Basic Level Categorisation and the Law

Mateusz Zeifert[1]

Abstract

This article probes the usefulness of the notion of basic level categorisation for legal theory. Basic level categorisation is the central part of the vertical dimension of Eleanor Rosch's prototype theory. It addresses the question about the various levels of abstraction at which humans can categorise the world. Extensive anthropological, psychological and linguistic research has proven that there is a preferable level of abstraction, namely the basic level, at which primary categorical cuts of the perceived world are made. Three areas of legal theory are identified when applying these findings. The first is the area of visualisation of legal rules. The notion of basic level categories addresses some of the known problems of discrepancies between the visualisation of a rule and its verbal description. The second is the area of statutory interpretation. Many famous cases of interpretive doubts are resolved around superordinate categories in statutory language. Categories of this level of abstraction are less contrastive than basic level categories, thus resulting in more potential for borderline cases and more reliance on functional methods in their classification. The third is the area of legislative drafting. The way in which the law categorises the world often invalidates two principles of categorisation identified by Rosch, namely cognitive economy and perceived world structure. In order to successfully enhance the comprehensibility of legal texts, it is necessary to go beyond the purely linguistic level and address the problem of legal categorisation.

Keywords Legal language · Basic level categorisation · Prototype theory · Statutory interpretation · Legislative drafting · Generality · Visual rules

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✉ Mateusz Zeifert
mateusz.zeifert@us.edu.pl

1   Faculty of Law and Administration, University of Silesia in Katowice (Poland), Katowice, Poland

1 Introduction: Categorisation and Prototypes

The object of this article is the notion of basic level categorisation and its significance for legal theory. Basic level categorisation is part of the prototype theory originating from the work of American psychologist Eleanor Rosch. In the early 1970s, Rosch conducted a series of psychological experiments on human categorisation. The results of these experiments led her to formulate a new (though, arguably, not entirely new) theory of categorisation that was later labelled as "the prototype theory". In Rosch's own words, there are two aspects, or dimensions, to any theory of categorisation:

> For purposes of explication, we may conceive of category systems as having both a vertical and horizontal dimension. The vertical dimension concerns the level of inclusiveness of the category—the dimension along which the terms collie, dog, mammal, animal, and living thing vary. The horizontal dimension concerns the segmentation of categories at the same level of inclusiveness— the dimension on which dog, cat, bus, chair, and sofa vary ([32], p. 40).

The horizontal dimension of Rosch's theory is built around the notion of prototype. The prototype of a category is understood as the most representative (the clearest, the most salient, etc.) case of category membership, defined operationally by people's judgment of goodness of membership in the category ([32], p. 36). Identifying an entity as a member of a category is based on its similarity to the prototype, rather than on satisfying some definitional features of that category. Categories are still defined as clusters of features (or "attributes"—as Rosch calls them), but the requirement that every member of a category must share a single set of criterial (i.e. necessary and sufficient) features is rejected. As a result, categories are found to have an internal structure. Some of their members are "better" than others, because they share a greater number of relevant features (i.e. an apple is a "better" fruit than a pumpkin because it has a more typical size, it is sweet, it is served as a dessert, etc.). This phenomenon, known as the "typicality effect" or "goodness-of-example rating" has been investigated in a number of experiments and has been shown to affect virtually every major method of study and measurement used in psychological research, including association, speed of processing, learning, and drawing inferences ([29], pp. 96–99). As a result, the classical (often called "Aristotelian"[1]) approach to defining categories by means of necessary and sufficient features is questioned, as the new main principle of category formation is found in Ludwig Wittgenstein's notion of family resemblance ([30], pp. 754–755). Categories are no longer treated as discrete entities with rigid borders. Instead, they are internally structured as "core meanings" consisting of the clearest cases (best examples) of the category, "surrounded" by other category members of decreasing similarity to that "core meaning", up to the point where it is no longer clear whether an entity still belongs to the category ("borderline" cases) ([31], p. 112).

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[1] On the relation between prototype theory and the philosophy of Aristotle and Plato, see [14, 15].

2 Basic Level Categorization: An Overview

The vertical dimension of Rosch's theory is built around the notion of basic level categorisation. It addresses the question of the various levels of abstraction at which humans can categorise the world ([32], p. 30). The idea was first expressed in development psychology and anthropology. Psychologist Roger Brown noticed that, although each thing has a number of appropriate names (i.e. "Prince", "Rottweiler", "dog", "quadruped", "mammal", "animal", "animated being" etc.), there seems to be a level of names that are learnt first by children. Although this level may vary depending on the group and personal significance of the thing, it is always the level of maximum utility ([6], p. 19). For instance, there are many things that one can do with dogs regardless of their race, but not that many things that one can do with all quadrupeds, or with Rottweilers only. Additionally, names at this level are often the shortest, most common lexical units ([6], pp. 14–17). Brent Berlin and his colleagues pursued a similar subject on anthropological grounds. They have examined numerous folk biological taxonomy classifications in indigenous languages, most famously the Tzeltal language of the Mayan people in Mexico. Their research has proven, among other things, that there is a level of classification, which they called "generic", that marks "the most salient conceptual groupings of organisms in any folk taxonomy and represent the fundamental units in ethnobiological classification" ([2], p. 240).

