

PIUS TEN HACKEN

## TERMS BETWEEN STANDARDIZATION AND THE MENTAL LEXICON

**A b s t r a c t.** Classical terminology, as reflected in the works of Eugen Wüster, assumes that the meaning of terms should be delimited precisely. Prototype theory can be seen as an existential threat to this approach, because it assumes that there is a gradual transition from clear instances of a concept to non-instances, without a natural cut-off point. The discussion of terms from a variety of different domains suggests that we should distinguish two types, called here *terms in the narrow sense* (TiNS) and *specialized vocabulary*. For specialized vocabulary, it is not a problem that concepts have a prototype structure. For TiNS, a clear delimitation of the meaning is required.

The introduction of TiNS as a special kind of term raises the question of their status as linguistic objects. For a word, there is no purely empirical basis to determine whether it exists as a word of English (or any other language), because neither English as a language nor any of its words are empirical entities. They exist as theoretical generalizations about speakers' competence. TiNS are different. They are argued to exist as abstract entities in the same way as pieces of music.

**Key words:** sound symbolism; sound schema; meaning patterns; intensity; number of syllables.

The study of terminology has for much of its history been rather detached from the study of linguistics. Eugen Wüster (1898-1977) is often seen as the founder of classical terminology. In his posthumous overview, Wüster (1979) emphasizes the difference between terminology and linguistics quite explicitly, but in earlier works, starting with Wüster's (1931) PhD thesis, the same attitude transpires. Given Wüster's influence on TC37, the Technical Committee for terminology in ISO, the International Organization for Standardization, and its predecessor ISA, these views dominated terminological standardization for a long time and are still influential.

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Prof. Dr. PIUS TEN HACKEN — Institut für Translationswissenschaft, Leopold-Franzens-Universität, Innsbruck; address for correspondence: Herzog-Siegmund-Ufer 15, A-6020 Innsbruck; E-mail: [pius.ten-hacken@uibk.ac.at](mailto:pius.ten-hacken@uibk.ac.at)

Since the 1930s, many theoretical ideas have emerged in linguistics that are significant for terminology, but were not taken into account in classical terminological theory. This has subsequently led to criticism and rejection of Wüster's approach, e.g. by Temmerman (2000). In this paper, I will indicate how some key notions of Wüster's thought can be saved and updated in the light of more recent linguistic ideas. Section 1 gives an overview of the linguistic ideas I consider essential in this context. Section 2 explores some terminology from one domain, cheese-making. Section 3 gives further examples of terms in a number of other domains. Section 4 explains the main insights about the nature of terms that can be derived from these examples.

## 1. WORDS, TERMS AND CONCEPTS

Terms are names for concepts used in specialized domains. Standardization of such names has long been recognized as useful for the communication in such domains. Wüster (1931) argues for international norms for terms in technical domains. In the 1930s, linguistics was dominated by views that considered individual languages and words as the main objects of study. One of the foundational texts of the Prague School of linguistics, *Thèses* (1929), devotes a substantial portion to the standardization of languages.

Two important innovations that have an impact on this model of terminology are Chomsky's (1965) introduction of the distinction between competence and performance and Rosch's (1978) prototype theory of word meaning. The impact of the latter is immediately obvious. Whereas standard terminological definitions characterize a concept by delimiting its boundary, prototype theory holds that there is no specific boundary for natural concepts. Labov (1973) demonstrated this for *cup*. Asking different speakers whether a particular object was an instance of this concept, Labov received clear answers for more prototypical cases and less clear ones for marginal cases. Most importantly, there was no natural cut-off point, but only a gradual decline.

The relevance to terminology of the distinction between competence and performance is more subtle. In a situation where two people speak to each other, the performance is the sound they produce and the competence the knowledge of language that enables them to produce and interpret this sound. Chomsky (1965) makes two points that were crucial in determining

the subsequent direction in linguistic research. First, he observes that performance is based on but not determined by competence. Many other factors are involved as well, and the actual performance reflects their interaction, which is so complex that there is no general, straightforward way to derive insight into a speaker's competence by observations of their natural performance. Secondly, a speaker's competence is an empirical object. It emerges naturally from language acquisition and although it may be difficult to observe its properties, the properties exist independently of the observation.

