# A metaphor in search of a source domain:
# The categories of Slavic aspect*

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*Abstract*

*I propose that human experience of matter provides the source domain for the metaphor that motivates the grammatical category of aspect in Russian. This model is a version of the universal* TIME IS SPACE *metaphor, according to which* SITUATIONS ARE MATERIAL ENTITIES, *and, more specifically,* PERFECTIVE IS A DISCRETE SOLID OBJECT *versus* IMPERFECTIVE IS A FLUID SUBSTANCE. *The contrast of discrete solid objects with fluid substances reveals a rich array of over a dozen properties; the isomorphism observed between those properties and the complex uses of aspect in Russian is compelling. This model presents a more finely articulated account of Russian aspect than feature analysis can achieve. Although some of these properties overlap significantly with the count versus mass distinction often associated with aspect, the properties provide more detail and ground the metaphor to concrete experience. Properties of matter can be divided into three groups: inherent properties such as edges, shape, and integrity (which correspond to inherent situation aspect); interactional properties such as juxtaposition, dynamism, and salience (which correspond to discourse phenomena of aspect); and human interactional properties such as graspability and impact (which correspond to pragmatic phenomena of aspect). The interactional and human interactional properties can be used to motivate subjective construal, whereas the inherent properties serve as default motivators. The model will be demonstrated in detail using Russian data, followed by a survey comparing Russian with the other Slavic languages, which will show that deviations consist of either non-implementation of a given property, or the implementation of an inherent (default) property in place of an interactional or human interactional property. This model will be contrasted with a brief discussion of a selection of non-Slavic languages. The specific metaphor in this model does not apply beyond Slavic, but perhaps it will encourage investigation into the source domain of aspect in other languages. There appears to be a correlation between the relatively*

*heavy morphological investment Slavic languages make in nominal individuation and the individuation of situations presented in this metaphorical model.*

## Introduction

This article will present a comprehensive model of the use of aspect in Russian in particular and Slavic in general, showing an isomorphism to an idealized cognitive model (ICM) of matter. I will argue that the properties of matter serve as the source domain for the metaphor that motivates aspectual properties in Slavic. In section 1 I will introduce some facts of Russian and Slavic aspect and foreshadow the analysis; I will also present terms and conventions in this section. The merits and disadvantages of previous analyses of Slavic aspect, largely focused on semantic features, will be surveyed in section 2. Section 3 is devoted to the conceptual entailments of the ICM of matter, and a discussion of how this ICM overlaps with, but is both more specific than and extends beyond the count versus mass distinction. The first three sections lead up to the detailed analysis of the model illustrated with Russian data in section 4. Section 5 is an overview of how aspectual uses differ across the Slavic territory. Section 6 will offer some comparison with non-Slavic languages. Conclusions will be offered in section 7.

## 1.   Slavic aspect and aspect in Russian

In addition to Russian, the Slavic languages include the following: Belarusian and Ukrainian (forming together with Russian the East Slavic subfamily); Polish, Czech, Slovak, and Sorbian (forming the West Slavic subfamily); and Slovene, Bosnian, Croatian, and Serbian (BCS), Macedonian, and Bulgarian (forming the South Slavic subfamily). It is common to group the East and West Slavic languages together as North Slavic (as opposed to the South Slavic languages). In terms of aspectual behavior, Dickey (2000) divides Slavic into eastern group languages (Russian, Belarusian, Ukrainian, and Bulgarian) as opposed to western group languages (Czech, Slovak, Sorbian, and Slovene), with Polish and BCS labeled "transitional". These groupings will be valuable in the discussion in section 5.

Following Comrie (1976), Dahl (1985), and Bybee, Perkins, and Pagliuca (1994), I will use lowercase letters to refer to conceptual or cross-linguistic categories, but uppercase to refer to language-specific categories (Perfective and Imperfective). Examples and glosses will be tagged with superscripts: verb[p] (perfective) and verb[i] (imperfective).

Aspect in the Slavic languages is manifested as a contrast of Perfective with Imperfective. Slavic, however, lacks a progressive as well as a neutral aspect. Unlike what is observed in many other languages, Slavic aspect is independent of tense and other verbal categories. Whereas, cross-linguistically, perfective and imperfective usually contrast only in the past tense, in Slavic, this contrast is available in the non-past tense, in the infinitive, and in imperative, participial, and gerundial forms. In fact, aspect is obligatorily expressed in all verbal forms.[1] Slavic languages have developed complex derivational morphology to distinguish Perfective from Imperfective verbs (for a description of the derivational prefixes and suffixes in Russian, see Townsend 1975). In Russian, for example, the simplex Imperfective *бить*[i] 'beat[i]' has various prefixed Perfectives, such as *вбить*[p] 'beat[p] in', *пробить*[p] 'beat[p] a hole through', and *разбить*[p] 'break[p]'. The prefixed Perfectives can have secondarily derived Imperfectives, such as *разбивать*[i] 'break, be breaking[i]', and both simplex Imperfectives and secondary Imperfectives can derive delimited Perfective verbs, such as *побить*[p] 'spend some time beating[p]', *поразбивать*[p] 'spend some time breaking[p] (a series of things)'. This is only a small sample of how aspect has been grammaticalized in the derivational morphology of Russian.

Following Smith (1991) and her augmentation of Vendler's (1957) categories, I will refer to the entities expressed by verbs (or, more accurately, verb constellations) as ''situations'' (cf. also Binnick 1991 and Comrie 1976), which can be States, Activities, Accomplishments, Achievements, and Semelfactives (the first four terms have their standard Vendlerian interpretation; Semelfactive refers to an instantaneous situation without a change of state, such as *cough once* in English). The Slavic Perfective and Imperfective, however, are overtly marked grammatical categories and thus express what Smith (1991) calls ''viewpoint'' aspect, rather than being strictly governed by situation aspect. Although there is a strong association of Perfective with Accomplishments, Achievements, and Semelfactives, and of Imperfective with States and Activities (see examples [1–5]), such a generalization would suppress the real intricacies of aspectual use in Slavic.

(1)   *Вчера мы были*[i] *дома.*
       Yesterday we-NOM be[i]-PAST home.
       'We were[i] at home yesterday.'          [State]

(2)   *Я сейчас читаю[i].*
      I-NOM now read[i]-NON-PAST.
      'I am reading[i] now.'                         [Activity]
(3)   *Соседи построили[p] дачу.*
      Neighbors-NOM build[p]-PAST dacha-ACC.
      'The neighbors built[p] a dacha.'             [Accomplishment]
(4)   *Катя получила[p] твое письмо.*
      Katja-NOM receive[p]-PAST your letter-ACC.
      'Katja received[p] your letter.'              [Achievement]
(5)   *Кто-то стукнул[p] в дверь.*
      Someone-NOM knock[p]-PAST on door-ACC.
      'Someone knocked[p] (once) on the door.'      [Semelfactive]

In addition to these associations (and sometimes in defiance of them), in Russian, both Perfective and Imperfective can be used (to make distinctions, in various contexts) to state that something happened in the past or will happen in the future, to identify characteristics, to indicate that an action had some duration, or to be either polite or insulting. There are further numerous restrictions relating to use with tense, mood, voice, measurement, motion verbs, narrative strategies, warnings, contractual agreements, negation, and evaluation of results (all of which will be illustrated in section 4). Few uses of Russian aspect follow a hard-and-fast rule; for most claims that can be made about the use of one aspect over the other there are counterexamples. And of course construal plays a pervasive role in the selection of aspect, particularly in the eastern group languages (Dickey 2000: 28, 287; Zaliznjak and Šmelev 2000: 37).

Binnick (1991: 136–139) states that although "Slavic aspect is often taken to be the prototypical exemplar of aspectual systems", and indeed the very term *aspect* is a loan translation from Slavic (cf. Russian *вид*), there are important differences between Slavic aspect and aspect in other languages. In his detailed empirical comparison of tense and aspect categories across 64 languages (including Russian, Czech, Polish, and Bulgarian), Dahl (1985: 69) finds a perfective versus imperfective distinction in 45 languages. Dahl (1985: 21, 27, 69, 70, 80, 84–86, 189) repeatedly states that the Perfective versus Imperfective distinction in Slavic is significantly different from the distinction found in other languages. Dahl puts the Slavic languages in their own separate subgroup, which he refers to as "idiosyncratic" and "deviant"; he even wonders "whether the Perfectivity/Imperfectivity opposition in Russian, Polish, Czech and Bulgarian should be subsumed under PFV:IPFV at all". The only languages in his survey that appear to be remotely similar to Slavic in this respect are Georgian, Hungarian, and Margi (a Chad language; Dahl 1985: 85–89). Dahl

(1985: 85) does, however, note that the correlations between Slavic Perfective versus Imperfective and his hypothesized prototypical distribution are quite high. He suggests (Dahl 1985: 89, 189) that there may be a connection between the unusual nature of the Slavic Perfective versus Imperfective and "the fact that the Slavic PFV : IPFV is realized as a derivational rather than as an inflectional category".

Slavic deviates from the cross-linguistic aspectual norm in two ways: (*a*) by marking Perfective versus Imperfective in all tenses and moods, and (*b*) by using (or allowing) an Imperfective in situations where most other languages would require a Perfective (Dahl 1985: 74–85); the latter tendency is particularly strongly documented for Russian, a fact that will be corroborated by the survey presented in section 5. For most other verbal categories, one member of any given opposition is universally marked (with only rare counterexamples, Dahl 1985: 71–72), but this is not the case for perfective versus imperfective. It is usually the case that perfective is unmarked in this opposition, but for Slavic languages Imperfective serves as the unmarked member (at least for most verbs, but cf. Janda 1995; note that Galton 1976 considers Imperfective to be marked in Slavic; and there are also scholars who consider Imperfective versus Perfective to be an equipollent distinction in Russian, most notably Padučeva 1996).

Semantic analyses of the perfective versus imperfective distinction have traditionally involved binary features, an approach that has yielded many insights, but has ultimately proven inadequate, as I will argue in section 2. The proposed features can be motivated by and subsumed under a metaphorical model based on the division of matter into two basic types: (*a*) discrete solid objects such as shells, nuts, apples, chairs, and (*b*) fluid substances such as sand, water, air, and smoke. I will assert (in more detail in section 3) that human beings can develop idealized cognitive models (Lakoff 1987) for discrete solid objects and fluid substances. Consistent with these ICMs, speakers of a language like Russian can access a rich array of knowledge, such as, for example:

   i.   a discrete solid object has an inherent shape and edges, but a fluid substance does not;

  ii.   it is impossible (or at least difficult) to penetrate the edges of a discrete solid object with a finger, but it is easy to penetrate a fluid substance;

 iii.   no two discrete solid objects can be in the same place, but it is possible to plunge a discrete solid object into a fluid substance or to mix two fluid substances together;

 iv.   it is easier to step along a path of discrete solid objects than to wade through a fluid substance;

v.   a discrete solid object is stable and can be grasped, but a fluid substance runs through one's fingers;

vi.  a discrete solid object could be dangerous if propelled by force, but a fluid substance is soft and spreadable.

I will assert that this ICM serves as the source domain for a metaphor, according to which PERFECTIVE IS A DISCRETE SOLID OBJECT and IMPERFECTIVE IS A FLUID SUBSTANCE. If we compare the properties of matter with the uses of aspect in Russian, the parallels are striking, as summarized in Table 1.

Here are a few Russian examples for orientational purposes:

(6)  *Он увлекся*[p] *выращиванием грибов.*
     He-NOM     become-fascinated[p]-self-PAST     cultivation-INST
     mushrooms-GEN.
     'He became fascinated[p] with cultivating mushrooms.'

(7)  *Пахло*[i] *горячим хлебом из тостера.*
     Emit-smell[i]-PAST hot bread-INST from toaster-GEN.
     'There was a smell[i] of hot bread from the toaster.'

(8)  *Вадим ничего не сказал*[p]*, прошел*[p] *в комнату и лег*[p] *на диван лицом к стене.*
     Vadim-NOM   nothing-GEN   not   say[p]-PAST,   go-through[p]-PAST
     into room-ACC and lie-down[p]-PAST on couch-ACC face-INST to
     wall-DAT.
     'Vadim didn't say[p] anything, went[p] into the room, and lay down[p]
     on the couch with his face to the wall.'

(9)  *Мы стояли*[i] *по разным сторонам пруда и смотрели*[i] *друг на друга.*
     We-NOM stand[i]-PAST along opposite sides-DAT pond-GEN and
     look[i]-PAST friend on friend-ACC.
     'We stood[i] on opposite sides of the pond and looked[i] at each other.'

The change of state in (6), expressed by a Perfective verb, is presented as a complete, unique bounded situation, a Gestalt no longer divisible into stages, with a tangible, graspable result. The situation expressed by an Imperfective in (7), by contrast, has no accessible onset or ending and no result. Example (8) presents a string of Perfectives that have the effect of sequencing a series of discrete situations and moving the narrative along, whereas the Imperfectives in (9) commingle in a backgrounded description. A detailed analysis illustrating all of the properties in Table 1 is presented in section 4. These four examples will also be used to illustrate the semantic features that have been proposed in previous descriptions of Russian aspect, presented in section 2.

## 2.   Merits and disadvantages of feature analyses

The search for invariant distinctive semantic features for Russian aspect preoccupied researchers for the bulk of the twentieth century, an endeavor that ultimately fizzled, leaving a scattering of partial insights, none of which is fully adequate. My goal is to show that the variety of concepts in the semantic features suggested by scholars can be incorporated in a comprehensive, coherent model. I will undertake a survey of the features and their proponents. Given the quantity of scholarship on Russian aspect, this overview is by necessity incomplete, though it aims to be representative.

Most feature analyses assume that the Russian Perfective is the marked member of the opposition, with Imperfective as a default value, and consequently describe the Perfective positively and the Imperfective as its negation. Authors have exercised considerable freedom of choice in devising terms, and many features that are essentially ''the same'' go by a variety of names. Below I attempt to smooth over superficial differences resulting from arbitrary terminology, and I also include authors who have used similar descriptors without any claims of strict feature analysis. This overview combines the work of Russian aspectologists, Slavists (who compare two or more Slavic languages), and other linguists who address Slavic or Russian within the context of a broader range of languages.

