

PROTOTYPES AND INVARIANTS IN LINGUISTIC CATEGORISATION

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1. Introduction

Since Ross (1972) and Rosch (1973), prototypes and concepts with fuzzy borders have been discussed in linguistic semantics. Some linguistic theories, especially generative linguistics and logical semantics have taken no notice of prototype effects, which are claimed by cognitive linguistics to permeate linguistic categorisation at all levels, i.e. from a phoneme (Jaeger 1980) up to a clause (Ross 1973, Kalisz 1981). Cognitive linguistics, especially in Lakoff's (1977, 1982 and 1987) version, treats prototype as a fundamental concept in categorisation of linguistic and psychological phenomena. Lakoff (1987) formulated the notion of a radial category where we can distinguish central members, exhibiting all or the majority of properties devised for a category and other members of the category which depart from the central cases family resembling (the term comes from Wittgenstein 1953) those category members which are regarded as being prototypical. Such category members can be shown to depart from prototypical cases in a radial manner. The examples which are discussed most often are *bachelor* and *mother*.

Wierzbicka (1996) is not against the concept of prototypes in linguistic theory; however, she claims that the notion of a prototype is abused in linguistic analyses, especially by cognitive linguistics. She tries to show that often for the cases which are given a prototypical account, it is possible to give an account in terms of invariants, i.e. non-fuzzy categories with clear borders. She also tries to make a distinction between genuine cases of prototypicality and cases which do not need a prototypical account and can be analysed in terms of semantic definition containing exclusively invariants.

In this paper I try to reconsider Wierzbicka's (1996) claims and I will try to demonstrate that although not all linguistic (here semantic) phenomena have to be given a prototypical account, the array of cases where such account is necessary seems to be larger than she assumes. It is also indispensable to state that a prototypical account itself is insufficient for an analysis of semantic or other linguistic phenomena. A prototypical account has to be accompanied by the concepts of ICM (idealised cognitive model), folk models and other grounding devices employed by cognitive linguistics (e.g., Lakoff 1987; Langacker 1991).

My general claim is that an account in terms of invariants is possible; however, such a possibility constitutes a special marked case whereas a prototypical structure of a concept reflects a general, unmarked case.

2. Prototypes and invariants in an analysis of the concept *bachelor*

Wierzbicka (1996) and Posner (1986) claim that a prototype may be and is overused as a linguistic tool in situations where it is possible to provide a precise definition. They claim that it leads to neglect of an intellectual effort necessary for a precise semantic description of a given concept. Wierzbicka (1996: 167) writes that if a prototype is treated as a magical key to open all doors without effort, the chances are that it will do more harm than good. Posner (1986: 58) claims that "these new ideas have been treated as an excuse for intellectual laziness and sloppiness". These ideas could be right provided that it is really the case that "prototype saves" which is a travestition of McCawley's (1981: 215) slogan "Grice saves" quoted in Wierzbicka (1996). Whether "prototype saves" is a legitimate, ironic slogan and whether the application of the concept of a prototype really spares intellectual effort and leads to laziness and sloppiness will be considered later. In the next sections I will try to consider some criticism and some concrete analyses provided by Wierzbicka (1996). She treats some cases as representing indeed prototypical effects required in her definitions. However, the first part of cases which she takes up are to be understood as misuses and misapplications of the notion of a prototype where a definition in terms of invariants is possible in her view. I will not discuss all the cases presented by her (such as Verschueren's (1985) analysis of a boat with a hole) but those which are more representative and widely discussed.

The term *bachelor* has a long tradition in semantic investigations. It was the main example of Katz and Fodor's (1963) theory of semantic markers and distinguishers. Lakoff (1986) and Fillmore (1982) observe that *bachelor* is defined relative to an idealised cognitive model of the world in which there is a model of marriage between opposite sexes, the marriage is monogamous etc. There are discrepancies between the model and concrete cases which are observed in the world. The questions which Fillmore and Lakoff ask are: Is Tarzan

a bachelor? Is the Pope a bachelor? We may also add a case of a man living with the same woman for twenty years, having four children with her but failing to perform the wedding ceremony. Will he be considered and called a bachelor? The borders of the category seem to be fuzzy where the fuzziness here is not within the model but in the interaction of the model with other models characterising other aspects of knowledge. Fillmore and Lakoff maintain that there are cases of better and worse bachelors depending on the degree of matching of a concrete case with the model.