An interesting consequence of the model based on competence and performance is that languages such as English, Polish and Dutch are not empirical entities. As explained by ten Hacken & Panocová (2011), this constitutes a move away from Saussure's (1916) model, which involved a concept of *langue* that is social rather than individual. It is only with Chomsky (1976) that we find an elaboration of this consequence of the assumption of competence as an individual property. Ten Hacken (2007, 274–281) presents and evaluates some of the evidence adduced by Chomsky.

In the context of terminology, the main focus is on the nature of words. An example of a question that cannot be answered empirically in Chomsky's model is (1).

- (1) Is *impossible* a word of English?

When we consider how to answer (1), there are three possible ways. Perhaps the first thought for many non-linguists is to consult a dictionary. For English, OED (2018) is the obvious place to look. In fact, there is an entry for *impossible*. As argued in ten Hacken (2012), however, the decision whether to include a word in the OED or not cannot be a purely empirical one. In particular, it cannot be an automatic consequence of an observation that the word exists in English. Instead, it must be based on performance and competence. Lexicographers use corpora which reflect a broad range of performance to support their decisions. However, corpora may contain errors. Therefore, lexicographers must also use their linguistic competence. They not only think of their own judgements when deciding whether the occurrence is an error or the reflection of a word in competence, but also have to judge whether the originator of the example in the corpus might have considered it correct or not. The use of examples from the corpus is a way for the lexicographer to justify their decision. However, the examples do not prove the existence.

In sum, (1) is not an empirical question. Words do not exist in named languages, but only in individual speakers' competence. In a corpus, they do not exist as combinations of form and meaning, but only as forms. The meaning only comes into existence when a speaker interprets the word. Any answer to (1) must be based on authority.

The distinction between competence and performance and the hypothesis that natural word meanings are prototype-based emerged in a context of linguistics as an empirical science. The purpose of an empirical science is to explain (aspects of) the outside world by describing an underlying model. Wüster had a more utilitarian perspective. Language is a device for communication and standardization is a way of facilitating successful communication in specialized contexts. In this context it is interesting to note that Wüster was active in the Esperanto movement and published an Esperanto-German dictionary that is still in print. Whereas for Saussure, the *langue* is at the same time mental (hence individual) and social, Wüster focuses only on the social aspect. Words are elements of a language learned by its speakers. This language as well as the words in it are conceived of as existing independently of the speakers. Fuzziness in the meaning is then a consequence of imperfections in individual speakers rather than an inherent property of words.

Given the apparent incompatibility of classical terminology and some basic assumptions in modern linguistics, the questions in (2) arise.

- (2) a. To what extent and how is it possible to reconcile classical terminology and modern linguistics?
- b. To what extent is it worthwhile reconciling the two?

Temmerman (2000) argues that classical terminology is no longer adequate. This amounts to negative answers to both questions in (2). Here, I will propose first an argument for (2b), then a model for (2a).

## 2. TERMS IN THE DOMAIN OF CHEESE-MAKING

Whereas words can be modelled as a combination of form and meaning, as in Saussure's (1916) *signe*, or phonological, syntactic and conceptual structure, as in Jackendoff's (2002) Parallel Architecture (PA), terms cannot be described without specifying in addition their domain. As a first example of a domain, I take cheese-making.

Being Dutch, the most prototypical cheese for me is Gouda. It should be noted that prototypes are not language-specific, but rather culture-specific and ultimately speaker-specific. Gouda cheese is produced in a process that involves a number of stages, different ingredients and a variety of actions. Many of these are not familiar to non-specialists. One of these ingredients is what is called *zuursel* in Dutch, *rennet* in English. When we look up *zuursel* in van Dale (1992), we find (3).

- (3) cultuur van melkzuurbacteriën, voor de boter- of kaasbereiding bij de melk gevoegd  
‘culture of lactic acid bacteria, added to the milk in butter or cheese preparation’

It is worth considering exactly what (3) states and how this determines the substance. The first part of (3) gives a hyperonym, classifying the substance, the second part indicates the purpose. As such, the definition in (3) is adequate for giving a broad understanding of the meaning of *zuursel*, but it does not specify the conditions that would enable one to determine whether something is *zuursel* or not. Terminologically, (3) is hardly sufficient. Given the nature of the source, this is not surprising. Van Dale (1992) is a large dictionary, three volumes containing 3900 pages together, but it is a general dictionary, not meant as a terminological resource.