The features most frequently cited for the Perfective are boundedness and totality, which are combined in Forsyth's (1970: 8) definition: ''expresses the action as a total situation summed up with reference to a single juncture''. Example (6) invokes clear boundaries in Russian, presenting a sharp break between the Perfective situation and prior time: *Он увлекся*[p] *выращиванием грибов* 'He became fascinated[p] with cultivating mushrooms'. By contrast, example (7) makes no reference to boundaries: *Пахло*[i] *горячим хлебом из тостера* 'There was a smell[i] of hot bread from the toaster'. *Boundedness*, also known as delimitation or telicity, refers to the reaching of some limit (thus including ingressives); among the proponents of boundedness are Avilova (1976), Jakobson (1971[1957]), Padučeva (1996), and Talmy (2000). Other names used for this feature include ''delimitation'' (Bondarko 1971), ''closure'' (Timberlake 1982), and ''demarcatedness/dimensionality'' (van Schooneveld 1978). Ultimately, Wierzbicka's (1967) metalanguage description of Polish aspect focuses on boundedness, since the differentiation hinges on the onset of a situation as beginning in a perfective or imperfective way.

*Totality* refers to the fact that a perfective situation is viewed as a whole. Adherents to this interpretation include Bondarko (1971), Comrie (1976), Dickey (2000), Durst-Andersen (1992), Smith (1991), and Maslov

Table 1.   *Overview of solids vs. substances distinction and implications for Russian aspect*

| Discrete solid objects | | Fluid substances | |
|---|---|---|---|
| What we know about discrete solid objects | *What this means for the Russian Perfective* | What we know about fluid substances | *What this means for the Russian Imperfective* |

| | Inherent properties | | |
|---|---|---|---|
| A. Have edges | *Boundedness* | A. Have no inherent edges | *Unboundedness, lack of reference to beginning/end* |
| B. Can have various shapes; can be thin stable slices | *Perfective can be of various durations and can be infinitely short; punctuality* | B. Shape is irrelevant; cannot form thin stable slices; must have thickness; can be omnipresent | *Must have some duration and can be infinitely long; generalizing effect of negation* |
| C. Each item has integrity as a unique discrete whole; heterogeneity | *Single one-time accomplishments and achievements; wholeness; definiteness; totality* | C. Uniform, continuous and divisible; homogeneity | *Ongoing activities and states; temporal stability; repetition; indefiniteness* |
| D. Countable units | *Used with measured adverbials and partitive genitive* | D. Uncountable masses; can fill a space | *Used with indefinite time reference, or with references that form boundaries* |
| E. Cannot stream, pour; come all at once in a whole piece | *Lack of determined/non-determined distinction; totality, completion, sense of a Gestalt* | E. Can stream, pour or be stagnant; can come gradually | *Determined vs. non-determined motion verbs; processual meanings* |
| F. Impenetrable, only experienced from exterior | *Exterior reference* | F. You can reach/see/be inside | *Interior reference, manner, unfolding* |
| G. Can be converted to substances: (*a*) when many are viewed from a distance, (*b*) when pulverized | *Perfectives can generate a) derived imperfectives with repetitive meaning, b) derived imperfectives with processual meaning* | G. Can be converted to solids: (*a*) by solidifying, (*b*) when reference is made to a single particle, (*c*) when packaged in a firm container | *Imperfectives can generate derived perfectives a) using perfectivizing prefixes that organize the action, b) using the -ну- suffix, c) when states/ activities are prefixed in no-/npo-; rehomogenized derived imperfective prefixed with no-* |

**Interactions of matter and discourse structure**

| | | | |
|---|---|---|---|
| H. Cannot share space with other solids | *Sequencing of perfectives with each other and with the human observer (a solid) at the present moment, which can force the meaning of future* | H. Can share space with both substances and solids | *Simultaneity of imperfectives with each other, with the human observer at the present moment, and with perfectives; present tense; historical present* |
| I. Can provide a firm path of stepping stones | *Perfectives are dynamic, move narrative along* | I. Static, impede movement | *Imperfectives retard narrative, encourage dwelling on characteristics, setting* |
| J. Perceptually salient objects | *Figure, foregrounding in narrative* | J. Perceptually diffuse masses | *Ground, backgrounding in narrative; neutral meaning of general-factual* |
| K. Can serve as barriers or boundaries for substances | *Use of perfective phasal verbs with imperfective infinitives; ingressives, terminatives, perduratives and delimitatives* | K. Can be bounded by solids or mixed with other substances | *Use of imperfective infinitives with phasal verbs* |

**Human interactions with matter and pragmatic structure**

| | | | |
|---|---|---|---|
| L. Provide the satisfying feel of a stable, manipulable object | *Sense of result, (successful) completion; contracts; ability to perform; neutral imperatives giving new instructions* | L. Slip through the fingers, nothing graspable | *No sense of result or completion; conative meanings; implications of bad work; frustration* |
| M. Hard, might be an obstacle, could hurt if used with any force | *Negative warnings; impolite imperatives* | M. Comfortingly soft and spreadable | *Generalizing meaning of negative imperatives; polite imperatives* |
| N. Can spontaneously form as lumps of substances | *Successful completion in relation to conative imperfectives* | N. Can, like an odor or residue, signal the prior presence of solids | *Reversals of action* |

(1965). Vinogradov's (1972) completion feature belongs here as well, and note that Comrie (1976: 18) refers to perfective situations as complete (rather than completed). Durst-Andersen (1992: 106), Padučeva (1996: 26–27), and Talmy (2000: 48–49) describe the perfective as uniplex as opposed to the multiplex imperfective, and this feature seems to parallel totality (versus non-totality) as well. Smith's (1991: 5–6, 92, 191, 195) characterization of grammatical aspect (what she calls "viewpoint aspect") as "full" (perfective) as opposed to "partial" (imperfective) belongs in this group. To illustrate, the Perfective verb *увлекся*[p] 'became fascinated[p]' rolls all possible subevents into a single package, a total situation; the Imperfective equivalent *увлекался*[i] 'was becoming fascinated[i]' involves only a subphase and does not refer to the whole situation.

*Definiteness* is used to caption the Perfective's tendency to refer to single, individuated actions, and behaves as the verbal parallel to the nominal category by the same name. If a situation is definite, it is also unique and specifically localizable in time. The uniqueness of the situation referenced by *увлекся*[p] 'became fascinated[p]' is consistent with this feature. Both Bondarko (1971) and Dickey (2000) claim this feature. Closely related to definiteness is a feature that is alternatively recognized as representing *change versus stability* or *sequencing versus simultaneity* (because stability and simultaneity are relatively indefinite in relation to change and sequencing). This feature recognizes the perfective's ability to signal change and the sequencing of situations (cf. example [8]: *Вадим ничего не сказал*[p]*, прошел*[p] *в комнату и лег*[p] *на диван лицом к стене* 'Vadim didn't say[p] anything, went[p] into the room, and lay down[p] on the couch with his face to the wall'), as opposed to the imperfective, which refers to situations that are stable and can co-occur with other situations (cf. example [9]: *Мы стояли*[i] *по разным сторонам пруда и смотрели*[i] *друг на друга* 'We stood[i] on opposite sides of the pond and looked[i] at each other'). Bondarko (1971) suggests this feature, along with Durst-Andersen (1992), Galton (1976), and Langacker (1991a). This opposition is also proposed in terms of "change of state" (perfective) versus "ongoing" (imperfective) by Townsend (to appear).

*Exterior versus Interior* refers to the fact that perfective situations are seen as if from without (like totality), obscuring any view of internal structure, whereas imperfective situations are seen as if from within, allowing the viewer to perceive how they unfold. Again, *увлекся*[p] 'became fascinated[p]' does not allow us to unpack the situation and examine it as a gradual process; this is only possible for the derived Imperfective *увлекался*[i] 'was becoming fascinated[i]'. This opposition is identified by Comrie (1976), and confirmed by data presented by Bybee, Perkins, and Pagliuca (1994: 174) showing "the overwhelming occurrence of locative

sources (meaning 'to be in or at an activity') for progressives, which develop into imperfectives''. The exterior versus interior feature is an abstraction of Isačenko's (1960) famous parade metaphor, according to which the perfective views the action as a whole parade from the perspective of the grandstand, whereas the imperfective views the action from the perspective of a participant in the midst of the parade. Padučeva (1996) refers to the same feature using the terms ''retrospective'' versus ''synchronic'', based on the logic that past situations can be viewed from a distance, but only present situations can be viewed from within.

*Figure versus ground* describes the Perfective as the aspect associated with the situations of a main plot line, whereas Imperfective is used for digressions on characteristics of the setting. Binnick (1991), Čertkova (1996), Chvany (1996a, 1996b), Galton (1976), Hopper (1979), and Stoll (2001) all make use of this observation. The Perfective onset of a fascination with mushroom cultivation in example (6) is a foregrounded, plotline situation, in contrast to the smell of bread in (7), which is a backgrounded description.

*Punctuality versus durativity* oppose the perfective's ability to reduce an action to a single package, viewed as an instant, to the imperfective's ability to signal temporal extension. To return to examples (6) and (7), *увлекся*[p] 'became fascinated[p]' presents a sudden change, whereas *пахло*[i] 'there was a smell' implies some duration. Čertkova (1996) uses both of these features (though she uses the term ''momentariness'' for the perfective). Mazon (1914) refers only to punctuality, whereas Bondarko (1971) refers only to durativity (termed ''processuality''). Padučeva (1996) asserts that it is possible to derive all meanings of the imperfective from durativity.

*Resultative* acknowledges the ability of the perfective to indicate that the change produced by a situation has some lasting effect. The result of *увлекся*[p] 'became fascinated[p]' is expected to be ongoing, meaning that the individual continues to be occupied with mushroom cultivation, but *пахло*[i] 'there was a smell' need not yield any result at all. This feature is employed by both Čertkova (1996) and Vinogradov (1972).

All of these features are apt descriptors for the behavior of aspect, but all are subject to counterexamples. Semantic features of this sort are inevitably somewhat arbitrary and vague. Furthermore, the pattern of citations above betrays a lack of confidence that any one feature might solve all our problems; most authors name at least two, some as many as seven features. One gets a very strong sense that these are the pieces to a larger puzzle, that there must be some idea that transcends and comprehends all of them. Stunová (1993: 25), for example, states this as a need to ''go beyond invariant meaning'', Galton (1976: 289) asserts that aspect's

"organizing role goes beyond any feature of the situation itself", and Dahl (1985: 18, 74) regards the search for binary features to explain aspect "futile".

There are other problems with this piecemeal approach. At the level of individual features (or even small bundles of features), there are exceptions that cannot be accounted for; Glovinskaja (1982: 7–25) gives an inventory of problematic facts for Russian. She also points out that the use of features of any sort ultimately reduces to circular reasoning, since the features (or descriptions of them) are just synonyms for "perfective" and "imperfective". In this manner, all we acquire is a new layer of labels, rather than satisfactory understanding of what underlies them (cf. Zaliznjak and Šmelev 2000: 32). This new layer of labels is entirely abstract, lacking any grounding in human experience. And, needless to say, features are virtually useless in pedagogy; the second language learner gains few, if any insights from a statement like "the perfective signals boundedness and totality". Furthermore, features, particularly invariant ones, are too rigid to account for diachronic and cross-linguistic variation. Nor can they motivate the fact that such seemingly disparate features appear to work in concert. It is hoped that the metaphorical model proposed in this article will integrate the achievements of featural/descriptive analyses, and in so doing provide an explanation that is both theoretically and pedagogically satisfying. This model will also show how aspect can be directly grounded in embodied experience.

## 3.   The ICM of matter and its relationship to count versus mass

Though the notion that aspectual concepts might be connected to concepts relating to matter in the physical world, and particularly the count versus mass distinction, is not new, the model that I present goes beyond previous claims of this sort and makes specific claims for Russian and Slavic. I will commence with a brief survey of relevant observations in the literature. I will then examine the ICM of matter in Russian and discuss how it conflates notions of count versus mass, solid versus fluid, hard versus soft, shaped versus formless, etc. In so doing, I will assert that the ICM of matter is a basic-level concept and thus is both more narrow in its scope (focusing specifically on countable solids as opposed to pourable masses, and relegating solid masses such as gold and wood to a peripheral status), and more richly endowed with real-world entailments than an abstraction such as count versus mass (which by itself could not account for many of the properties in Table 1). This amounts to a distinction primarily between Wierzbicka's (1985: 337) class I ("Countables only—names of non-divisible individual objects (bottle, chair, book, etc.)") and class

II ("Singularia only—names of homogeneous substances (butter, wine, water, etc.)"). The investment that Russian has made in count versus mass and similar individuation distinctions is considerable and shows a propensity to apply mass concepts to a broad range of phenomena. The role of the ICM of matter as a source domain in the mapping of properties to aspectual distinctions will then be explored, as well as the interactions of this metaphor with the metaphor of the human observer in the timeline.

## 3.1. *Previous identifications of properties of aspect with properties of matter*

The conceptualization of situations may parallel the conceptualization of physical entities. Galton (1976: 10, 288), in his comparison of aspect across Slavic, speaks suggestively of "events" being "arranged" in time (like objects). Talmy (2000: 67) states that "[a]spect can be characterized as the 'pattern of distribution of action through time'", implying a metaphor based on the distribution of matter through space. Comrie (1976: 18), in arguing against punctuality as the feature description for the perfective, states that

a more helpful metaphor would perhaps be to say that the perfective reduces a situation to a blob, rather than to a point: a blob is a three-dimensional object, and can therefore have internal complexity, although it is nonetheless a single object with clearly circumscribed limits.

Focusing on the Russian Perfective, Holden (1989: 33) suggests it is a manifestation of a basic metaphor of the sort "AN EVENT IS A CONTAINER/ PHYSICAL BODY". More to the point, Mehlig (1994, 1996, 1997, 2003) suggests a correlation between the morphological marking of Russian nouns and verbs in terms of what he calls "heterogeneity" versus "homogeneity". According to Mehlig, "heterogeneous" items are those that have natural boundaries, have a part versus whole structure, and do not permit divisibility or additivity (if you break a chair into pieces, no piece is a chair, and if you add one chair to another you have two chairs, not just a chair); whereas "homogeneous" items have the opposite characteristics. Wierzbicka (1985: 316–317) characterizes this distinction as the difference between something that has parts that cannot be removed or rearranged without destroying the identity of the referent (count), as opposed to something for which the removal or rearrangement of parts makes no difference (mass).