These findings were taken up by Rosch, who, together with her colleagues, conducted a series of experiments on how people divide up the perceived world. From a cognitive point of view, the world is not an unstructured continuum, but is made of information-rich bundles of perceptual and functional stimuli that co-occur and form natural discontinuities. Accordingly, there is a level of categorisation at which primary cuts in the perceived world are made along the lines of such discontinuities ([33], p. 384). She called that level "the basic level of categorisation". This brings the notion of taxonomies—systems by which categories are related to another by means of class inclusion. Objects from basic level categories share the greatest number of common features within a category (resemblance) and, simultaneously, share the least number of common features with objects from contrasting categories (distinction). In probabilistic terms, they have the highest cue validity ([33], p. 384). Objects from categories of a higher level of abstraction, i.e. superordinate categories, have less common features, meaning that they have lower category resemblance. Objects from categories of a lower level of abstraction, i.e. subordinate categories, have many common features, but also share many features with objects from contrasting categories of the same level, meaning that they are less distinctive. Let us take a look at an example of the taxonomy of musical instruments (see Table 1).

The common feature at the superordinate level, i.e. the attribute shared by all musical instruments, is that they are used to play music. Note that this is a purely functional, as opposed to perceptual, attribute, as various kinds of musical instruments may look, sound and feel extremely differently ([39], p. 171). Conversely, at the basic level there is an abundance of common features, both functional and

Table 1 The taxonomy of
musical instruments

Superordinate category	Basic level category	Subordinate category
Musical instrument	Guitar	Acoustic guitar
		Classical guitar
		Electric guitar
		Bass guitar
		Others
	Piano	Grand piano
		Upright piano
		Electric piano
		Others
	Drum	Bass drum
		Snare drum
		Conga
		Others

perceptual. All guitars, regardless of their type, share a characteristic shape, way of handling, method of making sound; they have characteristic parts (body, neck, strings), require particular manual skills, are usually made of wood, etc. The same can be said about pianos, drums, and other basic level categories of musical instruments. Objects of subordinate level obviously share plenty of common features, yet they also share many common features with objects of the neighbouring categories ([33], p. 385). For instance, the attributes of electric guitars overlap, to a large extent, with those of acoustic guitars. Consequently, classifying something at the basic level, i.e. as a guitar, is usually the most "economic" choice—it transmits the most relevant information. Classifying something at a higher level of abstraction, i.e. as a musical instrument, will rarely be useful because of the extreme internal diversity of the superordinate categories. On the other hand, classifying something at a lower level of abstraction, i.e. as an acoustic guitar, provides only a little additional information compared to classifying it just as a guitar. Thus, basic level categories constitute a "preferred level of reference" ([39], p. 170).

These findings may sound like simple common sense observations. It is important to note, therefore, that Rosch and other psychologists made great efforts to test the significance and universality of various basic level phenomena, as well as to provide us with their cognitive explanations. First, it was experimentally confirmed that basic level categories form the most inclusive (i.e. the most abstract) level of categorisation at which the four following aspects co-occur ([33], p. 428):

(1) clusters of co-occurring attributes common to the category,
(2) sequences of motor movements common to typical use or interaction with the object,
(3) objective similarity in the shape of the object,
(4) identifiability of the average shape of objects in the class.

We can see that these findings fully correspond to our examples. All guitars have similar features, both perceptual and functional (ad. 1). They are obviously not accidental, but they are consequences of their function—every part of a guitar serves its purpose (i.e. strings resonate with the body, the neck is needed to alter the tension on the strings, etc.). All guitars are played roughly the same way, despite the differences between their specific types (ad. 2). It is true that, if you can play acoustic guitar, you will do reasonably well with a classical, electric, or even bass guitar. If you do not, then you can almost certainly imitate the characteristic strumming movement with your hand and successfully use it in a game of charades. All guitars have similar shapes (ad. 3) and you can easily draw one even if you are not a very gifted painter (ad. 4).

Further experiments revealed that basic level categories are the quickest to be visually identified, the first to be learned by children, the most used in language by adults, the first used by children developing language, and the least dispensable in a language possessing fewer lexical items than standard English ([33], p. 429). Others have suggested that lexical items labelling basic level categories are usually the shortest and less derived terms ([39], p. 187), and that—barring special circumstances—they produce contextually neutral utterances ([10], p. 154). The basic level of categorisation is also special in that it is the level at which knowledge about parts of things is accumulated (i.e. parts of a guitar: body, neck, strings, etc.). Some researchers have claimed that knowledge about the parts is a crucial factor behind the primacy of basic level categorisation, because it allows inferences to be drawn from structure to function: "Through parts, we link the world of appearance to the realm of action" ([39], p. 190, [25], pp. 435–437). As a summary, we can say that basic level categories were found to be primary in four main respects ([21], p. 47):

(1) *Perception* they have an easily recognised overall shape that results in a single mental image;
(2) *Function* they activate a common general motor programme;
(3) *Communication* they are denoted by lexical units that are short, frequent in use, contextually neutral and are first learnt by children;
(4) *Knowledge organisation* most knowledge about the world is stored at this level of abstraction.