For the English *rennet*, we first of all find that OED (2018) gives three different entries. Apart from the reading corresponding to *zuursel*, *rennet* can also be used for a variety of apples and for a tool to remove putrid matter from a horse’s hoof. This illustrates the importance of the domain specification for a term. For the cheese-making term, OED (2018) gives (4) as a definition.

- (4) Curdled milk from the abomasum (fourth stomach) of an unweaned calf or other ruminant, containing rennin and used in curdling milk for cheese, junket, etc. Also: a preparation of the inner membrane of the abomasum used similarly.

It is interesting to compare (4) to (3). Whereas (4) gives a lot more detail about the substance, it is probably much harder to understand than (3). In (4), OED (2018) uses further terms in the definition. Still, (4) does not specify conditions for identifying the substance unambiguously. There are two coordinated participles, *containing* and *used* in (4). The fact that they are coordinated suggests that they have the same function. For *containing rennin* it is not clear whether this is a further condition or a piece of back-

ground information which does not restrict *curdled milk*. For the phrase with *used*, we have to assume that it is background information and not a necessary condition, because the curdled milk does not only become rennet when it is used in a particular way. Moreover, the phrase ends in *etc.*, which makes it impossible to apply it as a condition.

Whereas van Dale (1992) is a general dictionary, OED (2018) is a historical dictionary. This explains that (4) pursues a different strategy to (3). Whereas (3) is directed to a more general group of users, (4) aims at a more scholarly user type. Neither is intended to be a terminological definition that specifies conditions for determining whether something is rennet (or *zuursel*) or not.

The question is, now, whether (3) and (4) are inadequate as definitions. If we take *zuursel* and *rennet* as prototype-based concepts, the definitions fulfil the function of identifying the concept to different degrees. The use of the substance plays an important part in this identification. In order to be used in the intended way, the substance has to have certain chemical properties which presumably can be explained on the basis of a particular chemical composition. Would a definition specifying this chemical composition be better?

Before turning to the answer, let us consider a different type of term in cheese-making. Gouda cheese has to mature to develop its taste. Different stages of maturation are indicated by the labels in (5).

- (5)
- |                  |                            |
|------------------|----------------------------|
| a. jong          | (‘young’)                  |
| b. jong belegen  | (‘semi-matured’)           |
| c. belegen       | (‘matured’)                |
| d. extra belegen | (‘extra-matured’)          |
| e. oud           | (‘old’)                    |
| f. overjarig     | (‘more than one year old’) |

Some of the terms in (5) are very common words, especially (5a) and (5e), others, e.g. (5c), are more specialized. However, also (5c) has other, non-specialized senses. A *belegen bed* is a bed that has been slept in (since the sheets were changed). For the relevant sense of *belegen* in (5c), van Dale (1992) gives the definition in (6).

- (6) lang of een voldoende tijd gelegen hebbend  
 ‘having lied for a long or sufficient time’

Examples given for (6) start with *kaas* ('cheese'), but also include *bier* ('beer'), *sigaren* ('cigars') and *touw* ('rope'). The entry for *matured* in OED (2018) is similar, but it does not refer to cheese at all. This is a reflection of the prominence of the relevant concept in Dutch culture.

The strategy pursued in the definition of *belegen* in (6) is the same as the one we saw in (3). In both cases, a general characterization is given that enables the dictionary user to get an impression of the concept. As argued in ten Hacken (2009), this is exactly what a dictionary should do. In particular, it cannot be a description of the vocabulary of a language. The difference between (3) and (4) is mainly that they assume different types of user.

From a terminological point of view, however, (6) is inadequate in a way that (3) and (4) are not. If something is sold as rennet which does not work properly, it is just a poor product. If Gouda cheese is sold as *belegen* without having matured for long enough, it should probably fall into a different category, e.g. *jong belegen*. Given that keeping cheese in a warehouse for maturation is expensive, *belegen* cheese is more expensive than *jong belegen*. Therefore, cheese producers want to sell their cheese as *belegen* as soon as possible.