Mehlig (1996) makes specific reference to the count ("heterogeneous") versus mass ("homogeneous") distinction, and to parallels with Russian

Perfective versus Imperfective. Smith mentions associations without actually asserting a connection between nominal and verbal categories: she states that aspect is learned as easily as the count versus mass distinction (1991: xvii), and repeatedly notes a tendency for telic situations to have singular count arguments, and for atelic situations to have mass or plural arguments (1991: 31, 48, 73, 184–186). Brinton (1985a: 165; 1991) likewise finds a correlation between count nouns used as grammatical subjects or objects with perfective verbs and mass or plural nouns in these roles with imperfective verbs (and cf. also Mourelatos 1978), and Kresin (2000) links the use of individuating quantifiers with Perfective versus collectivizing quantifiers with Imperfective in Czech and Russian.

Like Mehlig, there are also scholars who take this association a step further and assert that count versus mass and perfective versus imperfective may derive from the same conceptual source; Dahl (1985: 76) notes that this parallel "has often been pointed out". Carlson (1981) relates the count versus mass distinction to the use of the English progressive, invoking particularly the properties of partitivity and additivity. In 1986 both Morrow and Bach argued that similar conceptual strategies underlie count versus mass and aspectual distinctions. It is Morrow's (1986: 426) contention that grammatical morphemes express "general and pervasive properties of objects and actions (or ways of viewing them)", and he locates count versus mass relative to a higher-level distinction, which he calls "individuation" that applies to both nouns and verbs:

Not only do solid objects differ from aggregates in terms of individuation (*ball* versus *sand*), but bounded situations, such as events, differ from unbounded ones, such as activities and processes, in the same way (*walk to school* versus *walk*).... Unindividuated things can be individuated by bounding. Thus, *sand* becomes *cup of sand* and *walk* becomes *walked for an hour*. (Morrow 1986: 429)

In very much the same vein, Bach develops an "algebra of events and processes" based loosely on the count versus mass distinction and even suggests some cross-linguistic comparisons:

In English, the way of switching back and forth between count and mass, event and process typically involves no change in the forms involved. The difference is rather induced by the context. In other languages, overt morphological processes or relationships are available or obligatory, for example, in the perfective-imperfective contrasts in the Slavic languages. (Bach 1986: 11)

Langacker (1987: 248–267; 1991b: 87) likewise acknowledges a strong parallelism between the count versus mass nominal distinction and per-

fective versus imperfective, calling them "precisely identical" (but it must be noted that his definitions of perfective and imperfective are not applicable to Slavic).

Smith, Carlson, Bach, Langacker, and Mehlig all concur that count versus mass is a continuum that overlaps to some extent with plural (because the plurals of count nouns can behave like mass nouns). Bach, Langacker, and Mehlig also raise a number of related issues that complicate the count versus mass distinction (see particularly Langacker 1991b: 59–74), such as the way that some mass nouns "homogenize" what is actually a disparate aggregate of items (cf. English *garbage*, Russian *мусор* and Wierzbicka's (1985) class XII), and conversions enabled by measures such as *a cup of water* (creating a count noun from a mass). These complications will be examined in the context of the ICM of matter discussed in the next subsection.

### 3.2. *The ICM of matter*

In this subsection I will assert that the ICM of matter that motivates Russian aspect is not reducible to count versus mass, although it has important implications for the count versus mass distinction. The Russian ICM of matter additionally draws on the distinction of solid versus fluid, creating a richly textured opposition of a prototypical countable solid versus a prototypical uncountable fluid. Because we are dealing with an *idealized* model of matter in the world, the focus is on the prototypes, which necessarily entails a lack of focus on marginal and transitional types of matter. It is also important to remember that this is a *cognitive* model of matter, not a physical model of matter, and this means that some of the complications of the physical world are suppressed, yielding a folk model not entirely compatible with theories of physics.

Although not every child has a sandbox, all children assimilate the experiences we associate with this environment, including the important lesson that the physical world contains two maximally distinct forms of matter as (*a*) discrete solid objects (corresponding to toys like the shovel, pail, and truck in the sandbox), and (*b*) fluid substances (like the sand). This is achieved through the manipulations of touching, grasping, dropping, pouring, colliding, throwing, etc. associated with child's play. The ICM of matter is a basic-level concept directly derived from embodied experience. The count versus mass distinction, though it is certainly informed by the ICM of matter, is an abstraction that belongs to a superordinate level and involves higher-order generalizations, such as that some masses may be solid. As Bach (1986) and Langacker (1991b: 72–73) point out, the conceptual difference between an object and the

substance of which it is composed is highly nuanced (cf. Langacker's observation that *rock* references both a countable object and the substance of which it is made). I would argue that the comprehension of this difference and of solid masses involves secondary extension of the ICM of matter, mapping the properties of fluids (homogeneity and lack of inherent boundaries requiring measurement by unit rather than by counting) onto non-fluids. Another secondary concept is that of the plurals of count nouns, where plural number suppresses individuation and creates the effects of mass (cf. Johnson 1987: 104; but also Corbett 2000: 79, who notes that though plural shares some behaviors of mass, it is distinct). When a count noun like *apple* appears in a bare plural, *apples*, or with an indefinite quantifier, *some apples*, there is a homogenizing effect that motivates mass-like quantification (such that *a basket of apples* is parallel to *a cup of water*). Collective nouns derived from count nouns (more widespread in Russian than in English, as we will see in section 3.3) further homogenize plural individuals into uncountable masses. A similar job is performed by nouns (like English *garbage*, Russian *мусор* discussed above) that generalize over disparate individuals to create homogeneous masses. Within the ICM of matter, items of indeterminate texture that lack clear association with one or the other pole of the distinction are marginal. An example would be a rotten piece of fruit, which is unique and possesses a definite shape (like a discrete solid object), but upon manipulation collapses and is thus penetrable and spreadable (like a fluid substance). Such items do not play a formative role in shaping the concepts of the ICM.

Because it is more specific than the abstract count versus mass distinction, the ICM of matter (thanks to the conflated distinction of firm solid versus soft fluid) presents a rich domain of oppositions, only a subset of which can be motivated by count versus mass alone. This can be demonstrated by reviewing the properties in Table 1. Only properties C (Integrity) and D (Countability) are direct entailments of count versus mass. A (Edges) and B (Shape) derive from the interplay of count versus mass and solid versus fluid. E (Streamability) and F (Penetrability) draw more strongly upon the solid versus fluid aspects of the distinction than upon count versus mass. G (Conversion) is strongly motivated by count versus mass, though the interplay of solids and fluids (particularly in the filling of solid packages with fluid contents) is also apparent. All of the remaining properties (H–N) receive input from both solid versus fluid and count versus mass distinctions. The ICM of matter thus incorporates relevant count versus mass concepts in a richly textured domain of distinctions directly grounded in human embodied experience.

## 3.3. *Russian/Slavic morphological investment in relevant distinctions*

Slavic in general, and Russian in particular, has made considerable investments in distinctions relevant to the ICM of matter in terms of nominal morphology. It is likely that these nominal distinctions and similar verbal (aspectual) distinctions are part of a consistent pattern.

Number plays a pervasive role in Russian grammar and involves an intricate complex of phenomena (a complete account is beyond the scope of this article; for more detail, see Timberlake 1993). Russian marks number obligatorily and overtly in the morphology of its nouns, pronouns, adjectives, verbs, and, to some extent, numerals: 'one' has both a singular (*один* [masc.], *одна* [fem.], *одно* [neut.]) and a plural (*одни*), and some indefinite numerals function both as direct quantifiers (*много* 'many' is syntactically neuter singular and governs the genitive case) and as adjectives (*многие* 'many' has only plural forms and agrees with the noun it modifies rather than governing it). Many nouns have special paucal forms used with numerals for 'two', 'three', and 'four'. Though indeclinable nouns may lack an overt mark, their number is marked on the pronouns, adjectives, and verbs syntactically required to agree with them. Even when number is grammatically neutralized (in the case of singularia and pluralia tantum), it is clearly marked nonetheless. Russian thus belongs to a group of languages labeled by Corbett (2000) as "typologically odd". In many languages, the marking of number is not obligatory and/or there is a default general number.

Though the prototypes for count and mass may be universal, the details of where the line between them is drawn differs from language to language (consistent with the language-specific mapping of universal conceptual space presented in Croft 2001). Corbett (2000: 80) speculates on possible variations in the count versus mass distinction and cites Russian as a salient example:

Thus there has been interesting work on the treatment of fruit and vegetables in Slavonic. Simplifying a little, we may say that Russian *kartofel'* 'potatoes', *vinograd* 'grapes', *kljukva* 'cranberries', *gorox* 'peas', *izjum* 'raisins', and many more like them, do not distinguish singular and plural (in some cases there are derived forms which do). On the other hand, *frukt* 'fruit' has singular and plural forms. Russian then sets the boundary for number-differentiability somewhat higher than English, and indeed a little higher than some other Slavonic languages.

Wierzbicka (1985: 324–325) corroborates the finding that Russian makes this distinction at the level of items that are slightly larger than in English. Russian stands out typologically as a language that categorizes as masses items that other languages categorize as individuals. This is

consistent with a pattern of linguistic categorization widespread in Slavic and particularly pronounced in Russian. In Russian many ethnonyms are actually collectives, requiring a special singulative suffix (*-ин-*) in order to refer to individuals, as in *болгары* 'Bulgarians' versus *болгарин* 'Bulgarian', *англичане* 'English people' versus *англичанин* 'Englishman'. A similar suffix (*-ин-а* sometimes enlarged with a diminutive *к* to form *-инк-а*) creates derived nouns to refer to an individual separated from a mass: *виноград* 'grapes' versus *виноградина* 'grape', *горох* 'peas' versus *горошина* 'pea', *кровь* 'blood' versus *кровинка* 'drop of blood', *песок* 'sand' versus *песчинка* 'grain of sand' (cf. Townsend 1975: 190). Russian is well-endowed with collective suffixes (which sometimes serve also to create abstract nouns) that form singularia tantum nouns, including *-ств-о, -ь-е, -няк, -ник, -тв-а, -ур-а,* and *-н-я: учитель* 'teacher' versus *учительство* 'teachers; teaching profession', *зверь* 'wild beast' versus *зверье* 'wild beasts', *дуб* 'oak tree' versus *дубняк* 'oak grove', *береза* 'birch tree' versus *березник* 'birchwood', *лист* 'leaf' versus *листва* 'foliage', *аспирант* 'graduate student' versus *аспирантура* 'graduate students; graduate studies', *двор* 'court' versus *дворня* 'servants' (cf. Townsend 1975: 194–195). Corbett (2000: 119, citing Greenberg) also notes that a proto-Slavic collective suffix has been transformed into a plural (cf. Russian *-ь-я* in *брат* 'brother' versus *братья* 'brothers'). A recent dissertation in Moscow was devoted entirely to exploring the intricacies of Russian distinctions involving count, mass, and number (Ljaševskaja 1999).

I have presented in detail (Janda 1996, see particularly chapters 3 and 4) a complex array of morphological changes across the Slavic languages in the past millennium that increased the number of distinctions relevant to individuation. This series of changes was triggered by the collapse of a nominal paradigm and of the dual number category; the associated morphemes were redeployed to make individuation distinctions throughout Slavic. Though all Slavic languages gained distinctions on the low end of this scale (with morphemes such as the Russian Genitive/Locative singular *-у* associated with mass nouns), Russian did not acquire distinctions at the high end of the scale (specialized endings and numerals for viriles and animates; for specific detail see also Janda 1999). Thus again Slavic seems to be heavily invested in morphological marking of individuation, and within this context Russian emphasizes the bottom end of the scale, focusing attention on masses. There may be some lexical evidence of this focus as well: Slavic languages have two verbal roots corresponding to English 'pour', one for wet substances (cf. Russian *лить*), and one for dry substances such as sand (cf. Russian *сыпать*).

Mehlig (1996) has noted some parallels between Russian nominal and verbal morphology, such as the connection between singulative suffixes

(cf. above) and the Semelfactive *-ну-* (Russian *кричать* 'yell' versus *крикнуть* 'give a single yell'). To this I would add the observation of a parallel between the collective suffixes (cf. above) and the pervasive Imperfectivizing suffixes (Russian *-ай-, -вай-, -ывай-*), which create undifferentiated activities or repetitions. Like other Activity situations (such as Russian *работать* 'work' which homogenizes disparate actions, much as *мусор* 'garbage' homogenizes disparate items), derived Imperfectives (*разбивать*[i] 'break, be breaking[i]') can become discrete only when bounded by a quantifier (like the delimitative *по-*), creating a parallel between verbs such as *поразбивать*[p] 'spend some time breaking[p]', *поработать*[p] 'spend some time working[p]' and the measurement of masses in *стакан воды* 'a glass of water'. The ubiquity of the singular versus plural distinction is also paralleled by Perfective versus Imperfective; in fact, the few verbs that lack derived partners of the opposing aspect are referred to as ''imperfectiva tantum'' and ''perfectiva tantum''. The next subsection will explore the metaphorical mappings that facilitate such parallels between nouns and verbs.

### 3.4. *The aspectual metaphor as a specific version of* TIME IS SPACE

I will argue that the ICM of matter provides the source domain for a version of the universal TIME IS SPACE metaphor, according to which SITUATIONS ARE MATERIAL ENTITIES, and, more specifically, PERFECTIVE IS A DISCRETE SOLID OBJECT versus IMPERFECTIVE IS A FLUID SUBSTANCE.

The fact that languages of the world conceptualize time in terms of space has been proposed as a linguistic universal by Haspelmath (1997), who provides compelling evidence from fifty-three languages; Lakoff and Johnson (1999: 137–169) also make a cross-linguistic case for TIME IS SPACE. Data presented by Bybee, Perkins, and Pagliuca (1994) supports the notion that verbal categories, and aspect in particular, often evolve from or incorporate spatial concepts. My own work on the semantics of case (Janda 2002a, 2002b, 2002c, 2000d and Janda and Clancy 2002) provides ample evidence of the robustness of spatial metaphors for time in Slavic, as well as of the ways that these metaphors vary from language to language. More generally, case semantics are indicative of the power of spatial metaphors in motivating basic grammatical categories (see particularly Janda 2002b). Space is occupied by matter. If space consisted merely of empty dimensions, it would provide little (if any) structure for metaphorical imagination. Indeed, spatial metaphors almost invariably refer to the parameters of material ''objects'' of various sorts. Aspect refers very specifically to the physical forms of matter, and metaphorically maps this parameter to the domain of space.

