

Genitives, Types and Sorts

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The topic. The genitive construction in Russian is used for many different relations. Our topic is the interplay between the semantics of the genitive construction(s), the lexical semantics of the head noun, the semantics of the genitive NP, and context. Our thesis is that many restrictions on felicitous and infelicitous uses of genitive constructions, and on the possible interpretations of felicitous uses, can be characterized in terms of *sortal* distinctions within the domain of entities, and corresponding sortal properties of both the head noun and the genitive NP.

Similar claims have been discussed before (Pustejovsky 1993, Jensen and Vikner 1994, Knorina 1979, 1985, 1988, Apresjan 1999, Paducheva (in prep.), Rakhilina (this workshop), Borschev and Partee 1999a,b, 2001a,b).

Examples of sorts include *physical objects, persons, substances, instruments, vehicles, containers*, etc. So, roughly speaking, sorts are elements of a classification system existing in language which are often labeled by “abstract” words (often found as headwords in conventional lexical entries). Sorts are more fine-grained than types, and sorts need not form a taxonomic hierarchy; the sort *food* overlaps the sort *plant*, but neither subsumes the other. Uncovering the sortal classifications that play an important role in natural language is part of the exploration of ‘natural language metaphysics’ (Bach 1986) or *naivnaja kartina mira* ‘the naive picture of the world’ (Apresjan 1986).

Our goal here is to explore the role of sorts in distinguishing possible from anomalous genitive constructions. We will focus mainly on one use of the genitive, the “genitive of measure” with concrete head nouns, a construction we discussed in Borschev and Partee (1999a).

The genitive of measure in Russian

Prototypical examples: *stakan moloka* ‘glass of milk’, *jaščik jablok* ‘box of apples’, *korzina gribov* ‘basket of mushrooms’

The sorts of the participants: *container* and *substance* (suitable for such a container; more on this issue below.)

Two meanings of the construction (informally, to be refined and revised):

- a) a predicate true of concrete quantities of the substance occupying the given container: *prenesi/kupi butylku vodki* ‘bring/buy a bottle of vodka’.
- b) a standard quantity of the substance, corresponding to a conventional standard size of containers of the given kind: *voz'mite dva stakana muki* ‘take two glasses [cups¹] of flour’ (a typical cookbook instruction).

There are various kinds of ‘bad’ examples. (i) #*bassejn vody* ‘swimming pool of water’, #*vaza vody/cvetov* ‘vase of water/flowers, (iii) #*sejf/papka dokumentov* ‘safe/folder of documents’.

These examples are bad because the head nouns are not containers.

(ii) meaningless examples: ***nož moloka* ‘knife of milk’, ***stakan jaščika* ‘glass of box’

So we presuppose that the sorts of participants of this construction, *container* and (suitable) *substance*, distinguish normal examples from anomalous ones, i.e. (names of) containers together with suitable substances (and only they) can form normal “OK” examples with the genitive of measure.

How to describe sorts? In lexical semantics, as we understand it, the meaning of a word is (can be approximated by) a set of meaning postulates, i.e. from a logical point of view, the ‘theory’ of this word. The meaning of a sortal term is similarly a ‘theory’. If a word belongs to some sort, the theory of this sort is a part of theory of the word. Of course, a word can belong to many sorts, even without polysemy.

In the talk we will try to develop a semiformal theory of *container*. Some relevant properties of container terms include:

1) Inner part

Containers have an *inner part* (to put substances in.) (We will mention but not resolve the issue of two-dimensional ‘containers’ as in ‘a page and a half of writing’, ‘three walls of murals’.)

¹ English uses ‘cups’ as a standard measure, Russian uses ‘glasses’. But Russians don’t have ‘measuring glasses’ analogous to our ‘measuring cups’.

2) We fill containers with suitable substances

We fill *glasses, jars*, etc. (in Russian) with liquids or “pourable” *substances*², *boxes* and *baskets* with nonliquid but homogeneous substances, special *boxes* or *crates* with bottles of beer, vodka, etc. There are constraints relating the sorts of containers and the sorts of their contents, constraints that may reflect both reality and lexical usage.

We can also fill some things that we do not classify as containers – pools, vases, shelves, etc.

Russian has another sort, *sosudy* ‘vessels’, which can be filled with liquids, and which includes both some containers (*glasses, jars*) and some non-containers (*vases, ...*).

3) We can fill containers partway; ‘half a basket of mushrooms’

The question of when a phrase like *polovina karziny gribov* ‘half a basket of mushrooms’ is well-formed is an interesting one; the constraints relate to the sorts of both parts of the construction, and reflect the conventional ‘measurability’ of the substance as well as the subdivisibility of the (interior of) the container.

Many things besides containers can be *filled partway*, e.g. swimming pools, rooms, shelves. But although a room may be half filled with people or a shelf half filled with sweaters, we do not naturally speak of *half a room of people* or *half a shelf of sweaters*. Is this because we do not conceptualize rooms or shelves as containers, or because we do not measure people by the roomful or sweaters by the shelfful, or both? The possibility of buying *two rooms of furniture* or filing *two and a half shelves of books* suggests that both are relevant.

We will discuss such contrasts as **half a purse of money*, (ok) *half a purse of gold*; **half a swimming pool of water*, (ok) *half a swimming pool of fuel* (see below). We will also discuss the often noted phenomenon that the addition of modifiers like *celyj* ‘whole’, *polnyj* ‘full’, and numerals also helps facilitate the use of the genitive of measure with words which do not denote containers only on a shifted reading:

Polnaja komnata gostej ‘full room of guests’ (Engl. ‘roomful of guests’), *dva vagona soldat* ‘two (railway) wagons of soldiers’.

4) Containers are functionality directed to contents

Classifying something as a *container* implies normally having an interest more in the contents than in the container itself. We use *glasses* and *boxes* in order to make use of what they contain: to drink, to hold, to carry their contents. But *swimming pools* we use to swim in, not to hold water. If in an extreme situation we use it to hold fuel it will become a container and we can say that we have half a pool of fuel. *Vase* is also used not to hold water but flowers. So a *vase* is not a container for water. Is it a container for flowers? In Russian, apparently not; one doesn’t fill a vase with flowers but puts flowers into a vase, and in Russian one does not say **vaza cvetov* ‘vase of flowers’. In English, on the other hand, a vase is apparently considered a container for flowers, since ‘vase of flowers’ is fine (though not a **half vase of flowers!*).

We can capture some of these properties of containers in the beginnings of a **semiformal theory** of containers:

Container(*x*)

- 1) *x* is a *physical object*
- 2) *x* has a concave *form* with *inner part* (Russian *polost’*)
- 3) *x* can be *filled* by some *substance* to some degree (full, almost full, half-full, etc); filling *x* involves filling its inner part.
- 4) *x* has a *volume*, which is the volume of its *inner part* and therefore the volume of the substance that *x* can contain
- 5) *x* is used in order to make use of the *substance* it contains (its *contents*).

For some of the other properties discussed above we need to introduce the relation between the container and its contents so that we can capture the mutual constraints on the two sides of the relation. The resulting theory should allow us to introduce the shift-operator **Quant**, generating for all words which can be considered as denoting containers (having the sort *container*) expressions which allow us built semantics for genitive of measure with ‘suitable contents’ in a compositional way.

We have checked Russian dictionaries for words of the sort *container* (by our definition.) Almost all of them have one of the words *vmestilišce* ‘container’ or *sosud’* ‘vessel’ as the main word of the definitions.

² The term *substance* is normally limited to things denoted by mass nouns, but we mean to include what masses and plurals have in common, as structured, for instance, by Link (1983).

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