Maturation is a gradual and continuous process. If a cheese has matured one day more than another, it is unlikely that anyone except perhaps a trained expert is able to taste the difference. In a world in which competing cheese producers want to maximize their profit, there is a strong pressure to sell cheese as *belegen* one day earlier. As soon as one competitor does this, however, the temptation to subtract another day from the maturation period is strong. This is an iterative process. Without proper regulation, the labels in (5) would be all but meaningless in a short time.

The situation in (5) is crucially different from the one for rennet. Economic pressure in the case of rennet is towards getting the best product for the lowest price. In fact, (4) mentions another way to arrive at rennet. How rennet is produced does not matter too much, as long as the desired effect is obtained. The pressure is then towards the prototype. For the terms in (5), however, the overwhelming pressure is towards selling cheese at an earlier stage with the particular label. In (5), the pressure is away from the prototype.

In a situation such as (5), a boundary has to be specified in order to protect the concept. Specifying such a boundary changes the nature of the concept dramatically. Whereas for *zuursel*, the prototype gradually veers off towards marginal instances, setting a boundary means that two discontinuous

classes are created. Gouda cheese is either *belegen* or not. Zuivelonline (2018) gives four months as the minimum maturation period for *belegen* Gouda and seven months as the minimum for *extra belegen*.

Two consequences of this specification of the boundary are prominent. First, for every cheese it is in principle possible to get a clear answer as to whether it is *belegen* or not. Cheese that has matured one day less is *jong belegen*, not *belegen*. Second, the prototype is abolished. Every cheese between four and seven months of maturation is *belegen* to exactly the same degree. It is only the boundaries that count, not the position in between these boundaries.

The practical consequences of this change of concept type can be seen in Wikipedia.nl (2018, Kaas). Here the maturation period for *belegen* is given as 16–18 weeks and for *jong belegen* as 8–10 weeks. No cheese is sold with a maturation of 11–15 weeks, because it would not be economical. It would have to be sold as *jong belegen*, but it has matured unnecessarily long. For similar reasons, more or less all *belegen* kaas sold is within the first two weeks of the period of legitimate use of this maturation label.

In ten Hacken (2008), I introduced different labels for terms like *zuursel* and terms like *belegen*. The former, which retains its natural prototype structure, is a case of *specialized vocabulary*. The latter, which has a precise boundary and no prototype, is a *term in the narrow sense* (TiNS). Ten Hacken (2015) elaborates this distinction.

### 3. FURTHER EXAMPLES FROM VARIOUS DOMAINS

As mentioned at the start of section 2, a crucial feature of terms is that they are domain-specific. In this section, I will present and discuss a number of terms from different domains in order to illustrate the variety of terms.

#### 3.1. MUSICAL INSTRUMENT MAKING

Musical instruments are highly complex technical devices. In the case of string instruments, their refinement is the result of centuries of gradual development. Techniques were passed on from master to apprentice over generations. This is reflected in the nature of the terminology involved.

As an example of a term, I will discuss *bridge*. Fig. 1 and Fig. 2 illustrate the concept.





Fig. 1: Bridge on a three-quarter cello.  
Photo by Michael Maggs, Wikimedia Commons



Fig. 2: Violin bridge before it is mounted to an instrument.  
Photo M. Kuhlberg, Wikimedia Commons

In Fig. 1, the bridge is the part in lighter wood that stands up from the case of the instrument and supports the strings. Fig. 2 illustrates the part in isolation. The name *bridge* is probably a rendering of Italian *ponticello*, a diminutive of *ponte* ('bridge'). The shape reminds one of the kind of small bridge found in a park. Many terms relating to violin playing and building have spread from Italian to other languages. However, Dutch has *kam* (lit. 'comb') and Polish *podstawek* (lit. 'base'). In Dutch, the shape is likened to the kind of comb used to fashion a woman's hair in the 17<sup>th</sup> century. The Polish word refers to the function.

The meaning of *bridge* is clearly a prototype-based concept. There is no reason and no procedure to delimit what constitutes a bridge. As illustrated in Fig. 1 and Fig. 2, indicating an example of the concept is the best way to identify it. At the same time, the expression is highly specialized. A translator who renders *bridge* as part of a violin in Italian as *ponte* or in Dutch as *brug* ('bridge') will produce a target text that is at best unprofessional, at worst incomprehensible.

