an animation support the understanding (= knowledge transfer) of a verbal description considerably.

Maps can take over parts of verbal description and will often be much more precise than verbal descriptions. When describing the First Partition of Poland an illustration (fig. 4) provides a much clearer idea of the changed state of affairs than what can be rendered from a verbal statement. Apart from the precise new borders, political implications can be deduced (who is neighbour to whom? Portion and proportion of territory lost. Location of the losses, etc.). About the function of maps, see also Picht (2006).



Fig. 4

*Relations:* Since objects are not the products of abstraction, no generic (logical) relations between them can exist. The types of relation to be expected when ordering objects in ontologies are primarily partitive, causal, temporal and sequential. These relations cannot be separated neatly from each other, as the following example will show.

The different phases of the Thirty Years War can be considered from a temporal and sequential point of view. Sequence and time are then the main criteria of ordering. However, it is also possible to order the phases according to causal relations and thus to put reasons for actions and their effects, which again might be the reasons for further actions in the centre of the ordering criteria. Even parts, e.g. different territories involved, can be related. The parties/persons engaged are also related to each other.

How many and what kind of relations are required to make the ordering structure of objects visible – and for what purpose – is not very well researched. The relations mentioned above are only based on empirical observations.

*Notations:* It seems advisable to design other notations than those used in concept systems in order to distinguish object ordering from concept ordering and make the difference visible already in the notation.

## Conclusion

From the above we can conclude the following:

- The concept of ‘object’ is only superficial and insufficiently treated in terminological literature. Basic research is still required in order to eradicate incongruities in definitions even in standards as DIN 2342, e.g. an object is not a concept’.

- Objects are units of knowledge in line with concepts. Therefore, they have to be included in knowledge-rich TDBs, which aim at storing the knowledge of a subject field or parts of it.
- The quantitative distribution of objects and concepts in a given subject field varies considerably according to the nature of knowledge of the subject field.
- Objects can be of a rather different kind, which greatly conditions the non-verbal, graphic forms of representation.
- Objects are verbally represented by names, which can vary in different languages; therefore, a multilingual design of a TDB is required.
- Objects cannot be defined but only described based on their properties – properties are not characteristics.
- The representation of objects in TDBs requires special data categories until now not included in national or international standards or other documents on terminological data categories.

## References

- DIN 2342 Teil 1 (1992) *Begriffe der Terminologielehre. Grundbegriffe*. Berlin: Deutsches Institut für Normung e.V.
- ISO 1087-1 (2000) *Terminology work – Vocabulary – Part 1: Theory and application*. Geneva: ISO.
- ISO 12620 (2000) *Computer applications in terminology – Data categories*. Geneva: ISO
- Laurén, Christer /Myking, Johan /Picht, Heribert (1997) *Terminologi som vetenskapsgren*. Lund: Studentlitteratur.
- Laurén, Christer /Myking, Johan /Picht, Heribert (2008) *Insikter om insikt*. Oslo: Novus.
- ÖNORM A 2704 (1990) *Terminologie. Allgemeine Grundsätze für Begriffe und Bezeichnungen*. Wien: ÖNORM
- Picht, Heribert (2004) Überlegungen zum Gegenstand und zum Begriff in der Terminologie. In: Baumann, Klaus-Dieter /Kalverkämper, Hartwig (Hrsg.) *Pluralität in der Fachsprachenforschung*. Tübingen: Gunter Narr . 313-340.
- Picht, Heribert (2006). Knowledge representation by Maps in Historiography. In: Nölke, Henning et al. (eds.) *Grammatica. Festschrift in honour of Michael Herslund*. Bern/Berlin/Bruxelles: Peter Lang. 405-419.