Several reservations should be made at this point. Firstly, research on basic level categorisation has been restricted to categories of specific, either natural or man-made, categories, such as BIRD, TREE, SOFA, etc. It was not intended to cover abstract categories, such as CAUSALITY or DEMOCRACY ([33], pp. 428–429). Obviously, objects of abstract categories lack perceptual and senso-motor dimensions that are crucial at the basic level. This is not to say, however, that there are no conceptual taxonomies in other domains, or that Rosch's findings have completely no relevance for abstract categories.[2] Secondly, basic level categorisation pertains to the

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[2] See, for example, a preliminary study on an abstract category of events by Rosch ([32], pp. 43–46).

perceived world structure and not to a "metaphysical world without a knower" ([33], p. 429). It is not objective in a philosophical sense and it is obviously not universal. The scope of perceived attributes, and thus categories, is species-dependent. The "out-there" of a human is significantly different to the "out-there" of a dog, a frog, or an ape ([33], p. 429). On the other hand, conceptual categories are not "an arbitrary product of historical accident or of whimsy" ([32], p. 27), nor are they freely socially negotiated. They are psychological tools required to provide the maximum information with the least cognitive effort ([32], p. 28). Therefore, they reflect the highly correlational structure of the perceived world ([33], p. 428). Thirdly, categorisation is influenced by the state of knowledge of the knower or, more generally, by culture. The level of knowledge about the world may affect classification schemes. For instance, for people who have spent time in the countryside, OAK, MAPLE, ASH would be basic level categories, whereas for city folks they would constitute subordinate categories of the basic level category TREE ([33], p. 432). Additionally, expertise in a given domain is likely to alter the basic level of categorisation. For a guitarist, GUITAR will not be a basic level category, but rather a superordinate one. Similarly, for a beer aficionado, PILSNER, STOUT or INDIA PALE ALE will be basic level categories, despite the fact that other people will label any object from these categories simply as "beer". Fourthly, it is important to remember that basic level categorisation and prototypes are the two sides of the same metaphorical coin. They are subject to the same principle of maximising cognitive economy ([33], p. 433). The seeming coherence and homogeneity of basic level categories is only possible because of prototypical effects. For example, when we think about guitars and their features, we actually refer to the prototypical guitar and tend to overlook the unusual instances, such as a steel lap guitar (which is played in a horizontal position), or a resonator guitar (which is often made of metal instead of wood).

Research into basic level categorisation has been carried out by a number of psychologists, anthropologists and linguists, resulting in a large body of subsequent research (see, for example, [17, 23]). As a matter of fact, however, it did not draw as much academic attention as the other dimension of Rosch's theory. It also did not attract nearly as much criticism. This may be due to a large amount of empirical data supporting the research, as well as the fact that it does not violate as many popular philosophical presuppositions as the notions of graded category membership and family resemblance. On the other hand, it does not seem to have penetrated other scientific disciplines to the extent that the notion of prototype has. This is certainly the case of legal science. Through linguistics and the philosophy of language, prototype theory has made its way into legal theory. There have been numerous successful applications of the notions of graded membership and fuzzy borders to various problems of the theory of law and legal practice (see i.e. [18, 26, 36, 37, 41]). However, none of them have included the notion of basic level categorisation.[3] This article, therefore, sets out to probe the usefulness and applicability of research into basic level categorisation on legal grounds. It should be considered a preliminary study, as

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[3] In fact, S. Winter explains the notion of basic level categorisation, but he does not use it in any of his analyses (see: [41]).

there currently seems to be no literature at all on the subject. As a result, the analyses presented below are intended to be as diverse as possible, identifying and touching on various problems, without a serious commitment to any of them. In other words, the focus here is on the scope of the analyses, not necessarily on their depth.

3 Visualisation of Legal Rules

An obvious application of the research on basic level categorisation in legal context is the area of visual signs. Let us consider the most common example of road signs (traffic signs). Road signs are visual representations of legal rules. They convey meaning through a conventional combination of shapes, colours, writing and pictures. This visual form of communicating normativity has been dubbed "graphic rules" and "pictorial law" ([9], p. 124). It poses interesting theoretical problems that can be discussed from a number of scientific perspectives, including legal theory, semiotics, philosophy of language, neuropsychology, and others (see, for example, [9, 11, 22]). For our purposes, only one theoretical problem is relevant, namely the relation between the visual content of the sign and its linguistic description provided in a legal act.

According to the famous semiotic theory of Charles Peirce, there are three types of signs: icons, indexes and symbols (see [1]). All these types are represented in road signage. For reasons that should be obvious in a moment, this study is restricted to iconic road signs, i.e. signs bearing an illustration of the phenomenon they are referring to. Consider the following two examples (Figs. 1, 2):

These are warning signs, from New Zealand and Australia respectively. The first one warns against kiwis crossing the road, the second one warns against kangaroos crossing the road. How do we know that? Certainly, we could consult the relevant legal act and the linguistic description of a sign: "Watch for kiwis"[4] and "Look out for kangaroos" respectively.[5] But, as road users, we would probably not do that. The

Fig. 1 W18-3.9 [The image is licensed under the Creative Commons Attribution-Share Alike 4.0 International license. Link: https://en.wikipedia.org/wiki/File:New_Zealand_road_sign_-_Kiwi.svg (accessed on 19 April 2021)]

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[4] See: https://en.wikipedia.org/wiki/Road_signs_in_New_Zealand (accessed on 19.04.2021).

[5] See: https://en.wikipedia.org/wiki/Road_signs_in_Australia (accessed on 19 April 2021).