*Bridge* is a typical example of specialized vocabulary. Terms of this type are frequent in all technical fields that involve skilled manual work.

### 3.2. FOOTBALL

As a sport, football is a universe of its own. During a match, the interpretation of actions and events is determined by rules that are not valid outside of this universe. In general, the rules of a sport determine the goal and the permissible means. Both the goal and the constraints on the means are artificial.

In football, a rule that illustrates the artificial nature of the constraints in the game very well is the offside rule. This rule was meant to discourage the tactics of posting one attacker close to the opponents' goal so that he could pick up any balls to be kicked forward indiscriminately when the opponents' team was in the attack. The offside rule prohibits such an attacker to receive a ball. Crucial in the application of this rule is the definition of *offside position*. A definition is (7).

- (7) A player is in an offside position if:
- a. The player is in the opposing team's half of the field.
  - b. The player is closer to the opposing goal line than the ball is.
  - c. There are one or zero opposing players between the player and the opposing goal line.

As the concept of *offside position* is artificial, it only comes into existence when it is defined. Each component of the definition can be determined freely. Thus, until 1925, there had to be at least three rather than two defenders (typically including the goal keeper) between the player and the goal line. The reason for changing the rule was to make the game more attractive by having more goals. The desired effect was achieved.

Another aspect of the rule is that, once it exists, teams will exploit it. Players will not only try to avoid being offside, but also try to catch

opponents in the so-called *offside trap*. As a consequence, (7) is no longer sufficiently specific. IFAB (2017, 93) gives the definition in (8).

- (8) A player is in an offside position if:
- a. any part of the head, body or feet is in the opponents' half (excluding the halfway line) and
  - b. any part of the head, body or feet is nearer to the opponents' goal line than both the ball and the second-last opponent.

In (8), it is taken into account that players are not points. (8a) specifies (7a) and (8b) combines (7b-c). The rules further specify that hands and arms are not considered and that there is no offside position when the player is level with the second-last opponent or the last two opponents. It should be noted in addition that being in an offside position is not equivalent to committing an offside offence, cf. IFAB (2017, 93–95).

An issue with terms such as these is that they rely on an authority. For football, the authority is the *International Football Association Board* (IFAB). In the case of sports, the authority of such bodies exists because players and officials accept it. It is the IFAB which determines what is football and the players know that if they do not accept the rules imposed by IFAB, they do not play football.

Given the emphasis on the boundary imposed by (7) and (8), it is obvious that *offside position* is a TiNS. Although it is possible to be more or less offside, this does not have any significance. The fact that *offside position* is a TiNS does not imply that all terms in football are TiNS. A counterexample is *offside trap*. There are no specific rules about the offside trap, only about offside position and offside offence. Although it is useful to talk about the offside trap in sports commentaries or match preparations, there is no reason to determine its exact boundary. Therefore, *offside trap* is an item of specialized vocabulary.

### 3.3. ZOOLOGY

As an example of a scientific domain, I will take the domain of zoology. A characteristic feature of zoology is that it includes many terms that are also in use as common words. Among names of classes of animals, this double use of the same expressions is particularly widespread. I will discuss *bird* as an example.

In general language, *bird* is a prototype-based concept. The prototype depends somewhat on cultural background. For me, the house sparrow is the prototypical bird. In such a concept, the effects of the prototype nature of the meaning can be observed very well. A blackbird is more prototypical than a chicken or an eagle. OED (2018, *bird* 2a) observes that historically and in many English dialects, *bird* is used in contrast to *fowl*, where the former refers to smaller, the latter to larger species. Chickens and eagles are still more prototypical than penguins and ostriches, for which we will have to learn that they are birds, although they do not look or behave like typical ones.

The prototype-based concept of *bird* is determined by a variety of properties associated with the prototype. Prominent features include flying, building nests and laying eggs. Also the size, the song and having a beak for picking seeds as food are typical features. Chickens are less typical because they are larger and they are domestic animals. Eagles are less typical because they are predators and do not sing. Penguins and ostriches are atypical because they do not fly.

The reason why zoology as a science has to define *bird* is that claims of the type exemplified in (9) have to be tested.

- (9) a. Birds first appeared in the Early Cretaceous.  
 b. Birds descend from dinosaurs.  
 c. The dodo is an extinct species of bird.