This argument contains the supposition that metaphorical extensions from categories pertaining to nouns might be operative in verbs. Of course a basic difference between nouns and verbs is that prototypically nouns describe items that are stable through time and therefore independent of that dimension, whereas verbs describe items that are not stable or independent of time. To continue the parallel between nouns and verbs, Slavic aspect behaves as a classifier system for verbs, sorting all verbs into two categories: Perfective situation/objects, which are conceived of as occupying time the way that a discrete solid object occupies space; and Imperfective situation/objects, which are conceived of as occupying time the way that a fluid substance occupies space. The proposed conceptualization of Perfective and Imperfective as specific types of physical entities is consistent with Chvany's (1996b: 286, 295) and Langacker's (1987: 248) assertions that aspect (or, at least perfective) has the psychological impact of a Gestalt. The two categories of aspect correspond to Parril's (2001) report on the association of ''ballistic gestures'' with perfective and gestures of ''continuous, multiple beats'' with imperfective.

To summarize, speakers of Slavic languages must choose between two grammaticalized aspectual forms in order to express a predicate. It appears that this choice is at least partially based on the metaphorical associations PERFECTIVE IS A DISCRETE SOLID OBJECT and IMPERFECTIVE IS A FLUID SUBSTANCE, a specific instantiation of the universal TIME IS SPACE metaphor. Thus the solid/substance metaphor mediates the speaker's choice of aspect: if a given situation triggers affinities with embodied knowledge of discrete solid objects, then the perfective is the best choice, whereas the choice of the imperfective will be supported when a situation triggers affinities with embodied knowledge of fluid substances. As we shall see, construal makes room for discourse and pragmatic variations in aspectual choice, which can be invoked or ignored in favor of default values.

### 3.5.   *The human observer in the timeline*

There is one further entailment of the ICM of matter that is very important for the present metaphorical model of aspect, one that involves the human body. The human body is clearly not a fluid substance, and must be classified as a discrete solid, although it is somewhat nonprototypical given its softness and flexibility. Still, the body is the instrument through which the properties in Table 1 are explored, and it also plays a role in the location of situations in time. This section will outline some of the ways that the human observer in the timeline interacts as a discrete solid object with situations, and contrast these with other situations where the timeline observer is absent.

Lakoff and Johnson (1999: 141–148) discuss the entailments of the MOVING OBSERVER and MOVING TIME metaphors, both of which entail a human being located at the present moment in the timeline. The presence of this human observer has important ramifications for Russian. When present in the timeline (in reference to what Michaelis 2004 calls "actual events"), the solid body of the human observer helps to disambiguate tense. As we shall see in more detail in section 4, the formally equivalent non-past tense forms of Russian Perfective versus Imperfective verbs normally have future tense versus present tense reference, respectively:

(10)  *Мы построим^p дачу.*
       We-NOM build^p-NON-PAST dacha-ACC.
       'We will build^p a dacha.'
(11)  *Мы строим^i дачу.*
       We-NOM build^i-NON-PAST dacha-ACC.
       'We are building^i a dacha.'

The tense distinction results from the fact that two solid objects (the human body of the observer and the discrete solid of a Perfective situation) cannot occupy the same spot on the timeline, displacing one (the Perfective situation) to the next available place (the future). A solid object (the human body of the observer) can, however, be enveloped in a fluid substance (an Imperfective situation), permitting the two to coexist at the present moment.

There are also instances where the observer (along with deictic reference to time) does not interact with situations in the timeline. In addition to imperatives and counterfactuals, these include a range of expressions termed "gnomic" that are usually considered tenseless (cf. Michaelis's "structural events"). These situations describe characteristics; though they exist in time they do not take time, but rather exist on Langacker's (1999) "virtuality plane" (though sometimes the expression of these situations can be ambiguous); cf. also Galton's (1976: 82, 86) assertion that such statements exist "without any locus on the time axis". Gnomic expressions can involve both Perfective and Imperfective verbs, but do not assign future or present (or any other) tense to a situation. The most typical gnomics are expressed by Imperfective verbs (examples [12–13]); in gnomic uses Perfective verbs express either a potential (14) or a habitual sequencing (15). A few examples are presented here and there will be more discussion of specifics in section 4:

(12)  *Земля вращается^i вокруг своей оси.*
       Earth-NOM rotate^i-NON-PAST around own axis-GEN.
       'The Earth rotates^i on its axis.'

(13)   *Сестра ест[i] мясо.*
      Sister-NOM eat[i]-NON-PAST meat-ACC.
      'My sister eats[i] meat.'

(14)   *Борис решит[p] любую задачу.*
      Boris-NOM solve[p]-NON-PAST any problem-ACC.
      'Boris (can) solve[p] any problem.'

(15)   *Весь день мне мешают[i]: то зазвонит[p] телефон, то кто-то войдет[p].*
      All day-ACC me-DAT bother[i]-NON-PAST: then ring[p]-NON-PAST telephone-NOM, then someone-NOM enter[p]-NON-PAST.
      'All day long I'm getting interrupted[i]: first the phone rings[p], then someone comes in[p].'

Examples (12), (13), and (14) all express the characteristics of entities, stating facts about the Earth as a rotating planet, my sister as a non-vegetarian, and Boris as a good problem-solver. The use of the Perfective to describe potential capacity, as illustrated in example (14), is associated with verbs describing intellectual or physical effort (Glovinskaja 1982: 61; Zaliznjak and Šmelev 2000: 19). Example (15) emphasizes the continuous string of sequenced interruptions, usually termed "habitual correlative" (Bondarko 1971; Dickey 2000). Fuller discussion of gnomic uses will appear under the headings of B (Shape), H (Compatibility), and L (Graspability).

## 4.   Analysis of Russian Perfective versus Imperfective

The analysis will follow the organization of Table 1, discussing each property with Russian examples to illustrate. The properties are presented in three groups. Though there is certainly some overlap among properties and among groups, the first group focuses on "inherent properties" of matter and correspondences to inherent properties of situations. The second group focuses on properties that are relevant when two or more items are juxtaposed. These are termed "interactional properties" and involve phenomena associated with bringing types of matter and corresponding situations into contact. The final group contains "human interactional properties", which arise when human beings interact with the types of matter and corresponding situations. The inherent properties occupy a privileged position in the model. Inherent properties are more tangible and objective, and serve as the default motives for aspectual choices. The interactional and human interactional properties provide opportunities for construal, though the default inherent properties are also available in such situations. The interactional and human interactional properties are

less compelling, and, as we will see in section 5, they are less compelling to other Slavs as well: most of the variation in aspect we observe across Slavic involves the use of default inherent properties in place of interactional and human interactional properties. Although it is impossible to rule out the possibility that some data might be found that does not fit this analysis, I have not been able to find any. This model accounts for all of the uses of Russian aspect that I have found both in the literature on the subject, and in my own endeavors to acquire Russian.

### 4.1.  *Inherent properties (A–G)*

The inherent properties are not strictly distinct, and most situations are multiply motivated by two or more properties. The properties do not have the force of absolute rules, but instead correspond to strong trends (which can admit exceptions). The examples are meant to illustrate typical uses.

#### A.  *Edges*

A discrete solid object has clear, firm edges, but a fluid substance lacks clear edges. This property corresponds to the boundedness of the Russian Perfective as opposed to the lack of boundedness and or any reference to a beginning or end associated with the Russian Imperfective.

(16)   *Односельчане нашли[p] его мертвым.*
Fellow-villagers-NOM find[p]-PAST him-ACC dead-INST.
'The fellow-villagers found[p] him dead.'

(17)   *На стульях и кровати лежали[i] вещи, вынутые из сундука.*
On chairs-LOC and bed-LOC lay[i]-PAST things-NOM, taken-NOM from trunk-GEN.
'On the chairs and bed lay[i] things that had been taken out of the trunk.'

The finding of the dead man is clearly distinct from surrounding intervals in time: there was a moment before the man was found, a time when he was found, and a subsequent interval, with sharp breaks between them. The situation of the things lying around in the room makes no reference to a beginning or ending and has no clear boundaries.

#### B.  *Shape*

A discrete solid object has an inherent shape and may vary in width. A discrete solid object can be sliced and can be extremely thin, such as a leaf or a sheet of paper. A fluid substance has no shape, but it must have some width because it lacks the structural integrity to exist as a thin slice.

Substances have the potential to be ubiquitous like the air or the ocean. The variable width of a discrete solid corresponds to the varying durations of the Russian Perfective, which can express Accomplishments (entailing duration, as in [18]), bounded Activities (also entailing duration, as in [19], achieved by prefixes such as the delimitative *no-* and perdurative *про-*), Achievements (which entail no duration, as in [20]), and Semelfactives (also lacking duration, as in [21]). The thinness of a very narrow solid slice, such as a leaf or a sheet of paper, corresponds to the punctuality of Achievements and Semelfactives.

(18)   *Вот я написал[p] роман о рабочем классе, как все.*
       Look I-NOM write[p]-PAST novel-ACC about working class-LOC, like everyone-NOM.
       'Look, I've written[p] a novel about the working class, like everyone else.'

(19)   *Я люблю[i] вечер пятницы: можно посидеть[p] за столом, повозиться[p] с ребятами, уложить[p] их на полчаса позже.*
       I-NOM love[i]-NON-PAST evening-ACC Friday-GEN: possible spend-some-time-sitting[p]-INFIN behind table-INST, spend-some-time-playing[p]-INFIN with children-INST, put-to-bed[p]-INFIN them-ACC on half-hour-ACC later.
       'I love[i] Friday evening: one can spend some time sitting[p] at the table, spend some time playing[p] with the children, and put[p] them to bed a half hour later.'

(20)   *Ее муж умер[p] от разрыва сердца.*
       Her husband-NOM die[p]-PAST from rupture-GEN heart-GEN.
       'Her husband died[p] from a heart attack.'

(21)   *Вон!—крикнула[p] женщина неожиданно звонким голосом.*
       Out!—yell[p]-PAST woman-NOM unexpectedly sonorous voice-INST.
       'Get out!—yelled[p] the woman in an unexpectedly sonorous voice.'

Whereas a situation such as *писать[i] роман* 'write[i] a novel' has a natural completion, expressed by the Perfective *написать[p] роман* 'write[p] a novel', situations like *сидеть[i] за столом* 'sit[i] at the table' and *возиться[i] с ребятами* 'play[i] with the children' lack a natural completion, and can only be perfectivized through the imposition of temporal boundaries, as achieved here by the delimitative *no-* prefix (cf. Mehlig 1996). Thus in the case of example (19), we encounter a complex item, corresponding to a discrete solid container filled with fluid substance. *Умереть[p]* 'die[p]' expresses an Achievement conceived of as an instantaneous transition from life to death; this transition corresponds to a very narrow solid object. The Semelfactive *крикнуть[p]* 'yell[p] (once)' is a singu-

lative narrow solid slice of *кричать*[i] 'yell[i] (continuously)'. Both (19) and (20) also fall under property G (Conversions), but are presented here to show the range of shapes possible with the Russian Perfective.

Just as a fluid substance cannot form a stable thin slice, the Russian Imperfective cannot refer to an instantaneous situation; the temporal width required by (22) is typical:

(22)  *Он носил*[i] *галстук белого цвета.*
He-NOM wear[i]-PAST tie-ACC white color-GEN.
'He wore/was wearing[i] a white tie.'

The present moment (discussed in more detail under H [Compatibility]) has an "elastic nature" (cf. Galton 1976: 14, 291), experienced as a composite of memory and ongoing experience. Through the retrospection of memory, the present moment can be extended to reach back into the past, as in (23):

(23)  *Я работаю*[i] *здесь с прошлого года.*
I-NOM work[i]-NON-PAST here from last year-GEN.
'I have been working[i] here since last year.'

States maximize the potential spread of a situation, corresponding to the ubiquitous spread of air in the atmosphere or water in the ocean, and indeed gnomic States are expressed by the Russian Imperfective, as in (24):

(24)  *Телевидение делает*[i] *мир плоским и примитивным.*
Television-NOM make[i]-NON-PAST world-ACC flat-INST and simplistic-INST.
'Television makes[i] the world flat and simplistic.'

The normal interpretation of such sentences presents States as eternal truths with no direct reference to a human observer at the present moment. It is, however, possible for Imperfective situations of this type to have an ongoing interpretation, or at least an interpretation limited in some way. Certainly there was a time before the invention of television when its effect on content was irrelevant. My sister's meat-eating habits (example [13]) cannot extend beyond the span of a human life. Even the turning of the Earth (example [12]) will be bounded by the birth and eventual collapse of the solar system. Michaelis (to appear) is correct in suggesting a distinction between State and what she terms "State Phase" (to cover limited States). In Russian, both of these situation types are expressed using Imperfective verbs, the prime example of which are Imperfective aspectual isolates (also known as imperfectiva tantum, extracted from Wheeler 1972), and their behavior suggests that the distinction between State and State Phase is actually a continuum. There are some

verbs that permit no perfectivization, and thus cannot form *no-* delimitatives, among them *выглядеть*[i] 'look, appear[i]', *значить*[i] 'mean[i]', *содержать*[i] 'contain[i]', *стоить*[i] 'cost, have value'. There are verbs for which the formation of *no-* delimitatives is very rare (attested in only one to five examples in internet search-engine queries), such as *находиться*[i] 'be located[i]', *зависеть*[i] 'depend[i] on', *принадлежать*[i] 'belong[i] to', *состоять*[i] 'consist[i] of'. And there are Imperfective aspectual isolates for which *no-* delimitatives are robustly attested (bringing up multiple pages of Google hits), such as: *болеть*[i] 'be[i] sick', *быть*[i] 'be[i]', *существовать*[i] 'exist[i]', *нуждаться*[i] 'need[i]', *сидеть*[i] 'sit[i]', *плакать*[i] 'cry[i]', *лить*[i] 'pour[i]'. This data suggests a gradual cline ranging from States to State Phases to Activities.

Negation can make use of the spreading effect associated with Imperfective. If a negation is categorical, it will appear with the Imperfective in Russian, as in (25):

(25)   *Эти декларации не подтверждались*[i] *какими-либо фактами.*
       Those declarations-NOM not verify[i]-self-PAST any-whatsoever facts-INST.
       'Those declarations were not verified[i] by any facts whatsoever.'