Wierzbicka (1996: 150), being aware of the fact that the formula "bachelor – an unmarried (adult) male person" does not work suggests her own account. Her definition is as follows: bachelor, a man who has never married; thought of as a man who can marry if he wants to, more precisely: people think of this man like this, this man can marry someone if he wants to.

Nevertheless, the definition she proposes is in itself triggering prototype effects. The basic part of the definition states that "this man can marry someone if he wants to". This part is not free from the possibility of estimation of fuzzy borders of the category. It seems to be the case that many bachelors are bachelors not because they would not like to get married but it is the other party (or no party is present) who does not want to get married. Many years ago I remember a question posed to a bachelor (in Polish): *Dlaczego pan się nie ożeni?* 'Why don't you get married?' The answer was: *Nie mam wzięcia*. 'Nobody wants me' (very roughly equivalent). Whether a bachelor who would like to get married but cannot is less prototypical from the one who could really get married but does not want to, is a matter of a conceived type of prototype. Some research would have to be done to establish which option is regarded as more common and cognitively basic. This would not diminish but rather increase the intellectual effort necessary for a more detailed and precise understanding of cognitive status of the notion. It is likely that the research would show that this property is not that significant in a semantic description of the concept *bachelor*, i.e. whether the bachelor status is a matter of a choice or necessity is not a decisive property in the determination of the essential meaning of the concept. If so, then Wierzbicka herself would have to admit that it is a prototypical but not a necessary feature. We do not make such distinctions.

It also has to be noted that even if Wierzbicka's definition is correct in its basic aspect, still the problems which were raised earlier (a man living with a woman and their children without a wedding ceremony or John Paul II etc.) remain unsolved and unaccounted for. Is a catholic priest a bachelor? The definition does not help us here. Theoretically, a priest may leave his celibate and get married. However, if he wants to do it he has to stop being a priest. Such problems can be multiplied. They are acute for Wierzbicka's definition, for analyses which do not accommodate the notions of a prototype and family re-

semblance. An analysis which employs the above notions and also sets those concepts in the background framing, ICM and cultural context is capable of handling such problems. On the contrary, it treats them as most interesting cases for analysis. If we take the effort which is necessary to analyse and accommodate such cases for an account of a category then it can easily be seen that it surpasses the effort necessary for a coinage of such definitions as: 'people think about this man like this: this man can marry someone if he wants to' or a meaning postulate: 'bachelor X \leftrightarrow (never married X)'. Both accounts ignore troublesome cases, which may be interpreted as stopping short of profound analyses of a variety of inconvenient data. A prototype account, if conducted adequately and carefully, is a challenging and intellectually rewarding enterprise.

3. The category *mother*

A similar case can be observed in another example, which is celebrated in linguistics namely *mother*. Lakoff (1987: 83) views a central, prototypical case in the following manner: "a mother who is and always has been female, and who gave birth to a child, supplied her half of the child's genes, nurtured the child, is married to the father, is one generation older than the child, and is the child's legal guardian". Apart from the central case, Lakoff considers the following:

- Stepmother: She didn't give birth or supply the genes, but she is currently married to the father.
- Adoptive mother: She didn't give birth or supply the genes, but she is the legal guardian and has the obligation to provide the nurturance.
- Birth mother: This is defined in contrast to adoptive mother; given an adoption ICM, the woman who gives birth and puts the child up for adoption.
- Natural mother: This was once the term used to contrast with adoptive mother, but it has been given up because of the unsavory inference that adoptive mothers were, by contrast "unnatural". This term has been replaced by birth mother.
- Foster mother: She did not give birth to the child, and is being paid by the state to provide nurturance.
- Biological mother: She gave birth to the child, but is not raising it and there is someone else who is and who qualifies to be called a mother of some sort.
- Surrogate mother: She has contracted to give birth and that is all. She may or may not have provided the genes, and she is not married to the father and is not obligated to provide nurturance. She has contractually given up the right to be a legal guardian.
- Unwed mother: She is not married at the time she gives birth.