The claims in (9) exemplify some types of claim that are common in zoology. (9a) is a claim of evolutionary history, (9b) of evolutionary relations, and (9c) of classification. In order to evaluate such claims, the concept of *bird* has to be defined precisely. An often-used definition is the one in (10).

- (10) A bird is an animal that is  
 a. vertebrate,  
 b. warm-blooded and  
 c. feathered.

The formulation in (10) deliberately spells out the intermediate decision points and lists them separately. For instance, as all vertebrates are animals, it would be possible to take *vertebrate* instead of *animal* as the hyperonym. Now we can say that (10a) excludes, for instance, insects, (10b) fish, amphibia and reptiles, and (10c) mammals.

It is striking that the criteria in (10) are not among the properties of prototypical birds listed earlier. As is typical of strong natural concepts, the choice of criteria only has an effect on boundary cases. By not including flying as a criterion, penguins and ostriches can be birds. We also have egg-laying mammals (platypus) and flying mammals (bat), because these animals, while sharing some prototypical bird-like characteristics, are haired and not feathered.

The selection of criteria in (10) is generally agreed on by zoologists. For more detailed classifications, e.g. subclasses of birds, competing theories are still being discussed. With the definition in (10) and similarly specific definitions for the other terms they mention, the claims in (9) can be evaluated. The discussion about the selection of criteria depends on the desirability of the consequences such a definition has for the evaluation of claims involving the concept.

#### 3.4. ASTRONOMY

As a second example of a term in a scientific domain, I propose to look at *planet* in astronomy. Given the interest in the development of astronomic knowledge and theories, the history of this term is documented better than average. I would like to focus on two terminologically significant changes, one in the mid-nineteenth century, the other in 2006.

After the acceptance of a heliocentric model, i.e. after Nicolaus Copernicus (1473–1543) and Johannes Kepler (1571–1630), the planets were Mercury, Venus, Earth, Mars, Jupiter and Saturn. In 1781, William Herschel discovered Uranus. The barrier to this discovery was not so much technical, but rather intellectual, illustrating the point made by Margolis (1993). Once it was accepted that it was possible to discover new planets, new discoveries followed each other quickly. In a first wave, a collaborative effort of astronomers, the *Himmelspolizey*, discovered Ceres, Pallas, Juno and Vesta between 1801 and 1807. Afterwards, there was a break caused by a temporary shift of attention. From 1845, however, every year at least one new planet has been discovered.

So far, the meaning of *planet* had been taken to be obvious. A planet is a celestial body in orbit around the Sun. Ceres, Pallas, Juno and Vesta were unusually small for a planet. This was the same for most of the planets discovered since 1845. An exception was Neptune, discovered in 1846. In 1851, the *Berliner Astronomisches Jahrbuch* proposed to reserve the name

*planet* for the classical planets, Uranus and Neptune, and to call the smaller celestial bodies, mainly concentrated in the space between the orbits of Mars and Jupiter, *asteroids*.

The introduction of a new conceptual distinction raises the question of how to determine the boundary between the two concepts. There was not much discussion about this. Asteroids were small and occurred in a particular space. The diameter of the smallest planet, Mercury, is approximately 4879 km and of the largest asteroid, Ceres, 946 km. There was no point in making this boundary more specific.

Discoveries that put this model in question again started in the 20<sup>th</sup> century. On one hand, they included transneptunian objects. The first of these was Pluto, discovered in 1930. It was classified as the ninth planet. From 1992, however, ever more of these objects, smaller than regular planets and further away from the Sun, were discovered. Currently, more than 2000 are known. They are of various sizes and the question arose to what extent they should be considered planets. Their position does not make them good instances of asteroids, but all of them are significantly smaller than Mercury. Pluto has a diameter of approximately 2376 km, placing it close to the middle of the range between Mercury and Ceres.

Another phenomenon that required a reconsideration of the concept of *planet* was the discovery of exoplanets, planets of other stars than the Sun. The first exoplanet was discovered in 1988 and currently more than 3000 of them are known. Obviously, they do not meet the condition of being in orbit around the Sun, but it would be arbitrary to insist on this condition if they are otherwise similar.