Fig. 2 W5-29 [The image is licensed under the Creative Commons Attribution-Share Alike 3.0 International license. Link: https://pl.wikipedia.org/wiki/Plik:Australia_road_sign_W5-29.svg (accessed on 19 April 2021)]

whole point of visualising legal rules is so that people do not need to read the statutes. Road signs are designed according to a simple syntax that is country-dependent. In the case of the above examples, the diamond shape and yellow background mean that their function is to warn against a danger that is depicted in the centre of a sign. We are able to comprehend the information provided by the above signs, because they depict a picture of the respective animals. These are highly schematic pictures (rough edges, no colours, no details, etc.), and yet they unarguably succeed in making the reference to the animals they are purported to warn against. Now, consider the next two examples (see Figs. 3, 4).

These are warning signs used in Poland and a number of other European countries. They are also warning signs, which you can tell from their shape and colours. But what are they warning against? The first one clearly depicts a cow (domestic cattle). The second one, due to its schematics, is somewhat dubious. It is hard to tell whether it is supposed to depict a deer (*Cervus elaphus*), a roe deer (*Capreolus capreolus*) or some other type of a hoofed ruminant mammal.[6] The controversy notwithstanding, these signs may be read as warning against the crossing of the road by cows and deer (roe deer) respectively. However, when we consult the relevant legal texts, we find a strikingly different linguistic descriptions of these two signs:

(1) A-18a (Fig. 3) is labelled: "zwierzęta gospodarskie" which translates as "farm animals" or "livestock". The description reads: "warns against the possibility of encountering farm animals (livestock) on the road."

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[6] In fact, this type of ambiguity is present also in the previous examples. For instance, the W5-29 sign (the "kangaroo sing") is schematic enough to cover not only animals commonly referred to as kangaroos, but also other animals that share a similar characteristic shape (i.e. wallabies, rock wallabies, etc.). For the sake of simplicity, I have allowed myself a bit of eurocentrism here, as I believe it does not affect my conclusions.

Fig. 3 A-18a [This image is in the public domain according to Article 4, case 2 of the Polish Copyright Law Act of February 4, 1994 (Dz. U. 2019 r. item 1231 with further amendments)]

Fig. 4 A-18b [This image is in the public domain according to Article 4, case 2 of the Polish Copyright Law Act of February 4, 1994 (Dz. U. 2019 r. item 1231 with further amendments)]

(2)   A-18b (Fig. 4) is labelled: "zwierzęta dzikie" which translates as "wild animals". The description reads: "warns against the possibility of encountering wild animals on the road."

We can see that the scope of reference of these two road signs, as defined by the lawmaker, is much more general than would appear from their visual content. Sign A-18a (Fig. 3) depicts a cow, but it is supposed to warn against all types of farm animals, including sheep, pigs, horses, chickens, ducks, etc. Sign A-18b (Fig. 4) warns not only against deer, roe deer or similar hoofed animals, but also against other wild animals, such as boars, moose, foxes, wolves, badgers, squirrels or pheasants. The concepts of farm animals and wild animals are obviously fuzzy (they have no rigid borders) and are context-dependant (i.e. there will be different wild animals in Poland than in Australia or Vietnam). There are several theoretically interesting aspects to this observation. The one discussed in the next paragraph is directly related to the notion of basic level categorisation.

Why do the above signs depict cows and deer instead of farm animals or wild animals? Because there is no single image of farm animals or wild animals that can be used. As trivial as it may seem, this answer bears some cognitive complexity which is addressed by the vertical dimension of the prototype theory. The difference between kiwis, kangaroos, cows and deer on the one hand and farm animals and wild animals on the other is a matter of level of abstraction. Kiwis, kangaroos, cows and deer are basic level categories (i.e. the level of folk genera in Berlin's terms). Farm animals and wild animals are superordinate categories. As has been already discussed, basic level categories have easily recognised the overall shape that results in a single mental image. As a result, they can be depicted on road signs by schematic pictures. Superordinate categories lack such an image and therefore cannot be portrayed. Instead, they are represented by images of basic level objects within the scope of the superordinate category (i.e. farm animals are represented by an image of a cow). Such a phenomenon is called metonymy—a characteristic part is used to represent the whole (or vice versa). In cognitive linguistics, it is believed that metonymy, along with conceptual metaphor and other imagistic phenomena, is one of the basic cognitive mechanisms that make abstract thinking (and abstract language) possible ([21], pp. 77–91). But why it is a cow, not a chicken or a donkey, that visually represents farm animals? Here, the horizontal dimension of the prototype theory comes into play. Not all members of a category are equally representative. For various reasons, including their prevalence, historical factors, characteristic features and functions, some farm animals are more typical than others. Arguably, in Poland the cow is the most typical farm animal, just as a roe deer is the most typical wild animal. Thus, we can see that superordinate categories are visually represented by objects from basic level categories that are their prototypical members. This also explains why we do not read signs (Figs. 1, 2) as referring respectively to all birds and all wild animals (or all mammals). A kiwi is not a prototypical bird and a kangaroo is not a prototypical mammal. Quite the contrary. They are both very distinctive, highly atypical members of their relevant categories. As such, they cannot cognitively substitute their superordinate categories by means of metonymical extensions.

The practical significance of the signs in question may be questioned on the ground that they are warning signs, traditionally believed to be non-normative (as opposed to obligatory and prohibitory signs) (see [11], p. 772, [9], pp. 125–126). However, the above considerations remain equally valid in the context of clearly normative signs. Take a look at the following example (see Fig. 4).