- Genetic mother: This is the term used for a woman who supplies an egg to be planted in somebody else's womb and has nothing else whatever to do with the child.

Lakoff (1987: 83) writes further that not all possible variations on the central case exist as categories, e.g., there is no category of mothers who are legal guardians but who do not personally supply nurturance but hire someone else to do it.

Wierzbicka (1996) criticises Lakoff's account on the grounds that he does not notice the fact that adoptive, foster or genetic mothers are not on par with biological mothers. This is certainly true but it does not mean that a woman who did not give birth to a child but was bringing up that child from the earliest age of the child up to adulthood cannot be called a mother at all. That child most likely calls that woman *mother* and does not use any other address form. The term *biological mother* as Wierzbicka claims is used only in a contrastive context. Normally, we would not call a mother *a biological mother*. This is true again but we employ the term *biological mother* exactly in the situation where that mother is a "full mother" i.e., she is not taking care of the child and she is not bringing it up. Wierzbicka's (1996: 155) definition seems to be a very good example of a prototypical definition although she would certainly object to such qualification. It is presented as follows:

X is Y's mother =

- (a) at one time, before now, Y was very small¹
- (b) at that time, Y was inside X
- (c) at that time, Y was like a part of X
- (d) because of that, people can think something like this about X:
"X wants to do good things for Y
X does not want bad things to happen to Y"

Wierzbicka writes that socio-psychological component (d) has to be formulated in terms of expectations (thoughts) but not in terms of actual events in contrast to (a-c). It is a very good definition, but again when a mother (biological) does not meet the expectations which are parts of the role of a mother (prototypical) but the parts are taken care of by some other woman (e.g., adoptive mother) then the problem does not disappear even if some property is formulated in terms of expectations.

On the other hand, genetic, surrogate or adoptive mothers constitute deviations from the prototype and it is difficult, if not implausible, to create independent models (from the central model) without the help of the notion *mother*.

¹ In Wierzbicka's (1996: 155) explication we have: "a) when X was very small". I take it as a misprint which I corrected substituting X by Y in the quotation. I think that nothing significant results from that.

Such categories would be totally unmotivated. The concept of a *biological mother* is also a deviation from the central case. It does not meet Wierzbicka's (1996: 155) condition (d). It is probably closer to the central case than other non-prototypical mothers (e.g., foster mother) but it is still a deviation and it should be analysed as such.

4. Collective notions and basic level categories

Wierzbicka (1996) analyses also such concepts as *furniture* and *toy*. She makes a distinction between category types such as *bird* and *furniture*. *Furniture* is conceived by her as a collective concept. *Bird* is in turn what she calls "a taxonomic concept" corresponding to a kind of animal. It is possible to talk about *three birds* but in English *furniture* is an uncountable noun. The differentiation made by Wierzbicka is to the effect that such words as *toy* or *furniture* have fuzzy borders but *bird* does not. *Bird* has rather neat borders. Again we should agree with her. Nevertheless, it is necessary to pay some attention to the second aspect of categorisation which is recognised in cognitive linguistics, namely the problem of levels of categories. A *bird* represents a basic level category whereas *furniture* represents a different category level, i.e. super-ordinate. Basic level categories have different properties from super-ordinate and subordinate level categories. They are easier to manipulate, they are also of "human size". It is possible to create a visual image of a basic level category but we cannot have a visual image of a super-ordinate category, i.e. it is impossible to have a visual image of *furniture*. Thus cognitive linguistics (e.g., Lakoff 1982, 1987) has a way of distinguishing types of categories such as *bird* and *furniture*.