## C.  Integrity

This property captures the opposition termed by Michaelis (2004), Mehlig (1994, 1996, 1997, 2003), and Langacker (1991b) as "heterogeneous" versus "homogeneous". Each discrete solid object is a unique individual, subject to indivisibility and anti-additivity. A part of a discrete solid object (say, a chair) is not the same as the discrete solid object from which it was removed. If you add one solid object to another, you have two objects, not one (a chair plus a chair is two chairs, not a chair). A fluid substance is uniform rather than discrete, and is subject to divisibility and additivity. If I have some sand, I can divide it into two piles, and each one is also sand, and if I join two piles of sand, the result is likewise sand. Russian Perfective and Imperfective situations have properties that correspond well to the heterogeneous versus homogeneous opposition of types of matter. Perfective situations like (26) describe unique events:

(26)   *Он нашел*[p] *позвонок мамонта в районе вечной мерзлоты.*
       He-NOM find[p]-PAST vertebra-ACC mammoth-GEN in region-LOC eternal frost-GEN.
       'He found[p] the vertebra of a mammoth in the permafrost region.'

There is no subevent of (26) that could also be called the finding of a vertebra; if another vertebra is found, those two events will remain unique

and the two cannot be jointly expressed by this sentence. By contrast, (27) presents a generalized activity that admits both divisibility and additivity:

(27)   *Днем она готовилась[i] к экзаменам.*
       Day-INST she-NOM prepare[i]-self-PAST to exams-DAT.
       'During the day she prepared[i] for the examinations.'

The preparations extend over several hours, and each subinterval is just as good an example of preparation as the whole effort; if the subject were to continue studying into the evening, the combined effort of the day and evening could be expressed in the same way. The Imperfective can view repetitions as undifferentiated Activities, suppressing any differences that may pertain to subevents, as we see in the experiences of a doctor in (28):

(28)   *По роду своей работы я каждодневно сталкиваюсь[i] с людьми,*
       *пострадавшими от укусов животных.*
       According nature-DAT own work-GEN I-NOM daily collide[i]-self-NON-PAST with people-INST, suffered-INST from bites-GEN animals-GEN.
       'Given the nature of my work, I daily encounter[i] people who have suffered animal bites.'

Surely each encounter with a patient was unique, but as a series of repetitions, they are not differentiated in this view.

### D. Countability

This property very nearly approximates to the count versus mass distinction. Discrete solid objects are countable and inherently quantified, whereas fluid substances are uncountable masses that can fill space and can only be quantified by imposing measures. Perfective situations are correspondingly inherently measured as discrete entities, whereas Imperfective situations are unquantified unless measurement is imposed.

The phrase *за* + ACC 'in (a certain amount of time)' is considered a test for perfectivity, since it is compatible only with the expression of discrete completion and does not appear with Imperfective verbs. Here is a typical example:

(29)   *Борис прочитал[p] эту книгу за два часа.*
       Boris-NOM read[p]-PAST that book-ACC in two hours-ACC.
       'Boris read[p] that book/got that book read[p] in two hours.'

The partitive genitive also assigns an amount and is compatible only with Perfective situations, as in (30), where the partitive genitive marks the money transferred via the Perfective verb meaning 'give':

(30)   —*А утром она говорит*[i], *без тебя не могу*[i]. —*А ты что?* —*Ну, успокоил*[p], *денег дал*[p] ...
       —And morning-INST she-NOM say[i]-NON-PAST without you-GEN not can[i]-NON-PAST.
       —And you-NOM what-ACC? —Well, calm-down[p]-PAST, money-GEN give[p]-PAST.
       '—And in the morning she says[i], I can't[i] go on without you. —So what did you do? —Well, I calmed[p] her down, gave[p] her some money.'

   Example (31) shows how an Imperfective situation can fill whatever time is available, and (32) shows how external units of measurement can be applied to an Imperfective situation that is not itself inherently quantified:

(31)   *Неизменно выпивший, он часами бродил*[i] *по коридору.*
       Invariably drunk-NOM, he-NOM hours-INST wander[i]-PAST along corridor-DAT.
       'Invariably drunk, he wandered[i] the corridor for hours.'

(32)   *Следующие пять дней дядя Коля лежит*[i] *безмолвный, носом в потолок.*
       Next five-ACC days-GEN uncle Kolja-NOM lie[i]-NON-PAST silent-NOM, nose-INST in ceiling-ACC.
       'For the next five days uncle Kolja lies[i] silent, with his nose pointing toward the ceiling.'

## E.   Streamability

A discrete solid object is something that you come upon all at once (a Gestalt), whereas the experience of a fluid substance is typically gradual. The matter of a fluid substance has two options: it can either be stagnant (like a lake) or it can flow (like a river), exerting a directional force. A discrete solid object lacks this set of options. Perfective verbs correspondingly describe a Gestalt as opposed to a gradual process, which is associated with Imperfective. Perfective verbs also lack a distinction between directed and nondirected motion; this distinction is only available for Imperfective verbs. Sentence (33) is an example of a Perfective Gestalt:

(33)   *Он стал*[p] *фанатиком пунктуации.*
       He-NOM become[p]-PAST fanatic-INST punctuation-GEN.
       'He became[p] a punctuation fanatic.'

   This situation certainly involved many subevents, such as learning the rules of punctuation and exhibiting fanatic behavior, but all these components are rolled into a single whole by the Perfective verb. Gradual accu-

mulation, on the other hand is usually associated with the Imperfective, as in (34):

(34) *Во мне, естественно, накапливался*[i] *протест против их «правды».*
In me-LOC, naturally, well-up[i]-PAST protest-NOM against their "truth"-GEN.
'A feeling of protest against their "truth" naturally welled[i] up in me.'

The protest accumulates over time, as signaled by the Imperfective. Perfective verbs are not entirely incompatible with the description of a gradual accumulation, but are rare in this use and require an accompanying adverb like *постепенно* 'gradually'.

Russian motion verbs have a distinction that is operative only for Imperfective verbs: determined versus non-determined. For every mode of transportation (walking, riding, running, flying, etc.) Russian has two Imperfective verbs, one that denotes movement in a direction (perhaps best described as having a route, cf. Rakhilina, to appear), and another, more neutral verb that denotes the action in general. Thus, corresponding to a flowing fluid substance, we have determined motion verbs like *идти*[i] 'walk[i]', *ехать*[i] 'ride[i]', *бежать*[i] 'run[i]', *лететь*[i] 'fly[i]', etc. to express motion toward a destination. The non-determined motion verbs, like *ходить*[i] 'walk[i]', *ездить*[i] 'ride[i]', *бегать*[i] 'run[i]', *летать* 'fly[i]', etc., express motion in general without a destination. This distinction is absent among Perfective verbs.

*F. Penetrability*

A discrete solid object is explored from the outside. Though it may have internal structure, this structure is not accessible. A fluid substance yields to penetration and its internal structure can be explored. This distinction corresponds to Comrie's (1976) characterization of the perfective as exterior, lacking internal temporal constituency versus imperfective, which has internal temporal constituency. Examples such as (32) illustrate the way that Russian Perfective verbs present situations as unanalyzed wholes. Imperfective, on the other hand, facilitates the examination of the manner in which an event unfolds (corresponding to internal structure). The use of manner adverbs is strongly correlated with Imperfective verbs in Russian, as in (35):

(35) *Медленно падал*[i] *крупный снег.*
Slowly fall[i]-PAST heavy snow-NOM.
'A heavy snow was slowly falling[i].'

## G.   Conversion

Discrete solid objects can be converted into fluid substances and vice versa. These conversions can be achieved either via adjustments in viewpoint or via actual physical transformation. Viewpoint adjustments involve either seeing a group of discrete solid objects from a distance as a fluid substance, or looking closely at a single particle of a fluid substance and recognizing it as a discrete solid object. Physical transformations include the pulverization of a discrete solid into a fluid substance, the hardening of a fluid substance into a discrete solid, and the packaging of a fluid substance in a firm container. All of these possibilities have analogs in the aspectual system of Russian, with its characteristically complex system of morphological aspectual derivation. The recognition of a group of discrete solid objects as a fluid substance corresponds to the recognition of a series of repeated actions as a continuous situation (parallel to the derivation of a collective noun), whereas pulverization corresponds to breaking down an action into a process. Imperfectives derived from verbs denoting punctual Achievements are usually interpreted as denoting repetition, whereas Imperfectives derived from verbs denoting Accomplishments are usually interpreted as denoting processes, though in appropriate contexts either meaning can be accessed by any Imperfective verb. Thus the Imperfective verb *давать*[i] 'give[i]', derived from *дать*[p] 'give[p]', usually refers to an iteration of situations, whereas the Imperfective *переписывать*[i] 'rewrite[i]', derived from *переписать*[p] 'rewrite[p]' tends to express a process.

Picking out a single particle of a fluid substance corresponds to the use of the Semelfactive *-ну-*; compare an Imperfective Activity like *чихать*[i] 'sneeze, be sneezing[i]' to the *-ну-* suffixed Perfective Semelfactive *чихнуть*[p] 'sneeze[p] once'. Prefixes provide various contours guiding the solidification of fluid Activities into Accomplishments and Achievements:[2] *писать*[i] 'write[i]' can be perfectivized as *написать*[p] 'write[p] to completion/a quantity', *приписать*[p] 'ascribe[p]', *подписать*[p] 'sign[p]', *переписать*[p] 'rewrite[p]', *записать*[p] 'register[p]', etc. Most prefixed Perfective verbs can form derived Imperfectives focusing on process and repetition as just described above: *приписывать*[i] 'ascribe[i]', *подписывать*[i] 'sign[i]', *переписывать*[i] 'rewrite[i]', *записывать*[i] 'register[i]', etc.

The packaging of fluid Activity in a firm Perfective container is realized using the perdurative *про-* and delimitative *по-* prefixes (which differ in that *про-* requires the specification of a time period but *по-* does not). Example (36) illustrates the use of a perdurative formed by prefixing *про-* to *работать*[i] 'work[i]':

(36) *Свою карьеру г-н Чемберс начал*<sup>p</sup> *в IBM, где проработал*<sup>p</sup> *шесть лет.*

Own career-ACC Mr. Chambers-NOM begin<sup>p</sup>-PAST in IBM, where work<sup>p</sup>-PAST six-ACC years-GEN.

'Mr. Chambers began<sup>p</sup> his career at IBM, where he worked<sup>p</sup> for six years.'

The use of *no-* delimitatives is illustrated in example (19) by *посидеть*<sup>p</sup> 'spend some time sitting<sup>p</sup>' (formed from *сидеть*<sup>i</sup> 'sit<sup>i</sup>') and *повозиться*<sup>p</sup> 'spend some time playing<sup>p</sup>' (formed from *возиться*<sup>i</sup> 'play<sup>i</sup>').

Imagine a chain of events in which (i) a fluid substance hardens into a discrete solid object, and this process is repeated, (ii) the discrete solid objects are then gathered in a group and recognized as a (secondary) fluid substance, and (iii) the fluid substance is poured into a firm container. The parallel to this three-step process is what Mehlig (1996, 2003) refers to as "secondary homogenization" in the derivation of Russian verbs. We can illustrate this beginning with *писать*<sup>i</sup> 'write<sup>i</sup>', which can be (i) solidified/perfectivized as *подписать*<sup>p</sup> 'sign<sup>p</sup>', (ii) rehomogenized as *подписывать*<sup>i</sup> 'sign, be signing<sup>i</sup>', and (iii) repackaged as *поподписывать*<sup>p</sup> 'spend some time signing<sup>p</sup>', as in (37):

(37) *Говорят*<sup>i</sup>, *Клинтон в свои последние дни поподписывал*<sup>p</sup> *бумаг* . . .

Say<sup>i</sup>-NON-PAST, Clinton-NOM in own last days-ACC spend-time-signing<sup>p</sup> papers-GEN . . .

'They say<sup>i</sup> that during his last days (in office) Clinton signed<sup>p</sup> a bunch of papers . . .'

## 4.2. *Interactional properties (H–K)*

The interactional properties relate to what happens when material entities are in contact. In the domain of aspect we are therefore examining what happens when one situation comes in contact with another situation, which obtains at the level of discourse structure. The effects of these properties are somewhat weaker and subject to construal, whereas the inherent properties play a default role. As with the inherent properties, there is overlap and multiple motivation among interactional properties.

### H. *Compatibility*

If a discrete solid object occupies a certain location, another discrete solid object cannot be made to occupy the same location; at best it can be located next to the first object. If a fluid substance is in a location, another fluid substance can be poured into and mixed with it, so that the

two substances coexist in the same location. A discrete solid object can also be embedded in a fluid substance, sharing a location.

Sequencing, the temporal equivalent of the spatial incompatibility of discrete solid objects, is strongly associated with the Russian Perfective, as in (38):

(38)   *Я уверенно подошел*[p] *и постучал*[p] *в дверь костяшками пальцев.*
I-NOM confidently approach[p]-PAST and knock[p]-PAST in door-ACC knuckles-INST fingers-GEN.
'I approached[p] confidently and knocked[p] on the door with my knuckles.'

The most normal way to interpret a string of Perfective verbs in Russian is as a sequence of situations (though it is possible, given sufficient adverbial context, for perfectives to be simultaneous, like a stack of discrete solid objects; cf. Stoll 2001: 78–81, 86). By contrast, the most normal way to interpret a string of Imperfective verbs is as simultaneous situations. Note that the structures of (38) and (39) are parallel, consisting of two past tense verbs conjoined by *и* 'and'; in other words, both examples are devoid of adverbial context that would favor one interpretation over the other:

(39)   *Девушка смотрела*[i] *в окно, и в ее светлых глазах отражались*[i] *деревья, дома, небо.*
Girl-NOM look[i]-PAST in window-ACC, and in her bright eyes-LOC reflect[i]-self-PAST trees-NOM, houses-NOM, sky-NOM.
'The girl was looking[i] out the window and trees, houses, and the sky were reflected[i] in her bright eyes.'

The girl in (39) is in a train and looking out the window is coextensive with the reflection of passing scenes in her eyes. Again, this property identifies the usual interpretation of Imperfectives as simultaneous; it is possible to use Imperfective verbs in a description of sequential events, but this can only take place under certain circumstances (such as the historical present, see below), or in the presence of adverbs to specify sequencing.

The embedding of a discrete solid object in a fluid substance corresponds to the interpretation of a Perfective juxtaposed with an imperfective, as in (40):

(40)   *Я глядел*[i] *в стену, вспоминая*[i] *пугающие подробности вчерашнего дня, а затем дверь растворилась*[p].
I-NOM stare[i]-PAST in wall-ACC, recall[i]-GERUND frightening details-ACC yesterday's day-GEN, and then door-NOM open[p]-PAST.
'I was staring[i] at the wall, recalling[i] the frightening details of the previous day, when the door opened[p].'

The simultaneous Imperfective situations of staring and recalling are punctuated by the Perfective situation of the door opening.