In view of these developments, the International Astronomic Union (IAU) decided at its 2006 Congress to adopt a formal definition of *planet*. Although the formulation adopted was for planet in the Solar System, the conditions are straightforwardly generalizable to include exoplanets in their scope. The size is not referred to as a precise diameter, expressed in km, but as having a mass that is sufficient to result in a nearly round shape because of self-gravity. This excludes most asteroids, but not Ceres. A further condition that the celestial body “has cleared the neighbourhood around its orbit” (IAU 2006) excludes not only Ceres and other remaining asteroids, but also Pluto and other transneptunian objects.

What is striking about the history of the definition of *planet* is the degree to which further specification is driven by new discoveries. On one hand, new discoveries trigger the need for a stronger definition. On the other hand,

a definition can be left underspecified when no objects are known that would be concerned by a further specification.

#### 4. TERMS AS LINGUISTIC OBJECTS

The central questions formulated at the end of section 1 concerned the possibility and desirability of reconciling modern linguistic insights concerning the nature of words with classical terminology. In section 2, I argued that we should first of all distinguish specialized vocabulary and terms in the narrow sense (TiNS). Let us now consider how the case studies in sections 2 and 3 can be analysed from linguistic and terminological perspectives.

Examples of specialized vocabulary include *rennet* in cheese-making and *bridge* in the making of string instruments. With their prototype-based meanings, these terms can be considered normal words from a linguistic perspective. The only difference to general-language words such as *cheese* and *violin* is that there are fewer people who know them. From a terminological perspective, the domain-specific nature of the form-meaning combinations implies that it is still worthwhile describing them as terms. Standardization can be performed at the level of form. It is still worth recording that in violin-making the Dutch equivalent of *bridge* is *kam*, not *brug*, despite the fact that for general language *brug* means ‘bridge’ and *kam* means ‘comb’. Also monolingually, it is worth recording the names of parts and actions to be performed on them in technical fields. Much of the terminological work of Eugen Wüster’s is devoted to such recording and Arntz et al. (2014) give many examples of this type of work.

For TiNS, the situation is different. Whereas definitions of specialized vocabulary items describe the concepts they name, definitions of TiNS delimit the concepts. We have seen four examples of TiNS, *matured* in cheese-making, *offside position* in football, *bird* in zoology, and *planet* in astronomy. They have in common that there is a need to take a decision on the classification of borderline cases. This requires an authority. However, the authority does not directly address the borderline cases, but sets up explicit criteria for deciding. These criteria constitute the definition. The authority is transferred from a person or group of persons to the definition they endorsed. The question arises, then, what is the linguistic status of such definitions.

The definition of a TiNS is higher in status than any individual speaker's intuition. This can be verified because any speaker's competence can be evaluated as to, for instance, whether their conception of *offside position* is correct. In its interaction of individual competence and performance with an authoritative norm, a TiNS can be compared to a piece of music.

When Beethoven wrote his fifth symphony, he must have had the piece in his mind in order to write it down in the score. His competence is what enabled him to produce the score as his performance. Conductors and orchestras take the score to play the symphony. The conductor's and players' competence enables them to build up a mental representation of the symphony on the basis of the score and produce the orchestral sound as their performance. Someone listening to the orchestra's performance uses his or her musical competence to build up a mental representation of the symphony, which corresponds to understanding or knowing it.

Each of these stages has a parallel in terminology. The authority formulating a definition is like the composer. Crucially, by formulating the definition, the authority is no longer necessarily directly involved. One can play a symphony without asking the composer, as one can apply a definition without consulting the authority that formulated it. In this sense, using a TiNS in a text corresponds to performing a piece of music. Reading such a text and understanding the TiNS corresponds to the activity of the audience in listening to a musical performance.

While this representation settles the question of how a piece of music and a TiNS work in practice, it does not specify where they reside. Lerdahl & Jackendoff (1983, 2) argue for the answer in (11) in the case of a piece of music.

- (11) “[A] piece of music is a mentally constructed entity, of which scores and performances are partial representations by which the piece is transmitted.”

The point of (11) is that the score and the performance are derived from the piece. To the extent someone knows the piece, they have constructed a representation of it. However, the piece is not equal to this representation. This is the same for a TiNS. The TiNS exists in a way that does not depend on the individual knowledge of specialist speakers. If such a mode of existence is possible for a piece of music, it must be possible also for a term. A TiNS is created by an authority by means of a conscious act. After its creation, it is a speaker-independent object.