5. Lying

Coleman and Kay (1981) analyse *lying* as a graded concept of cluster nature. They maintain that there are no sufficient and necessary conditions that would properly characterise lying. Instead they formulate the following prototypical properties: a) S (speaker) believes that p (proposition) is false, b) S intends to deceive A (addressee), c) p is in fact false. According to their analysis if all the three properties are exhibited by a given utterance, then we have to do with an doubtless lie. However, if one or two properties are not exhibited by an expression (or a set of expressions) but only the remaining two or one, then we have to do with lies which may be regarded as controversial or non-prototypical, such as white lies or unintentional lies. Sweetser (1987: 62) carries out "prototype reduction" claiming that "a lie is simply a false statement". All cases in which there is no agreement between the definition

and the uses may be explained by means of cultural models in proper experiential domains.

Wierzbicka (1985, 1996) and Krzeszowski (1985, 1997) note the absence of the axiological aspect in Coleman and Kay's (1981) analysis. This aspect is also absent in Sweetser's (1987) account. Wierzbicka (1985: 341-342) claims that it is possible to formulate a definition in terms of discrete, semantic features. Her definition is as follows:

X lied to Y
 X said something to Y
 X knew it was not true
 X said it because X wanted Y to think it was true
 [people would say: if someone does this, it is bad]

The last element of the explication reflects the axiological aspect of a lie. As an argument against Sweetser's (1987) analysis, Wierzbicka (1996) presents two words from Russian which correspond to a *lie* namely *lgat'* and *vrat'*, claiming that cultural models are reflected in meanings of words. Sweetser would certainly not deny that but her analysis is (I think more importantly) short of axiological aspect which seems to be indispensable for the perception of lying. The fact that a given analysis is defective does not immediately disqualify the method within which the analysis was conducted. Krzeszowski's (1985) account contains both axiological elements and cognitive linguistics principles. Again, as in the previous cases of Wierzbicka's analyses a lot of data is unaccounted for and/or is treated as homogenous. If some inconvenient data were to be accounted for, then Wierzbicka's definitions should change their status; e.g., a white lie is a non-prototypical lie, where the first four lines of the definition seem to hold but the last (axiological element) probably does not. Thus, if more cases are to be taken care of, then there seems to be no escape from a prototypical characterisation. Discrete semantic features or atomic expressions simply will not do.

6. Uncontroversial use of prototypes

Wierzbicka (1996: 160) claims that meanings of such terms as colours should be analysed with the help of the idea of a prototype:

green = colour which is thought of as the colour of the grass
 blue = colour which is thought of as the colour of the sky

Wierzbicka treats grass and sky in the above definitions as prototypes for colours (because grass may be yellow and the sky may be grey). They correspond to colours only in their prototypical forms.

Also the words expressing feelings should be analysed by resorting to prototypical situations.

Wierzbicka (1996: 161) explicates *envy* in the following way:

X feels envy =

sometimes a person thinks something like this:

something good happened to this other person
it didn't happen to me

I want things like these to happen to me

because of this, this person feels something bad

X feels something like this

She maintains that feelings may be described by prototypical reactions to them. She claims further that there is no conflict between prototypes and definitions. I would agree with this statement provided that this situation covers also the cases considered in the previous sections.

Other cases where the notion of a prototype is useful is the concept of a *cup* since we have various kinds of cups (with handles or without them, big ones, small ones and having various shapes). However, Wierzbicka (1985: 59) wants to distinguish necessary features from those which are not essential in the characterisation of a cup. According to her the necessary features are such that: "cups are manufactured in order to drink warm liquids from them and they are small enough that people can easily raise them to their mouths with one hand". In my other work (Kalisz 1996) I hoped to demonstrate that such distinctions are not always possible and very often they have neither empirical nor objective grounds. Very often such distinctions are idiosyncratic and idiolectal matters, e.g., is the wrinkled skin a necessary or not essential property in a semantic characterisation of elephants?