The human observer behaves as a discrete solid object located at the present moment and interacts as such with Perfective and Imperfective situations. Because the human observer occupies the present moment, a non-past Perfective event must be displaced to the next available slot, which is the future, as in (41):

(41)  *Гениальная идея! Принесет[p] нам три миллиона долларов!*
      Brilliant idea-NOM! Bring[p]-NON-PAST us-DAT three million-ACC dollars-GEN!
      'It's a brilliant idea! It will bring[p] us three million dollars!'

An Imperfective situation can, however, envelop the human observer at the present moment and is thus an appropriate way to express present tense, as in (42):

(42)  *Мы сейчас читаем[i].*
      We-NOM now read[i]-NON-PAST.
      'Right now we are reading[i].'

The historical present is a narrative technique in which aspectual differences are largely suspended (used for various purposes, including "lively" narration and live broadcasting). The historical present depicts a string of situations as if they were unfolding before one's very eyes. Indeed, the term "historical present" is quite apt, since the effect is of a history in the present tense, placing the hearer in the position of the human observer at the present moment. In order to put the hearer into the flow of situations, Russian uses Imperfective verbs, as in (43). (The use of Perfective verbs in the historical present in Russian is very rare, cf. Stunová 1993.)

(43)  *Она сжимает[i] зубами сигарету, щелкает[i] зажигалкой и затягивается[i].*
      She-NOM squeeze[i]-NON-PAST teeth-ISNT cigarette-ACC, flick[i]-NON-PAST lighter-INST and inhale[i]-NON-PAST.
      'She squeezes[i] the cigarette between her teeth, flicks[i] the lighter and inhales[i].'

Example (43) is taken from a sample of literary prose, in which the frame is clearly a narrative of past situations. The default properties of the scene described in (43) are those of a sequence of discrete, closed situations, and they could certainly be described using Perfective verbs; the use of the historical present involves a construal of these situations as ongoing and therefore Imperfective.

Section 3.5 mentioned the characteristics of gnomic situations, which obtain when there is no reference to a human observer at the present moment, and tense is attenuated. When two or more Perfective verbs are used in a gnomic construction, they are interpreted as describing a sequence of situations that is habitually repeated (Nesset [1998: 178] refers to these as "synecdochical habituals", and Bondarko [1971: 197–208] and Dickey [2000: 55–67] term this phenomenon the "habitual correlative"). The function of Perfective aspect here is purely to signal sequencing, as in the childhood memory recounted in (44) (cf. also example [15] in section 3.5):

(44) *Мне во дворе нравилось*[i]*—там вся наша жизнь проходила*[i].
*Мама иногда высунется*[p] *из окна, крикнет*[p]*: «Во дворе?»*
Me-DAT in courtyard-LOC please[i]-PAST—there all our life-NOM pass[i]-PAST. Mama-NOM sometimes thrust-out[p]-self-NON-PAST from window-GEN, yell[p]-NON-PAST: "In courtyard-LOC?"
'I liked[i] it in our courtyard—or whole life took place[i] there. Sometimes Mama would lean[p] out the window and yell[p]: "Are you in the courtyard?"''

Example (44) is clearly framed as a narrative of bygone years. The use of Perfective verbs has the effect of presenting a sequence of Mama leaning out and then yelling that was repeated, in that order, over and over.

*I.   Dynamicity*
A series of discrete solid objects can serve as paving stones, enabling swift progress along a path. Wading through a fluid substance is by contrast arduous and retards movement. In discourse, Russian typically uses Perfective verbs to move the plot line along, and Imperfective verbs for descriptive digressions that hold up the narrative to focus on characteristics of setting and subjects. (This is a common characteristic of perfective versus imperfective distinctions, as noted by Binnick 1991: 371–379 and Brinton 1985b.) Example (45) illustrates the interaction of Perfective and Imperfective verbs in a narrative:

(45) *Отец родился*[p] *в Санкт-Петербурге в 1911 году. Когда началась*[p] *первая мировая война, в Питере жить*[i] *стало*[p] *трудно, и вся семья уехала*[p] *в деревню Поминово в Тверской области, на родину бабушки. Дом, где они жили*[i]*, стоит*[i]*, кстати, до сих пор, родственники ездят*[i] *туда отдыхать*[i]*. Там же, в Поминове, отец познакомился*[p] *с моей мамой. Они поженились*[p]*, когда им было*[i] *по 17 лет.*

Father-NOM born$^p$-PAST in Saint Petersburg-LOC in 1911 year-LOC. When began$^p$-PAST first world war-NOM, in Petersburg-LOC live$^i$-INFINITIVE become$^p$-PAST hard, hungry, and whole family-NOM leave$^p$-PAST into village-ACC Pominovo-NOM in Tver' region-LOC, to homeland-ACC grandmother-GEN. House-NOM, where they-NOM live$^i$-PAST, stand$^i$-NON-PAST, by-the-way, to these times-GEN, relatives-NOM ride$^i$-NON-PAST there rest$^i$-INFINITIVE. There EMPHATIC, in Pominovo-LOC, father-NOM meet$^p$-PAST with my mother-INST. They-NOM marry$^p$-PAST, when them-DAT be$^i$-PAST along 17-ACC years-GEN.

'My father was born$^p$ in Saint Petersburg in 1911. When World War I began$^p$, it got$^p$ so that living$^i$ in Petersburg was hard and hungry, and the whole family left$^p$ for the village of Pominovo in the Tver' region, for grandmother's homeland. The house where they lived$^i$, by the way, still stands$^i$ to this day, and the relatives go$^i$ there for vacations. In that same place, in Pominovo, my father met$^p$ my mother. They got married$^p$ when they were$^i$ 17 years old.'

The plot line in this passage is carried forward by Perfective verbs describing the father's birth, the beginning of the war, the change in times, the move to the country, and the meeting and marrying of the narrator's parents. The description of the current state and use of the family home is a digression from the main story, and is conveyed using Imperfective verbs. Details of how people lived during the war, where they went on vacation, and how old the parents were when they were married are likewise expressed via Imperfectives.

*J. Salience*

In a scene containing both discrete solid objects and fluid substances, the former enjoy a privilege of salience, acting as clearly delineated figures against a diffuse background, like shells on a sandy beach. The property of salience parallels the observation that the Russian Perfective is used to foreground situations in a narrative, whereas the Imperfective serves to background situations. The effect of salience is very similar to that of dynamicity and can be illustrated using the same example. The primary purpose of the narration in example (45) is to explain the speaker's origins, so he foregrounds all the plot-line situations with Perfective verbs, and uses Imperfectives to fill in background information such as the circumstances of wartime life, the status of the house, and the age of his parents when they married. Chvany (1996b: 296–299) has shown that this kind of foregrounding versus backgrounding can exist even in a nonsequential

text, demonstrating that these two effects are not entirely dependent on each other.

Russian has an additional use of the Imperfective known as the ''general-factual'' (cf. Comrie 1976: 113; Čertkova 1996: 95), The general-factual is a neutral statement of the fact that something has taken place and cannot be embedded in a larger sequential narrative (Stoll 2001). I assert that the purpose of the general-factual is to background a situation and present it as a description, as illustrated by the general-factual use of *покупал*[i] 'bought[i]' in (46):

(46)  *Сходи*[p] *на Разинский толчок. Там есть*[i] *мечеть, а рядом во всю идет*[i] *торговля. Там можно купить*[p] *и баранину и говя-дину. Я даже однажды покупал*[i] *там свинину.*
       Go[p]-IMPERATIVE on Razinskij tolchok-ACC. There be[i]-NON-PAST mosque-NOM, and nearby in all-ACC go[i]-NON-PAST trade-NOM. There possible buy[p]-INFIN and mutton-ACC and beef-ACC. I-NOM even once buy[i]-PAST there pork-ACC.
       'Go[p] to the Razinskij tolchok. There is[i] a mosque there and right by it trade is[i] in full swing. It is possible to buy[p] both mutton and beef there. I even bought[i] pork there once.'

Though it is clear that we are dealing with a single closed Achievement (witness the presence of the adverb *однажды* 'once', usually strongly associated with Perfective), it is cast as a background descriptor. Glovinskaja (1982: 119–120) notes that the Russian general-factual implies a certain psychological distance and consequently a lack of specificity; it is incompatible with specific time reference. This is clearly a case of construal, where the Inherent Properties associated with Perfective have been suppressed, despite the fact that they would otherwise be appropriate.

*K.   Contiguity*
A discrete solid object can serve as a barrier, on one side of which a fluid substance can be dammed up. Consistent with this experience, Perfective verbs meaning 'start' and 'stop' interact with Imperfective infinitives to denote 'start/stop[p] doing something[i]', as in example (47):

(47)  *И тут жена стала*[p] *ему изменять*[i].
       And here wife-NOM start[p]-PAST him-DAT betray[i]-INFIN.
       'And then his wife started[p] cheating[i] on him.'

In Russian this combination of a Perfective onset (Achievement) with an Imperfective Activity has been grammaticalized with the ingressive prefix *за-*, which can be productively affixed to Activity verbs, as in exam-

ple (48), where *за-* has been prefixed to the verb *хрюкать*[i] 'oink[i]' to form *захрюкать*[p] 'start oinking[p]':

(48) *Горький говорил*[i] *как-то, что, если человека все время называть*[i] *свиньей, в конце концов он захрюкает*[p].
Gor'kij-NOM say[i]-PAST once, what-NOM, if person-ACC all time-ACC call[i]-INFINITIVE pig-INST, in end-LOC ends-GEN he-NOM start-oink[p]-NON-PAST.
'Gor'kij once said[i] that if you call[i] a man a pig all the time, he'll eventually start oinking[p].'

### 4.3. *Human interactional properties (L–N)*

The last three properties I will examine pertain to subjective human reactions to types of matter, in terms of perceived relative satisfaction, danger, frustration, as well as logical inferences. The human interactional properties serve primarily pragmatic purposes and are even less compelling than the interactional properties. Construal plays an important role in the aspectual uses that correspond to these properties. And once again I will stress that most uses of aspect are motivated by more than one property.

### L. *Graspability*

A discrete solid object has certain advantages: it is stable and can be grasped and manipulated. A fluid substance, by contrast, merely slips through one's fingers. The relative satisfaction offered by discrete solid objects as opposed to fluid substances is asserted only in terms of the property of graspability. (It is entirely possible for substances, such as beer or wine, to have other properties that might be satisfying, but these properties are not directly related to their identity as fluid substances. Also, as I will show under M (Texture), given different conditions, the scale of desirability can be reversed.) The Russian Perfective is associated with the satisfying sense of a lasting result, as illustrated in (49):

(49) *Этот образ запомнился*[p] *навсегда*.
That picture-NOM memorized[p]-self-PAST forever.
'That picture became fixed[p] in memory forever.'

In certain contexts, such as contracts and assignments, completion and results are expected. Thus, if students were handed a syllabus specifying that a given book be read by a given date, it would be natural for the professor to commence class on that date with the question in example (50); in the absence of a contractual agreement of this sort, Russian would use an Imperfective general-factual (Glovinskaja 1982: 121; Zaliznjak and

Šmelev 2000: 37). In a like fashion, Townsend (1979: 46) demonstrates that the Perfective signals preparation to move on to the next event, as opposed to the Imperfective general-factual.

(50)   *Вы прочитали*[p] *эту книгу?*
       You-NOM read[p]-PAST this book-ACC?
       'Have you read[p] this book?'

Perfectives can be used in a gnomic sense to characterize the potential that something might happen or be completed (cf. example [14] in section 3.5). Example (51) does not identify a specific occurrence, it just states that this is the type of thing that can happen (a quote from a frustrated archaeologist):

(51)   *Наименее опытный начальник участка с наименее обученной командой всегда сделает*[p] *наиболее важное открытие.*
       Least experienced leader-NOM section-GEN with least skilled team-INST always make[p]-NON-PAST most important discovery-ACC.
       'The least experienced leader of the section with the least skilled team always makes[p] the most important discovery.'

It is the atemporal nature of this gnomic construction that facilitates the combination of the Perfective with the adverb *всегда* 'always', and Dickey (2000: 92) notes that in Russian this construction can be used in exasperation even when the speaker has had only one such bad experience.

An imperative is most often used when a result is desired, making the Perfective the logical aspectual choice, (cf. Forsyth 1970: 99; Zaliznjak and Šmelev 2000: 39), as in (52):

(52)   *Уважаемые   депутаты,   пройдите*[p], *пожалуйста,   в   зал заседаний!*
       Esteemed delegates-NOM, go-through[p]-IMPERATIVE, please, in hall-ACC meetings-GEN!
       'Dear delegates, please enter[p] the meeting hall!'

As we will see under M (Texture), there are certain social circumstances in which Imperfective imperatives are preferred.

Russian Imperfective verbs characteristically fail to specify completion. The derived Imperfectives of many Perfective verbs denoting Accomplishments can be interpreted as having a conative meaning, expressing 'try to do something', emphasizing the lack of a satisfactory result. The derived Imperfective of *решить*[p] 'solve[p]' is *решать*[i], which usually means 'work

on, try to solve[i]'. Example (53) illustrates the use of the derived Imperfective of *уговорить*[p] 'convince[p]'.

(53)  *Он ее уговаривал*[i].
      He-NOM her-ACC convince[i]-PAST.
      'He was trying to convince[i] her.'

If a speaker wishes to convey dismay at a contractual failure or a poor performance, the Imperfective is a natural choice. Example (54) would be felicitous in a situation where the hearer discovers that someone has scribbled all over the margins of a book. Even though it is clear that the entire book has been read, the job has been done badly, and dissatisfaction is expressed with the imperfective.

(54)  *Кто так неаккуратно читал*[i] *эту книгу?*
      Who-NOM so inaccurately read[i]-PAST this book-ACC?
      'Who made such a mess reading[i] this book?'

Once an instruction has been given (using a Perfective imperative *запиши*[p] 'write down[p]'), the speaker expects a proper result. If none is forthcoming, the speaker may become annoyed and resort to asking for at least a lesser manifestation of activity, using an Imperfective imperative (*записывай*[i] 'write down[i]') to express frustration. In example (55), when the interlocutor fails to produce a satisfactory result, the speaker tries to egg her/him on, asking at least for some activity, implying that the activity should already be underway.

(55)  *Запиши*[p] *мой телефон … Записывай*[i], *пожалуйста, я очень тороплюсь*[i]!
      Write-down[p]-IMPERATIVE my telephone-ACC … Write-down[i]-IMPERATIVE, please, I-NOM very hurry[i]-NON-PAST!
      'Write down[p] my telephone number … Get writing[i], please, I'm in a real hurry[i]!'