This sign (Fig. 5) has a prohibitory function—you can tell it from its shape, colour scheme and the crossing line in the centre. But what does it prohibit? It clearly depicts a schematic dog. Therefore, maybe it should be read as "no dogs allowed"? Or maybe the image of dog symbolises a superordinate category of which it is a prototypical member, namely the category of pets? Both readings are acceptable. Indeed, we can find examples of both readings in the linguistic descriptions of

Fig. 5 No dogs allowed? [This image is in the public domain. Link: https://en.wikipedia. org/wiki/File:No_dogs.svg (accessed on 19 April 2021)]

analogical signs in the real world, namely signs with the label "no dogs allowed" as well as identical signs with the label "no pets allowed".[7]

The problem just described can be labelled as "visual ambiguity" and it clearly has practical consequences. It is by no means restricted to animals. Consider the following examples (see Figs. 6, 7, 8, 9).

The above analysis leads to several profound theoretical questions. Firstly, there is the problem of discrepancy between the visualisation of a rule and its verbal description. In the literature of the subject, high emphasis is placed on the necessary correspondence between visualisation and description: "when it comes to suggestions concerning the visualization of law in general (…), it seems that anyone who actually wants to visualize some rule should not include in its description anything that would go beyond what is actually visualized" ([11], p. 783). Such statements obviously do not take into account the phenomenon discussed in this article, namely the impossibility of visualising superordinate categories by means of a single image. They also ignore the existence and significance of metonymy as a cognitive mechanism. Secondly, metonymy is not restricted to visual communication only. In fact it has been researched mostly as a linguistic phenomenon. Therefore, one may ask to what extent it exists in the language of legal texts, and how it affects such practical legal problems as linguistic precision, clarity and vagueness. These questions will not be addressed in this article. However, it is plausible to think that the notion of basic level categorisation may be relevant for dealing with them in the future.

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[7] See, for example: https://cdn11.bigcommerce.com/s-frpbc5/images/stencil/1000x1000/products/122/ 418/EU20018__24589.1417943691.jpg?c=2; https://images-na.ssl-images-amazon.com/images/G/01/ apparel/rcxgs/tile._CB483369110_.gif (accessed on 19 April 2021).

Fig. 6 No automobiles allowed? [This image is in the public domain according to Article 4, case 2 of the Polish Copyright Law Act of February 4, 1994 (Dz. U. 2019 r. item 1231 with further amendments]

Fig. 7 No smoking allowed? [This image is in the public domain. Link: https://en.wikip edia.org/wiki/File:No_Smoki ng.svg (accessed on 19 April 2021)]

4 Statutory Interpretation

We have discussed some of the problems with the visualisation of legal rules and their explanation in light of the theory of basic level categorisation. These difficulties are generally easily omitted by using linguistic formulations together with or instead of visualisations. Obviously, language does include superordinate terms, like "farm animals", "livestock", "vehicles" or "alcoholic drinks" and they are, understandably, commonly used in legislative drafting. Here, however, new problems arise. Superordinate categories are more inclusive than basic level categories. At the same time, they have a smaller number of common attributes and it is usually much harder to make categorical judgments about their members. It is generally unproblematic deciding whether something is a dog or not. This is because, according to Rosch's findings, basic level categories are the most contrastive categories, and

Fig. 8 Noalcoholic drinks allowed? [This image is in the public domain. Link: https://pl.m.wikipedia.org/wiki/Plik:No_alcohol-1.svg (accessed on 19 April 2021)]

Fig. 9 No bicycles allowed? [This image is in the public domain according to Article 4, case 2 of the Polish Copyright Law Act of February 4, 1994 (Dz. U. 2019 r. item 1231 with further amendments]

therefore less likely to pose interpretive problems. We know a great deal about dogs, including their size, shape, characteristic perceptual features, behaviour, activities to perform with them, etc. Of course, there may be some highly atypical, borderline cases, but these are more likely to be found in academic discussions than in real life.[8] At the same time, it is very easy to imagine a borderline pet, a borderline farm animal, or a borderline vehicle. This is due to the fact that our knowledge about these superordinate categories is much more abstract and less precise. We identify only some general and mostly (or exclusively) functional features. Consider the following dictionary definitions[9]:

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[8] Conceptually, vagueness is believed to be independent of generality and specificity (see [40], p. 522). However, it should be noted that conceptual independence does not prevent factual coincidence that is predicted by the prototype theory and that is confirmed by our everyday experience.

[9] Definitions from The Free Dictionary https://www.thefreedictionary.com/ (accessed on 19 April 2021).

(1) *Pet* "an animal kept for enjoyment or companionship";
(2) *Farm animals* "any animals kept for use or profit";
(3) *Vehicle* "A device or structure for transporting persons or things; a conveyance";
(4) *Aircraft* "A machine or device, such as an airplane, helicopter, glider, or dirigible, capable of atmospheric flight".