Still other cases where prototypes may be useful are characterisations of different kinds of fruit (e.g., a cabbage may be red and tomatoes may be yellow or green). Prototypical apples according to Wierzbicka (1996) are red but there are apples which are green or yellow. Here we may argue that Wierzbicka is not right in treating colour as an essential property characterising apples. Nobody would object to the statement that colour is an immanent property of apples (as well as of many other phenomena); however, there is a great variety of colours (except for green and yellow we have brown, orange and multicolour apples). Perhaps it is more appropriate to say that apples have various colours rather than prototypical apples are red (we also have to take into consideration various degrees and shades of redness exhibited by various kinds of apples). Similarly, some colours of apples are more typical in some regions of the world where other colours of apples may be more frequently met in other parts of the world.

In her general account of semantic phenomena Wierzbicka (1996) has to admit a prototypical status of some of her semantic primitives. She rightly observes that words which are considered primitives are often polysemous in various languages. They may be considered as belonging to an alphabet of human thought, however, in their prototypical meanings only. The prototypical meanings of the posited primitives are to be similar (or synonymous) across languages, whereas other meanings which are not prototypical may vary across languages. Wierzbicka (1996) does not give examples of such situations but they are not hard to find. In Diegueno (Mesa Grande dialect), *bad* (one of Wierzbicka's primitives) is *wellich*. Apart from prototypical 'bad' *wellich* means also 'ugly' and 'dies' (euphemistically). In Rutul (one of Dagestani languages of the Caucasus) *hijikad* means 'bad', 'ugly', and 'not similar'. Thus only one prototypical sense 'bad' is shared by the words in the three languages (including English) and this sense constitutes the "bridge" atomic expression in Wierzbicka's sense. However, the similarity of one more sense 'ugly', in two unrelated languages such as Rutul or Diegueno will be unaccounted for and there is no theoretical foundation in Wierzbicka's theory to assess such similarities. Here prototypes and invariants meet. A purely invariant account is impossible because of polysemic nature of words which are employed as atomic expressions. It has to be noted that semantic primitives are not abstract concepts (as abstract verbs or predicates in generative semantics) but they are according to Wierzbicka real expressions in real languages. This makes her enterprise more difficult because she has to deal with polysemous expressions and what follows with prototypical nature of semantic primitives. This weakens an invariant status of elements in her definitions and of the definitions themselves. Since particular elements (semantic primitives) have prototypical nature in concrete languages, then definitions themselves are bound to have prototypical properties, which indeed seems to be the case even in the examples which according to Wierzbicka receive an exclusively invariant account (e.g., the definitions of *bachelor* and *mother*).

7. Invariants and elicitation of prototype effects

It is relatively uncontroversial that the often discussed category *bird* has neat boundaries. Ostriches may be "strange" birds but they are birds nonetheless whereas bats are not birds at all although they have wings and they can fly (which are the properties common for birds). In some more exotic languages birds share the same lexical item with other flying things such as aeroplanes and this may challenge the universal correspondence of prototypical meanings across languages (we will not explore this interesting issue here). In court a defendant is found guilty (although in some courts he/she may be released because of lack of sufficient evidence against him/her). Some courses at American universities must be taken on pass/fail where *tertium non datur*. Thus,

the borders of the above categories, i.e. *bird*, *guilty*, *pass* are non-fuzzy and there may seem to be no reason to analyse them in terms of prototypes. They may be treated as invariants susceptible to some kind of definitions or analyses in terms of necessary features.

It is claimed by Wierzbicka (1996) that prototype effects (i.e. *robin* is higher on birdiness scale than *chicken*, which is in turn higher on the scale than *ostrich*) were achieved by Rosch (1973) on the basis of the test she had devised. The results were inherent in the composition of Rosch's test. If *bat* and *cow* are included as phenomena to be placed on birdiness scale from 1 to 7 then it is obvious that *bat* in contrast to *cow* will receive a better location on the scale than *cow* and some properties of birds would be attributed to bats. The scale would also trigger differentiation among robins, chickens and ostriches.