In an example like (55), the Imperfective "seems more insistent, since it dwells on the action" (Galton 1976: 233).

*M.  Texture*

If matter is propelled at a human being, a discrete solid object is potentially dangerous, whereas a fluid substance is likely to make a gentler impact; in such circumstances a fluid substance is clearly preferred. The verbal equivalent of a propelling force is the imperative, and in certain polite social circumstances, a Perfective is just too harsh and Imperfective is preferred. The best example is a visit to a friend's home. In this scenario, everyone is acting according to a script and no new instructions are being

given. Both the guest and the host know that the guest will come in, and politeness dictates that the invitation be made gentle by using the Imperfective. The utterance in (56) is merely the Imperfective equivalent of (52) above:

(56)   *Проходите*[i]*, пожалуйста!*
     Go-through[i]-IMPERATIVE, please!
     'Please come[i] in!'

  This pragmatic manipulation of aspect is motivated by construal.

### N.   Implied presence

Given the fact that matter can be converted from one type to the other, the presence of one type of matter might imply the presence of the other. For example, if it is known that a fluid substance can accrete into discrete solid lumps, then when one encounters a quantity of the fluid substance, it would be reasonable to assume that a discrete solid object might be found by sifting through the fluid substance. On the contrary, if a discrete solid object is known to leave behind a fluid substance as a residue (for example the odor left by an onion, or the water left by an ice cube), then when one encounters the fluid substance, it is reasonable to assume that the discrete solid was present at a prior time (and has since been removed). The first scenario (sifting in search of a discrete solid object) is parallel to the use of Imperfective conatives in conjunction with their Perfective partners to describe trying and trying and ultimately meeting with success, as in (57):

(57)   *Он ее уговаривал*[i]*, уговаривал*[i]*, и, наконец, уговорил*[p]*.*
     He-NOM her-ACC convince[i]-PAST, convince[i]-PAST, and finally, convince[p]-PAST.
     'He tried[i] and tried[i] to convince her, and finally he did convince[p] her.'

  The other scenario, that of finding a residue and presuming the prior existence of something, finds its parallel in the "annulled event" use of the Russian Imperfective, which is associated with motions that can be reversed. The classic example of this use involves a cold and drafty room where the window is shut and someone asks *Кто здесь открывал*[i] *окно?* 'Who opened[i] the window here?', using the Imperfective because the result of the prior situation has been reversed (the window that was open has now been closed). Sentence (58) is an authentic example, that focuses on the use of the verb meaning 'take'. Because the Perfective verb *взять*[p] 'take[p]' describes a reversible action, its Imperfective partner *брать*[i] can mean 'take[i] (and return)' (lexicalized as *borrow* in English). The context

of this example involves a library patron who has found notes scribbled in the margins of a text by a previous reader and seeks the acquaintance of their author:

(58)   *Макс выясняет*[i] *у библиотекаря, кто брал*[i] *книгу до него.*
       Max-NOM inquire[i]-NON-PAST at librarian-GEN, who-NOM take[i]-PAST book-ACC to him-GEN.
       'Max asks[i] the librarian who borrowed[i] [literally: took[i]] the book before him.'

The previous reader obviously took the book from the library (a closed Achievement), but because the action has been reversed (the book was returned), the speaker can use the Imperfective to emphasize the reversal, and thus the Imperfective refers to both the taking and the returning. If, instead, each situation that makes up this scenario were presented as a sequence (cf. *Читатель взял*[p] *книгу, а потом вернул*[p] *ее* 'The reader took[p] the book and then returned[p] it'), we would expect two Perfective verbs.

### 4.4.   *Implications of the metaphorical model*

The isomorphism between the properties of matter and the uses of aspect in Russian is compelling. The model is theoretically elegant as a demonstration of the metaphorical motivation of a complex grammatical category. The model has pedagogical value for the teaching of Russian aspect (an otherwise daunting task, when the instructor is armed only with incoherent and seemingly endless lists of uses and vague semantic features). To my considerable surprise, native speakers of Russian (and other Slavic languages) have insisted that this model also "feels right", and have encouraged me to undertake experimental research to test the possible reality of the model.[3] Thus the model appears to be successful in providing an account of Russian. Still, there would be something suspicious about a linguistic analysis that was valid for only one language. For a model to be truly satisfying, it should have cross-linguistic implications. Section 5 will explore how well the model performs in describing the aspectual behavior of the remaining languages in the Slavic family, and section 6 will make some comparisons with non-Slavic languages.

### 5.   **Comparisons across the Slavic languages**

Although all Slavic languages have the perfective versus imperfective distinction, the behavior of aspect is not uniform across Slavic. As I will demonstrate below, Russian inhabits one corner of Slavic territory both geographically and in terms of the use of aspect. Russian tends to use its

Imperfective more to make certain kinds of distinctions that are not made in various other parts of the territory. Generally the differences in aspect are of two kinds, involving either a situation where (*a*) an inherent property is used to motivate a distinction in part of the Slavic territory, but is ignored elsewhere, or (*b*) a construal motivated by an interactional property or a human interactional property can be used in part of the Slavic territory, but elsewhere the default values of inherent properties are used instead. With two relatively minor exceptions, Slavs seem to agree on the use of inherent properties to motivate aspectual use; the majority of variations involve the interactional properties and human interactional properties. Many of the differences in aspectual use among the Slavic languages do not involve absolute values; generally it is not the case that one language uses Imperfective only where another language uses only Perfective, but rather that there is a strong tendency for one language to use, say Imperfective where another language does not show that tendency. Relatively little comparative work on the behavior of aspect has been done for the Slavic languages: Galton (1976) is a wide-ranging pan-Slavic description; Dickey (2000) presents empirical data on selected differences across Slavic; Stunová (1993) is likewise empirically based, but more narrowly focused on a comparison of Czech and Russian. This section draws heavily on the results of these three scholars, supplemented by other information that I have gathered (particularly for properties E, H, and M). Though this is merely a survey of differences, not a report of thorough primary research (which would be beyond the scope of an article), this section gives a good outline of aspectual differences across Slavic and how they relate to the metaphorical model. I will target only points of variation among the Slavic languages; the reader can assume that the remaining uses presented in section 4 are quite similar in the other Slavic languages.

### 5.1.   *Inherent properties across Slavic (C and E)*

These properties seem to be the semantic center of gravity for aspect in all of the Slavic languages, and are for the most part implemented in a very similar way throughout the territory. We know that metaphorical mapping selects only some characteristics from the source domain, ignoring others. Some Slavic languages have mapped more Inherent Properties than others.

### C.   *Integrity*
This first difference is relatively marginal and diffuse; the remaining cross-linguistic differences are more obviously related to a single property. This

difference involves only deverbal nouns, rather than verbs themselves, and it could be identified with more than one of the Inherent Properties. Dickey (2000: 234–258) conducted an empirical survey of the nouns derived from twenty verbs in the Slavic world. He found that while Czech, Slovak, and Polish all readily form deverbal nouns from verbs of both aspects and use these derived nouns to mark aspectual distinctions (primarily as results versus processes), BCS, Bulgarian, Ukrainian and Russian tend to form derived nouns primarily from Imperfective verbs and do not use them to mark aspect. Slovene is transitional in its use of deverbal nouns.

### E. Streamability

South Slavic has apparently ignored this property altogether. The determined versus non-determined motion verb distinction that is characteristic of North Slavic (and Russian) has no correlate in the South Slavic languages.

### 5.2. Interactional properties across Slavic (H, I, J, and K)

As we have seen in section 4, interactional properties can override inherent properties when they serve discourse functions in Russian. There is considerable variation among Slavic languages in the deployment of interactional properties, with many languages resorting instead to inherent properties. Whereas only a minority of inherent properties show cross-linguistic variation (and do so in marginal ways, involving only deverbal nouns and motion verbs), all of the interactional properties show variation.

### H. Compatibility

There are two variable phenomena that relate to this property: (*a*) the use of the historical present, and (*b*) the use of the non-past to signal future.

As noted in section 4, Russian virtually excludes Perfective from the historical present. While all Slavic languages take advantage of the capacity for the Imperfective to embed the hearer in the narrated event using this technique, Russian, Ukrainian, and Polish have taken this idea to its logical extreme, making Perfective verbs extremely rare in this use (Dickey 2000: 125–154). In the remaining Slavic languages, aspectual distinctions in the historical present are more influenced by inherent properties. Stunová (1993) describes this difference in terms of the level at which aspect operates in Russian versus Czech, asserting that in Russian aspect is functioning at the level of "discourse", whereas in Czech aspect functions at the level of "the individual event". Stunová's assertion is entirely supported by the present model.

The expression of Perfective future in main clauses shows a North Slavic versus South Slavic opposition. In the North (as in Russian), the Imperfective future is a periphrastic construction with an auxiliary derived from Common Slavic *byti* 'be', while a simple non-past form signals the Perfective future (due to the interaction of the solid human observer with a "solid" perfective situation, as described for Russian in Section 4). In the South, the auxiliary verb is derived from Common Slavic *xotěti* 'want', and it is used with both Imperfective and Perfective verbs. Perfective non-past forms with a future reading are generally restricted to subordinate clauses. Thus the effects of non-compatibility of the human observer and non-past Perfective situations are more limited in the South.

## I.   Dynamicity

In section 4 I described the role of Perfective verbs in moving a narrative along in Russian. While all Slavs make use of this property and prefer Perfectives for plot-line situations, Czechs and Slovaks are capable of using strings of Imperfective verbs to express the sequencing of open-ended situations as well (cf. data in Dickey 2000: 203–218; Stunová 1993: 16, 112, 124–129; Galton 1976: 71). Once again, Russian (joined by most other Slavs in this instance) is using aspect for its discourse value, suppressing Inherent Properties of situations, whereas other languages (Czech and Slovak) differentiate between situations according to their inherent properties, which are not as likely to be overridden in favor of interactional properties. This is the only phenomenon that involves a greater use of Perfective in Russian as opposed to other languages; note that in the other variations, Russian tends to belong with a group of languages that make more use of Imperfective than Perfective.

## J.   Salience

Whereas the foregrounding property of the Perfective as opposed to the Imperfective is pan-Slavic (Galton 1976: 128), the use of the Imperfective general-factual as a backgrounding device is restricted to East Slavic plus Bulgarian (a distribution documented by Dickey 2000: 95–110). The remaining West and South Slavic languages do not override the Inherent Properties of Achievements and Accomplishments in order suppress their salience by means of a general-factual.

## K.   Contiguity

Recall that the combination of a sudden onset (Achievement) with an Activity can be grammaticalized as a *за-* ingressive in Russian. The formation of such ingressive verbs is highly productive in East Slavic and Bulgarian, but this option is significantly less entrenched in the grammars

of Polish and BCS, and is absent or marginal in Czech, Slovak, and Sorbian (Dickey 2000: 222–233).

## 5.3. *Human interactional properties across Slavic (M and N)*

The human interactional properties are quite vulnerable to variation among the Slavic languages, demonstrating that there is some disagreement concerning the overriding of inherent properties for pragmatic purposes.

### M. *Texture*

We have seen that in polite situations, such as the frame in which a host greets a guest, when an imperative presents no new information, but is instead an invitation to perform an expected act, Russian suspends the properties that would dictate the use of the Perfective and uses the Imperfective instead to soften the command. Elsewhere in Slavic, Perfectives are usually found in this context. I was not able to locate any comparative data to cite on this phenomenon, so I will briefly illustrate it here. A Russian will invite a guest to be seated by using the Imperfective *садитесь*[i] 'sit[i] down' (the corresponding Perfective *сядьте*[p] 'sit[p] down' would be rude under these circumstances and can only be used when giving new information, such as describing a position needed to perform a yoga exercise). In Polish, the Perfective *niech pan siądzie*[p] 'sit[p] down' is preferred (Imperfective is usual only for informal, intimate settings: *siadaj*[i] 'sit[i] down'). In Czech, it is only possible to say *sedněte si* [p] 'sit[p] down'; the Imperfective equivalent, *sedejte*[i] *si* 'sit[i] down' is extremely rare and can only refer to repetitions (as in exercises like sit-ups). Bulgarians also use the Perfective, which is *седнете*[p] *(си)* 'sit[p] down'; the Imperfective *сядайте*[i] 'sit[i] down' would imply frustration (cf. the use of the Imperfective to express annoyance in Russian described under L [Graspability] in section 4) and would therefore be impolite. The normal way to express this request in BCS likewise involves the Perfective *sedite*[p] 'sit[p] down'; the Imperfective *sedajte*[i] 'sit[i] down' is strongly dispreferred. The construal of an invited Achievement as a processual Activity seems to be most available in Russian; elsewhere in Slavic the inherent properties of the Achievement prevail.

### N. *Implied presence*

The use of the Imperfective to signal the reversal of an Achievement or Accomplishment (recall the Russian use of *брать*[i] 'take[i]' to mean 'take[i] (and return)' in example 59 as opposed to *взять*[p] 'take[p]') has a distribution similar to the Imperfective general-factual; it is preferred only in East

Slavic and Bulgarian. The perfective is often acceptable in such circum-stances in BCS and Polish, and is always acceptable in Czech, Slovak, and Slovene (Dickey 2000: 110–119).

## 5.4.  *Summary of Slavic comparisons*

Overall, the model holds up extremely well in Slavic. This survey con-firms the anecdotal evidence I have from native speakers of Polish, Ukrai-nian, Czech, Slovak, BCS, and Macedonian that the model (with small adjustments to accommodate differences from Russian) accurately repre-sents their intuitions as language users. The variations that exist are rela-tively minor and are of the kind we expect given the nature of metaphor-ical reasoning: they involve the failure to map a given characteristic from the source domain or a failure to extend a metaphor to the discourse and pragmatic domains. The variations confirm the major isoglosses of Slavic separating North from South and East from West. The distribution also suggests that Polish and BCS (as Dickey 2000 correctly points out) are transitional languages, and that Bulgarian shares a grammatical bond with East Slavic (in addition to its well-known lexical similarity). The sur-vey provides the satisfaction of knowing that the model is not an entirely idiosyncratic accident, since it is not limited in its application to just one language. Still, for a model to be truly valuable, it must have some impli-cations for language in general; section 6 will examine this issue.