Superordinate categories are less contrastive. For instance, the above definitions certainly do not allow clear distinctions to be drawn between pets and farm animals or vehicles and aircraft. Actually, it is quite common for an object to belong to several superordinate categories simultaneously. For instance, a piano may be considered a musical instrument for one purpose (i.e. playing music) and a piece of furniture for another (i.e. decorating a restaurant). This is because the characteristics of superordinate categories are mostly functional and it is not uncommon for an object to serve several different functions. A functional perspective is also much more perceiver-dependent. If you do not play the piano, you are more likely to perceive it merely as a piece of furniture. If you do, however, then you will automatically categorise it as a musical instrument. The context also plays an important role. A piano will be perceived differently in a home design catalogue than in a music store.

The legal language, i.e. the language of constitutions, statutes, regulations, international treatises and contracts is full of superordinate level terms. They provide flexibility and all-inclusiveness of legal categories at the cost of indeterminacy and vagueness. In fact, many of the famous (or infamous) interpretive cases, both hypothetical and real, are concerned with superordinate terms, such as "vehicle",[10] "live animal",[11] "labour of any kind",[12] "to use",[13] etc. The vertical dimension of prototype theory offers a very convincing and intuitive explanation why this is. It also puts a strong argument for functional methods of interpretation. In cases resolving around superordinate terms, functional considerations are necessary because superordinate categories are created on a functional, as opposed to a perceptual basis. In other words, a judge cannot abstract from the function of a given object if his job is to categorise it as, say, a vehicle, because the only common denominator of all vehicles is their function.

An instructive example is provided by Polish case law concerning the term "niebezpieczny przedmiot", which can be translated most directly as "dangerous object", or possibly also as "dangerous instrument" or "dangerous item."[14] This is obviously

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[10] See the discussion about the hypothetical "No vehicles in the park" rule in: ([20], p. 127, [19], p. 607, [12], pp. 662–672, [34]). See also the real case: *McBoyle v. United States*, 283 U.S. 25 (1931), where the question was whether a 1919 federal statute prohibiting interstate transportation of a stolen "vehicle" applies to airplanes.

[11] See the discussion about the hypothetical "No live animals on the bus" rule in: ([35], p. 533, [41], pp. 101–102).

[12] See: *Church of the Holy Trinity v. United States*, 143 U.S. 457 (1892).

[13] See: *Smith v. United States*, 508 U.S. 223 (1993). In that case, the question was whether a federal statute imposing penalties for "use" of a firearm "during and in relation to" a drug trafficking crime applies to an exchange of a gun for drugs. On the topic of basic level verbs, see: ([21], p. 271, [16]).

[14] See Articles 159, 223, 280 § 2 of Polish Criminal Code of 6 June 1997.

a term naming a superordinate category that groups basic level objects like knives and guns.[15] Its extension is not determined either by the semantics of Polish language or by a statutory definition. As a matter of fact, criminals may use a multitude of items during assaults and brawls, and the burden of their categorisation is left to the courts. Among the items classified as "dangerous objects" by various Polish courts were: an axe, an axe handle, a cleaver, a broken glass bottle, a baseball bat, a metal tube, a crowbar, a table leg, a large stone, a flagstone, a screwdriver, a hammer, a nunchaku, a nightstick, a piece of glass, a knuckle-duster, a heated iron, an electric wire connected to a power source, an empty beer bottle, Mastiff and Rottweiler dogs. Among the things classified as not "dangerous objects" were: a non-heated iron, a military boots with nails, a stick, a heavy pot, an ashtray, a wooden stool, a beer mug, a meat mallet, a door handle with a sharpened, pointed end, a pepper spray thrower, an automobile, a hydraulic wrench, a metal rod, metal-cutting shears, a nightstick, a piece of glass, knuckle-duster, a hammer, an empty vodka bottle.[16] The above lists are clearly not mutually exclusive, meaning that there are objects classified as "dangerous objects" by some courts and as not "dangerous objects" by others. This includes nightsticks, pieces of glass, knuckle-dusters, hammers, and empty bottles. According to the vertical dimension of the prototype theory, these objects may be considered borderline cases and are the sources of interpretive doubts. There are also some other non-prototypical cases, such as dogs, automobiles, electric wires, or irons. Classifying them as "dangerous objects" is clearly counterintuitive and requires "an act of imagination" ([6], p. 17). It is only possible if we dismiss the perceptual, objective features of the things in question, focusing instead solely on the manner of their use, i.e. connecting a wire to a source of electric power and wielding it as a weapon. Accordingly, in such cases the Polish courts have resorted to functional methods of statutory interpretation, despite expressing a deference to linguistic or literal methods as the most suitable for criminal law.[17] However, this conforms to the previous observation that superordinate categories are created on a functional rather than a perceptual basis. As a result, the act of categorisation on a superordinate level naturally requires functional considerations—even in the context of criminal law.

The prototype theory in its horizontal dimension has already been applied to the problems of legal interpretation by a number of scholars (see i.e. [18, 26, 36, 37, 41, 43]). This should not come as a surprise, since jurists are professionally occupied with the task of drawing lines between legal categories. However, as Rosch reminds us, there is more than only the horizontal aspect of human categorisation. My claim in this article is that the vertical dimension of the theory, namely the notion of basic

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[15] Article 280 § 2 of the Polish Criminal Code of 6 June 1997 states: "If the perpetrator of a robbery uses a firearm, knife, or any other similarly dangerous object…" Note that the category "dangerous object" is even more abstract that the superordinate category "weapon", as analysed by Rosch in one of her studies, see: ([28], p. 230).

[16] For reference, see ([42], pp. 79–81).