This is all true. Birds are birds no matter how strange they may be whereas bats are not birds at all. However, it is also true that bats resemble birds to a higher degree (or to some degree) than cows (which do not resemble birds to any degree). Whether we want to note that fact in our semantic theory or not is a debatable matter. I find no *a priori* reason to reject such similarities.

Also the fact that when asked to give an example of a bird people most often mention robins, sparrows or pigeons but not peacocks or turkeys may also receive an account in a semantic theory. Now I am in Southern California and I can see a humming bird through my window. Many Californians or Arizonians would probably rank humming birds high on birdiness scale. When I come back to Poland I will most likely soon forget about humming birds as examples of birds. Thus, as was mentioned earlier, the prototype analysis itself is not sufficient in an adequate characterisation of a concept. Cultural background, ICMs and other grounding factors of sociological, psychological and discourse kind should supplement a proper analysis.

Hence, although it is most reasonable to postulate neat borders for the category *bird*, still it is recommendable for a fuller and better understanding of the concept to show the variation *within* the category and to show other cases (belonging to different categories) which are close and resemble in some respects the category we are exploring. Such enterprise cannot be called a neglect of intellectual effort. A purely invariant analysis does not take any notice of similarities and differences among members within a given category or similarities across category boundaries. Hence, a cognitive account seems to be more complex, more elaborate and more revealing.

Taking into consideration the dichotomy guilty vs. not guilty, it can immediately be noted that the border is made in a hard and fast manner. Nevertheless, on a slightly closer scrutiny it is possible to find prototype effects even here. Although some court may come up with a decision "guilty", still in judgement of ordinary (non-professional) observers the guilty may not be obvious (*He*

probably wasn't that guilty!). There may be doubts concerning guilt or a degree of guilt. The conclusion is that prototype effects are possible and frequent both within and across categories. It is true that those effects may be triggered by an analyst but the mere possibility of triggering such effects throws some light on the nature of the phenomena. If such categories had been based exclusively on invariant principles then such effects should not have been possible at all.

8. Conclusion

Any kind of linguistic description may be carried out with care or in a shallow manner. The analyses based on prototype and family resemblance principles do not constitute exceptions. Equally, semantic definitions or meaning postulates may be formulated in an *ad hoc*, careless manner. An adequate analysis taking into consideration all available data is possible with the help of a prototype and family resemblance. The establishing of prototypical properties is not a simpler matter than the formulation of a semantic definition, meaning postulates or necessary semantic features. Additionally, a prototype account has to be accompanied by a construction of a radial structure showing concrete relations among various non-prototypical cases and marking which properties are or are not realised by a given phenomenon or object in confrontation with the central case and other than the intellectual effect necessary for such analyses exceeds other analyses.

There is no need for distinguishing semantic features into necessary and prototypical. However, it is necessary to distinguish categories with fuzzy borders (*furniture*, *bachelor*) from categories which have rather neat borders (*bird*, *guilty in court*). In the last group of cases, properties devised for a given category have the status of "more necessary" features. It has to be noted, however, that within every category including those within neat boundaries, it is possible to have prototype effects. Lakoff (1982) calls such cases as possessing *secondary gradience*. That is why it is possible to talk about "birdiness" or a "degree of being guilty" (even if the defendant was found guilty in court). In a situation of secondary gradience "necessary" properties immediately become parameters for establishing the most typical examples of a given category, best examples, paragons and cases removed in various degrees from typical ones. The secondary gradience is not a necessity but it creates cognitive dynamism of a category.

It is not very significant whether we introduce a prototype in terms of properties or a definition. A definition may be split into properties or features. Properties may be composed to form a definition. Such versions are also present in Wierzbicka's (1996: 159) analyses. A definition may be treated as a representation of a prototypical situation (cf. also frame semantics). Both kinds of analyses may be compared with respect to empirical adequacy.

The concept of a prototype and family resemblance are not sufficient for a full characterisation of a given concept. Other theoretical constructs such as ICM, expert theories, folk models, sociological and psychological grounding are indispensable. It is also very important to establish the level of an analysed category (i.e. whether it is basic, super-ordinate or subordinate) and discuss properties stemming from particular levels.

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