A comparison of the four examples of TiNS discussed in sections 2 and 3 shows that there is a further distinction between two types, which I will call *legal terms* and *scientific terms*. Legal terms are TiNS for which the delimitation of the concept is required in order to apply rules. Examples are *matured* in cheese-making and *offside position* in football. Scientific terms are TiNS for which the delimitation of the concept is required in order to discuss theories. Examples are *bird* in zoology and *planet* in astronomy.

The distinction in the motivation of the delimitation also causes characteristic differences in the creation, use and maintenance of the boundaries imposed by the definition. For legal terms, it is generally accepted and often considered desirable to impose boundaries in advance of their use. This means that when there are different alternatives or a precise boundary has to be imposed in a continuum, the choice can at least to some extent be arbitrary. At the time of specification, there may be few or no data justifying the exact location of the boundary. For scientific terms, it is generally preferred to wait for more evidence in such cases and it is acceptable that there are some instances for which the position with respect to the concept in question is indeterminate. In the 1990s and up to 2006, there was an increasing set of known astronomic objects for which it was not clear whether they should be classified as *planet* or not. This increased the pressure to tighten the constraints in the definition, but at the same time strengthened the empirical basis for the decision about such a tightening.

As for the use and maintenance, boundaries of legal terms do and are intended to influence behaviour. This was noted in the context of *matured cheese*. It is also clear for *offside position*. Sometimes, this behaviour may not be explicitly intended. The offside trap was not intended as a side effect of the offside rule. Revisions of definitions are based on an evaluation of its effects in moral terms, i.e. whether the effects are desirable.

Scientific terms are strongly connected to a descriptive and explanatory framework. This means that definitions are necessarily theory-dependent and the choice between definitions is directly based on the choice between theories. As a consequence, new evidence plays a crucial role in the evaluation and revision of definitions.

In conclusion, many of the insights from classical terminology based on the work of Eugen Wüster can be maintained. The characterization of terms as standardized, specialized naming items is still valid. The insight that natural concepts are prototype-based justifies the distinction between specialized vocabulary and terms in the narrow sense as different types of

term. TiNS have a special status in relation to competence, but not one that is unique. They are similar to pieces of music in being independent of individual people's minds. A distinction between two types of reason for creating such objects leads to two types of TiNS, legal terms and scientific terms. Connected to their function, they have characteristic differences in the way they are specified, used and maintained.

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#### TERMINY POMIĘDZY STANDARYZACJĄ A MENTALNYM LEKSYKONEM

##### Streszczenie

Według klasycznej terminologii, odzwierciedlonej w pracach Eugena Wüstera, znaczenie wyrazów powinno być precyzyjne. Kognitywna teoria prototypu stwarza egzystencjalne zagrożenie dla tego podejścia, zakładając istnienie stopniowego przejścia od klarownych przykładów danego pojęcia do jednostek leksykalnych niebędących tegoż pojęcia egzemplifikacją, wykluczając możliwość wytyczenia granicy oddzielającej jedno od drugich. Analiza terminów z różnych dziedzin sugeruje, że powinniśmy rozgraniczyć dwa rodzaje pojęć: *terminy w znaczeniu zawężonym* (TiNS) oraz *terminy wyspecjalizowane*. W przypadku terminów wyspecjalizowanych nie jest problemem, że struktura konceptów oparta jest na prototypie. W przypadku TiNS konieczne jest klarowne sformułowanie znaczenia.

Uznanie, że terminy w znaczeniu zawężonym są specyficzną grupą pojęć, stawia nas przed pytaniem o ich status jako jednostek językowych. Nie istnieje empiryczna podstawa umożliwiająca stwierdzenie istnienia jakiegoś wyrazu w języku angielskim (czy też w innym języku), ponieważ ani język angielski, ani żadne z angielskich słów nie są empirycznie doświadczalne. Istnieją jako teoretyczne uogólnienia na temat kompetencji mówcy. TiNS są inne. Istnieją jako jednostki abstrakcyjne w ten sam sposób co utwory muzyczne.

*Przekład abstraktu Kamil Rusilowicz*

**Słowa kluczowe:** terminologia; semantyka prototypu; definicja; konieczne i wystarczające warunki.