[17] For instance, there is the commonly repeated assertion that the classification of "dangerous objects" is a matter of the "objective and constant properties of an object, and not the way it is used", see: the judgment of the Court of Appeal in Katowice, 24 October 2013, II AKa 238/13, Lex No 1400248.

level categorisation, is also relevant for this topic. It gives a plausible explanation as to why particular terms may attract interpretive doubts more than others, and why certain interpretive tools are more suitable to deal with them.

5 The Comprehensibility of Legal Texts

The last problem that will be mentioned in the context of basic level categorisation is closely related to the previous one, but it requires a change of perspective. It is the problem of the comprehensibility of legal texts. Legal language—the controversies over the exact definition of this term notwithstanding—has been criticised over and over again for being complicated, incomprehensible, obscure and hermetic. Called "high class mumbo jumbo" by some (see [7], p. 4), it has been accused of being "verbose", "long-winded", having "tortuous and convoluted syntax" ([3], p. 171), as well as being "ambiguous, wordy, and either overly precise or overly vague" (see [7], p. 4). Linguists and legal scholars have identified numerous factors contributing to this state of affairs. The most obvious—and the most researched—is legal vocabulary. David Mellinkoff has been the first to blame the lexical structure of English legal texts, including the frequent use of Latin, French and Old English words, terms of art, argot, formal words, as well as words with flexible meanings ([24], p. 11). Others have also pointed to grammatical features such as the extensive use of nominal structures over verbs, passive voice over active voice, extremely long sentences, and syntactic discontinuities (see, for example, [7], p. 8, [38], pp. 44–45). Next, there are certainly some stylistic features of legal texts, such as the impersonal style, the use of schematic expressions, attempts at extreme precision, which also contribute to the difficulties with their comprehension (see, for example, [38], p. 40). Most of these observations so far have been verified intuitively rather than empirically, because "[…] descriptive research into legal language is still quite limited" ([13], p. 136). Nevertheless, it is striking that they are being formed independently in the context of various languages and a range of legal cultures ([4], p. 140).

My suggestion is that the incomprehensibility of legal language results not only from its linguistic features, but is partly located on the conceptual level. It has to do with the way legal texts categorise the world. According to the prototype theory, people tend to perceive the world, think and talk about it at the basic level of categorisation. Categorisation at different levels of abstraction often requires a cognitive effort: a deliberate "act of imagination" ([6], p. 17) in the case of a superordinate level, or a healthy dose of specialised knowledge in the case of a subordinate level. One of the lexical features of legal texts is the extensive use of superordinate categories at the expense of basic level categories. Consider the following examples taken from random statutory language (see Table 2).

Laws would surely be more intelligible if statutory language was more concrete. If they referred to "cars" instead of "vehicles", "cows" instead of "farm animals", "pistols" instead of "firearms", "anxiety" instead of "intense emotional

Table 2 Statutory terms vs. relevant basic level terms

Statutory terms	Relevant basic level terms
Vehicle	Car, truck, motorbike, bicycle, scooter, etc.
Farm animal	Cow, horse, goat, sheep, pig, etc.
Firearms	Pistol, shotgun, rifle
Intense emotional circumstances	Anger, rage, desperation
Descendants	Children, grandchildren
Real estate	House, flat, plot of land
A security device protecting the vehicle from use by an unauthorised person	Car lock

circumstances,"[18] "children" instead of "descendants", "axes" instead of "dangerous items", "house" instead of "real estate", "money" instead of "movable property", "car lock" instead of "a security device protecting the vehicle from the use by an unauthorised person,"[19] etc. Of course, there are obvious reasons why legislators use superordinate categories in statutory language: to ensure the intended scope of a rule, to cover diverse situations, or to provide the statute with some flexibility ([8], pp. 389–390). It is important, however, to be aware of the cognitive consequences of the level of abstraction that is referred to in legal language, as well as the types of categorical cuts made by laws.

Rosch's key paper on the principles of categorisation begins with a quotation from an essay by J. Borges. The quotation includes a passage from a fictional Ancient Chinese encyclopaedia:

> On those remote pages it is written that animals are divided into (a) those that belong to the Emperor, (b) embalmed ones, (c) those that are trained, (d) suckling pigs, (e) mermaids, (f) fabulous ones, (g) stray dogs, (h) those that are included in this classification, (i) those that tremble as if they were mad, (j) innumerable ones, (k) those drawn with a very fine camel's hair brush, (l) others, (m) those that have just broken a flower vase, (n) those that resemble flies from a distance ([5], p. 108 quoted by Rosch [32], p. 27).

Rosch takes note that "conceptually, the most interesting aspect of this classification system is that it does not exist. Certain types of categorizations may appear in the imagination of poets, but they are never found in the practical or linguistic classes of organisms or of man-made objects used by any of the cultures in the world" ([32], p. 27). This is due to the fact that cognitive categories are not arbitrary, but are formed according to principles that have a cognitive background, e.g. the principles of cognitive economy and the perceived world structure ([32], p. 30).

One is tempted to argue that this comment is an exaggeration. There is at least one culture where similarly unintuitive classification systems can be found in

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[18] See: article 149 of Polish Penal Code.