## 6.   **Comparisons beyond Slavic: French, Chinese, and Navajo**

Dahl (1985), on the basis of detailed empirical research, refused to in-clude the Slavic languages in his list of languages with a Perfective versus Imperfective distinction, instead relegating them to their own idiosyn-cratic group. Given this fact, it is reasonable to expect that a model that works well for Slavic might not be applicable, at least in its specifics, to non-Slavic languages. In fact, the model is not a good fit once we move beyond Slavic, as I will demonstrate in this section. However, it would be strange for a linguistic oddity to be confined to just one characteristic (like aspect). As linguists, we have come to expect any oddity to have re-percussions elsewhere in a language. So if Slavic languages are peculiar in terms of their aspectual behavior, we should look for other, correspond-ing differences. The peculiarity of Slavic aspect should be a symptom of a more fundamental systematic difference between Slavic and other lan-guages. I will assert that the aspectual behavior that sets Slavic apart par-allels the strength of its nominal number and count versus mass dis-tinctions (recall that Corbett [2000] finds Slavic typologically unusual as

regards these distinctions). And although the specific metaphorical model that I have presented here for Russian and Slavic may not be a good fit for other languages, it is not without broader linguistic significance. The perfective versus imperfective distinction in other languages may not be motivated by exactly the same source domain, but it is very likely that metaphorical models are at work, and that they make use of source experiences that overlap to some extent with the bodily experiences that motivate Slavic aspect. The purpose of this section is to identify ways in which the aspectual systems of other languages differ from Slavic and look at how these differences correlate to differences in the grammatical treatment of number.

This survey is by necessity rather cursory and is based on a comparison of Smith's (1991) descriptions of French, Chinese, and Navajo with Russian (the French, Chinese, and Navajo sentences below are from Smith, and I have provided Russian translations for comparison). In terms of their aspectual behavior, Dahl (1985) sorts the languages in his study into three groups: languages that have a perfective versus imperfective distinction similar to a universal prototype, languages that have an idiosyncratic perfective versus imperfective distinction, and languages that lack such a distinction. Both French and Chinese belong to the first group (which is the largest). Russian (and Slavic) is in an idiosyncratic group. Germanic languages (like English) are among those that Dahl identifies as lacking a perfective versus imperfective distinction. Navajo was not in Dahl's survey. I have chosen to restrict this comparison to languages with a perfective versus imperfective distinction (according to Dahl), and to languages for which there is sufficient and comparable data available to make informed speculations (something that Smith does provide, but Dahl does not, since his purpose is more broadly comparative). The inclusion of French and Chinese will guarantee a comparison of Russian with more ''classic'' examples of perfective versus imperfective. Though the status of Navajo is less clear, this language will add typological breadth to the discussion.

## 6.1. *French*

Perfective versus Imperfective is restricted to the past tense in French and is manifested as Passé Composé (and in some styles Passé Simple) versus Imparfait. Broadly speaking, virtually all uses of the Imparfait (except, perhaps, the Imparfait de Rupture, a discourse device that serves to define a break with a preceding narrative) correspond to Russian Imperfective, but many uses of the French Passé Composé do not correspond to Russian Perfective and would require Imperfective instead. As Smith (1991:

277) puts it, the Perfective is clearly unmarked in French, but marked in Russian, which means that many French Perfectives correspond to Russian Imperfectives. French and Russian agree on the expression of completed Accomplishments and Achievements with Perfectives, as in (59) and (60):

(59)   *Il s'est assis*[p] *à son bureau.*
         *Он сел*[p] *за стол.*
         'He sat down[p] at his desk.'

(60)   *La guerre a éclaté*[p].
         *Началась*[p] *война.*
         'The war broke out[p].'

French and Russian also share the use of Imperfectives to signal durative processes (61), repetitions (62), and an ongoing event in which a Perfective is embedded (63):

(61)   *L'enfant pleurait*[i].
         *Ребенок плакал*[i].
         'The child was crying[i].'

(62)   *Maurice lui tapait*[i] *l'épaule.*
         *Морис хлопал*[i] *его по плечу.*
         'Maurice was tapping[i] his shoulder.'

(63)   *Quand l'oncle Jean a frappé*[p] *à sa porte à minuit, elle lisait*[i].
         *Когда дядя Жан постучал*[p] *в ее дверь в полночь, она читала*[i].
         'When Uncle Jean knocked[p] at her door at midnight, she was reading[i].'

But here the similarities end. A French Perfective often corresponds to a Russian Imperfective when describing temporary States (64) and Activities (65):

(64)   *Marthe a vecu*[p] *à Paris.*
         *Марта жила*[i] *в Париже.*
         'Martha lived[p/i] in Paris.'

(65)   *La roue a tourné*[p] *toute la journée.*
         *Колесо крутилось*[i] *весь день.*
         'The wheel turned[p/i] all day.'

Although more research would be required to fully document the metaphorical source of the French opposition, it seems possible that French Perfective versus Imperfective is motivated on the basis of the experience of closed versus open. Something that is closed cannot have anything added to it, and has a discrete size (corresponding to the facts that a French Perfective cannot describe a situation that can still be ongoing,

and Perfective is strongly preferred if an explicit interval is expressed). Something that is open can be filled, can have things added to it, and thus does not have a discrete size (corresponding to the facts that French Imparfait can describe a situation that fills time, can be continued, and cannot be delimited by an interval without special context). The ICM of closed versus open overlaps with the ICM of matter enough to account for the similarities between French and Russian, but differs in terms of the specific properties it highlights, leaving room for the observed differences.

## 6.2.   *Chinese*

Dahl's (1985: 70) list of languages that conform to the prototypical perfective versus imperfective distinction is ranked, and in that ranking Chinese is in last place (whereas French is higher). Smith's account of Mandarin Chinese reflects this ranking of Chinese aspect, and Melchert (1980) prefers to identify Chinese *le* as a perfect, instead of perfective. Mandarin Chinese lacks overt tense, and temporal location need not be expressed. Perfective tends to be associated with past time and Imperfective with present time. Aspectual marking is optional: a sentence may have a Perfective marker, an Imperfective marker, or no marker at all (in which case the sentence is aspectually vague). There are two Perfective markers, *le* and *guo* (though Dahl recognizes only *le* as perfective and classes *guo* as "experiential", so we will limit discussion to *le*); two Imperfective markers, -*zhe* and *zai* (though the two overlap, and in Northern dialects -*zhe* is taking over the functions of *zai*); and numerous resultative verb complements (RVCs) that can co-occur with the Perfective markers to further specify their impact. The fact that aspect is always optional (which is not so for the French past tenses or for Russian at all), already suggests that Chinese is probably not operating on the basis of a single source domain that would yield a binary opposition (like discrete solid object versus fluid substance or closed versus open), and the proliferation of markers which are relatively independent of each other is consistent with this assumption. It is likely that Chinese uses several source domains, creating a complex landscape of aspectual meanings that may overlap to some degree. If we look just at *le*, we find that it corresponds only partially to the Russian Perfective. As in Russian, Semelfactives and Achievements are associated with Perfective in Chinese:

(66)   *Lisi huran kesou-le*[p].
　　　*Лиси вдруг кашлянул*[p].
　　　'Lisi coughed[p] suddenly.'

(67)  *Zhangsan zai zhongwu dao-le*[p] *shanding.*
     *Жангсан достиг*[p] *вершины в полдень.*
     'Zhangsan reached[p] the top at noon.'

A terminated Activity, which is Perfective in Chinese, can be either Imperfective or Perfective (emphasizing the termination) in Russian:

(68)  *Tamen zuotianzai gongyan chao-le*[p] *yi-jia.*
     *Они спорили*[i]/*поспорили*[p] *вчера в парке.*
     'They quarreled[p(/i)] yesterday in the park.'

Both languages express an Accomplishment as Perfective (69), but in Chinese the focus is really only on the termination, not the completion, so it is possible for the situation to be incomplete. The Perfective cannot be used this way in Russian, which can only use an Imperfective in this situation (followed by a negated Perfective to describe the situation that was not completed, as in [70]):

(69)  *Wo zuotian xie-le*[p] *yifeng xin.*
     *Вчера я написал*[p] *письмо.*
     'I wrote[p] a letter yesterday.'
(70)  *Wo zuotian xie-le*[p] *gei Zhangsan de xin, keshi mei xie-wan.*
     *Вчера я писал*[i] *Жангсану письмо, но не дописал*[p] *его.*
     'I wrote[p/i] a letter to Zhangsan yesterday, but I didn't finish[(p)] it.'

Termination seems to be more basic and separate from completion in Chinese (though resultative verb complements can combine these notions), whereas the Russian Perfective prototypically accommodates both concepts, and the signaling of only termination (as in delimitatives) is permitted as a more peripheral use of Perfective.

Like the Russian Imperfective, the Chinese Imperfective *-zhe* is associated with States (71), but unlike the Russian Imperfective, Chinese cannot normally use this morpheme in individual-level stative predicates (72), and seems limit this use to States that result from a prior situation:

(71)  *Ta zai chuang shang tang-zhe*[i].
     *Он лежит*[i] *на кровати.*
     'He is lying[i] on the bed.'
(72)  ?? *Ta zhidao-zhe*[i] *zhege huida.*
     *Он знает*[i] *ответ.*
     'He knows[i(?)] the answer.'

Finally, Chinese need not express aspect at all, as in (74); an aspectually neutral statement in Chinese could have several translations in Russian:

(74)   *Zhangsan xiuli yige luyinji.*
       *Жангсан чинит[i]/чинил[i]/починил[p] магнитофон.*
       'Zhangsan is repairing[i]/repaired[i/p] a tape recorder.'

Whatever the metaphorical model (or probably models) is that underlies the Chinese aspectual system, is it clearly different from that for Russian, since it does not force the speaker to choose, and seems to focus on junctures, suggesting possibly barriers or other landmarks as possible source domains.

### 6.3.   *Navajo*

In Navajo aspect is embedded in a complex system of Modes and Verb Lexeme Categories, and for this reason I will restrict myself to condensing Smith's (1991) description to a few relevant observations. Like Chinese, Navajo has Perfective, Imperfective, and a default neutral aspect. Future is the only tense in Navajo, and the neutral aspect appears obligatorily in the Future and in stative sentences. Perfective expresses closed situations, often with strong punctual associations. Imperfective is strongly associated with durativity. The Navajo Perfective, as in Chinese, focuses on termination, to the point that the expression of completion is not grammatically available: "the contrasts relevant to the grammatical distinction of telic and atelic events do not occur in the Navajo language (Smith 1991: 412)". Thus, like Chinese and unlike Russian, Navajo seems to focus on junctures, which likely have a metaphorical source (or sources) other than the ICM of matter.

### 6.4.   *Summary of comparisons*

Though three languages is a very limited data set, there appears to be a correlation between the grammatical expression of number/count versus mass and the metaphorical model that motivates aspect. Russian, French, Chinese, and Navajo vary according to the morphological investment they make in nominal individuation, such that Russian has the heaviest investment, French is somewhat less invested, Chinese has relatively few investments, and Navajo has virtually none. Russian (cf. section 3.3) has obligatory number and a variety of morphological means to emphasize count versus mass (collectives, singulatives, Genitive/Locative singular -*y*, singularia tantum). Corbett (2000: 179) notes that phonological changes in French have largely eroded the marking of number on nouns, relegating this distinction to the article (where present). Number has thus been somewhat attenuated in French. Smith (1991: 369) states that: "Mandarin has no formal distinction between count nouns and mass

nouns: there is one class of common nouns'', and Corbett (2000: 51) speculates that Classical Chinese may have lacked number altogether. Navajo does not inflect its nouns for number and lacks formal expression of countability (Smith 1991: 407, 412). There is a powerful logic to this pattern. A language that focuses on distinctions pertaining to the individuation of material objects (and by extension other ''objects'' named by nouns) is likely to use those concepts to organize the distinctions of its verbs as well. A language that ignores some or many of these distinctions should be much less likely to use them in its verbal system and should look elsewhere for organizing principles. The model both confirms Dahl's classification of Slavic aspect as idiosyncratic and suggests a reason: it is motivated by a strong focus on the individuation of objects.

## 7.   Conclusion

The metaphorical model of Russian aspect presented here has a number of advantages. This model provides a richly textured, coherent motivation for an otherwise intractable array of uses. This model is compatible with previous achievements in the study of Russian aspect. This model is consistent with the principles of cognitive linguistics because it demonstrates how a linguistic category is grounded in embodied human experience. This model avoids the circular logic of merely creating new synonyms for perfective and imperfective and avoids resorting to abstractions in order to explain an abstraction. This model is plastic enough to account for variations across Slavic. This model has heuristic value for both theory and pedagogy. This model suggests a logical correlation between how a language organizes nominal and verbal categories. I hope that this model will inspire more research into the metaphorical models that motivate aspect, and in general will encourage linguists to re-examine abstract ''purely grammatical'' categories and search for the experiences in which they are grounded.

**Notes**

1. There are a few hundred so-called "biaspectual" verbs in Russian that lack an overt formal marker for aspect. For these verbs, the Perfective and Imperfective forms are syncretic (this view seems to be held unanimously by scholars, cf. Čertkova [1996: 100–109], Galton [1976: 294], and Zaliznjak and Šmelev [2000: 10]), but under normal circumstances aspect is unambiguously recoverable from context. If encountered out of context, these verbs might be ambiguous, but never vague. The vast majority of biaspectual verbs are of foreign origin, and these show a very strong tendency to leave the biaspectual category by developing morphologically derived aspectual partners. The biaspectuals, then, can primarily be thought of as a sort of "holding tank" for foreign verbs while they are being nativized to the Russian aspectual system (Anderson 2002). Biaspectual verbs are not considered a threat to the obligatoriness of aspect in Slavic languages any more than the defective morphology of *sheep* (sg.) versus *sheep* (pl.) would be considered a threat to the integrity of number in English. Sorbian, itself an endangered language, could be an exception, since it may be losing its aspectual distinctions due to German influence (Toops 1997).

2. The semantic and grammatical interaction of verbal prefixes and verbal roots in Russian is too complex a topic to be addressed in this article. I have argued elsewhere (Janda 1986) that Russian verbal prefixes are never semantically empty, and would further argue that the so-called "empty" prefixes are those that indicate the type of solidification/perfectivization that is most natural for the Accomplishment that is the ultimate outcome of the given Activity. Considerations of space and focus preclude such discussions here.

3. During the fall of 2002, Sean Flanagan and I undertook a pilot study, and determined that it would be worth pursuing psycholinguistic experimentation to test the metaphorical model. We are now in the process of designing a study that will have rigorous methodology and statistical analysis. The results of this research will be presented in a future publication.

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