[19] See: article 289 § 2 of Polish Penal Code.

abundance: the legal culture. Law is a categorisation device par excellence. Legal rules divide up the world into discrete categories and provide thus obtained "legal facts" with legal consequences. However, the ways in which legal rules cut reality do not necessarily conform to the principles of categorisation as defined by Rosch. Legal categories often have little to do with the perceived world structure and legislative drafters seem not to care much about the cognitive economy. Consider the following definition of murder in the first degree from the United States Code:

> Every murder perpetrated by poison, lying in wait, or any other kind of willful, deliberate, malicious, and premeditated killing; or committed in the perpetration of, or attempt to perpetrate, any arson, escape, murder, kidnapping, treason, espionage, sabotage, aggravated sexual abuse or sexual abuse, child abuse, burglary, or robbery; or perpetrated as part of a pattern or practice of assault or torture against a child or children; or perpetrated from a premeditated design unlawfully and maliciously to effect the death of any human being other than him who is killed, is murder in the first degree.[20]

This definition includes numerous categories that interfere in peculiar, unintuitive manners. It explicitly mentions some—in fact quite unusual—instances of murder, such as poisoning. At the same time, it leaves out some of the most common instances, such as shooting with a gun, implicitly including it under a very general label of "any other kind of willful, deliberate, malicious, and premeditated killing." It differentiates murders according to their relations with other crimes, not according to the manner of their commission. It includes some very fine graded—and arguably unnecessary—distinctions, such as between pattern and practice, or torture against a child and torture against children. In short, it bears some resemblance to the fictional classification of animals mocked by Rosch.

Particularly (in)famous for their artificiality and non-intuitiveness are legal classifications for tax purposes. Consider the following example from the EU's Combined Nomenclature (CN) (Table 3).

Obviously, there are no cognitive reasons for distinguishing between steel products "of rectangular (including square) cross-section the width measuring less than twice the thickness" and steel products "of rectangular (other than square) cross-section", not to mention other nuanced subdivisions. Those categorical cuts made by the law hardly reflect the world structure as naturally perceived by human beings. In addition, with their extremely fine-graded distinctions, they produce cognitive overload. In other words, they directly invalidate Rosch's principles of categorisation: perceived world structure and cognitive economy. This is why they are so difficult to comprehend, internalise and memorise.

Although it exceeds the scope of this article, similar analyses could be provided for many fundamental legal concepts, such as LEGAL PERSONHOOD. This particular category groups together such varied entities like human beings and joint-stock companies, not to mention controversies over animals, artificial intelligences, people in a vegetative state, embryos, etc. (see, for example, [27]). From a cognitive

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[20] 18 U.S. Code § 1111 (a).

Table 3 The excerpt from EU's Combined Nomenclature

7207		Semi-finished products of iron or non-alloy steel
	–	Containing by weight less than 0.25% of carbon
7207 11	–	Of rectangular (including square) cross-section, the width measuring less than twice the thickness
	–	Rolled or obtained by continuous casting
7207 11 11	–	Of free-cutting steel
	–	Other
7207 11 14	–	Of a thickness not exceeding 130 mm
7207 11 16	–	Of a thickness exceeding 130 mm
7207 11 90	–	Forged
7207 12	–	Other, of rectangular (other than square) cross-section
7207 12 10	–	Rolled or obtained by continuous casting
7207 12 90	–	Forged
7207 19	–	Other
	–	Of circular or polygonal cross-section
7207 19 12	–	Rolled or obtained by continuous casting
7207 19 19	–	Forged
7207 19 80	–	Other
7207 20	–	Containing by weight 0.25% or more of carbon
	–	Of rectangular (including square) cross-section, the width measuring less than twice the thickness
	–	Rolled or obtained by continuous casting
7207 20 11	–	Of free-cutting steel
	–	Other, containing by weight
7207 20 15	–	0.25% Or more but less than 0.6% of carbon
7207 20 17	–	0.6% or more of carbon
7207 20 19	–	Forged
	–	Other, of rectangular (other than square) cross-section
7207 20 32	–	Rolled or obtained by continuous casting
7207 20 39	–	Forged
	–	Of circular or polygonal cross-section
7207 20 52	–	Rolled or obtained by continuous casting
7207 20 59	–	Forged
7207 20 80	–	Other

point of view, most of these entities have little, if anything, in common. Their common denominator is purely legal. Surely, the claim that legal categories differ from natural categories, or that the legal structure of the world differs from the perceived structure of the world, is not new. Up to this point, however, it has not been analysed in terms of the theory of basic level categorisation.

6 Conclusions

The language of the law is often criticised on linguistic grounds, including its vocabulary and grammar. However, there are good reasons to claim that the problems with communicating legal rules lie even deeper, at cognitive level. Law, by its very nature, is a categorisation device, but the way it divides up the world is not the way we—as human beings—are naturally adapted to. It uses a lot more abstraction in order to be all-inclusive and flexible. It invalidates the natural principles of categorisation in order to achieve its goals.

Throughout the article, three different areas where the vertical dimension of the prototype theory may find its applications were briefly touched on: the visualisation of legal rules, statutory interpretation, and legislative drafting. This list should not be considered exhaustive by any means. Quite the contrary—it should rather be treated as an example. Further research is needed in order to identify other areas, preferably including the contribution of psychologists or linguists. So far it seems that the notion of basic level categorisation can be used to broaden our understanding of legal language. It can share light on some of the familiar problems with legal rules, even if it cannot directly eliminate them. It allows us to look beyond the purely linguistic level of law right into its conceptual structure.

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