Aspectuality across Languages

Edited by
Alan Cienki
Olga K. Iriskhanova

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Aspectuality across Languages. Event construal in speech and gesture
Edited by Alan Cienki and Olga K. Iriskhanova

Aspectuality across Languages

Event construal in speech and gesture

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Alan Cienki
Olga Iriskhanova
December 2017

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Preface

In March 2011, the fifth workshop on Empirical Methods in Cognitive Linguistics (EMCL) was held in Freiburg, Germany (https://sites.google.com/site/emcl5freiburg/home). The workshop followed the structure developed through previous EMCLs of having a set of groups running in parallel for one week. Each group was led by two researchers from different fields of study and consisted of a small number of selected students. The goal for each group was to develop, design, carry out, and report on a small, empirical research project on a topic in cognitive linguistics, integrating at least two theoretical and methodological perspectives – often from linguistics and cognitive psychology. The group that was led by Alan Cienki and Raymond Becker developed a project on Aktionsarten, speech, and gesture in English. An initiative to follow up on that research through a larger, cross-linguistic comparison, taking grammatical aspect into consideration, provided the starting point for the development of the project that is reported on in this volume.

A grant from the Russian Science Foundation for international research groups was awarded to Moscow State Linguistic University (A. Cienki, principal investigator) for the research from September 2014 through December 2016. The volume stems from work accomplished during the 2014–15 period of the project, the following year being devoted to a follow-up study on second-language production. The grant supported a productive model of international collaboration involving the team members from France, Germany, and the Netherlands spending a minimum of one month per year in Moscow. This was usually divided up into two visits per year, allowing for intensive periods together of several weeks at a time, with preparatory and follow-up work in the months in between visits coordinated via e-mail and Skype contact. This made it possible to develop ideas over time and to keep them moving ahead through the structure of the regular, intensive group meetings.

This volume presents empirical research but as well brings together reviews of different language-based traditions to the study of aspect (in Chapter 1), some works of which have not been published before in English. The volume was composed not as a set of collected papers, but as a multi-authored work. While maintaining a common parallel structure for presenting the theory and analyses concerning the three languages of study (French, German, and Russian), the chapters were written by teams from the three countries concerned. The book therefore incorporates, to some degree, different language-based approaches to scholarship in general, and to

scholarly writing and argumentation in particular. We feel that this, in itself, is an important element of the volume, giving the readers in English a feel for the different traditions on which the work is based and for the slightly different emphases in linguistic analysis highlighted within each language tradition. We hope that the result will provide an enrichment of Anglo-American approaches to scholarship.

The book not only encompasses three languages but also is multimodal and cross-disciplinary in scope. The research is part of the growing trend in cognitive linguistics to take an audio-visual approach to language use. It incorporates the study of manual gesture as another form of expression, which can give insights into speakers' processes of conceptualization; in our study, we focus on speakers' means of construing events. The work is also cross-disciplinary, bringing together theoretical issues and methodological approaches from linguistics and cognitive psychology, as well as some insights from the study of human physiology and kinesics. In this regard, the book reflects the combination of knowledge and expertise that was part of the research group, in which we all learned from each other. Finally, in chapters with various authors (Chapters 1, 2, 3, and 4), each section title indicates in parentheses the names of the researchers mainly responsible for authoring that section.

Alan Cienki and Olga Iriskhanova

Introduction

Aspect and event structure as topics in linguistic and psychological research (*Cienki, Iriskhanova*)

1. Introduction

The linguistic study of how events are talked and written about, and the study of aspect in connection with this, is familiar to an English-speaking audience from such works in the Anglo-American tradition as Comrie (1976), Croft (2012), and others. Alongside research on grammatical tense, aspect has been analyzed in terms of its morphological expression across a typologically diverse range of the world's languages. A general characterization of aspect is that it has to do with "different ways of viewing [and expressing] the internal temporal constituency of a situation" (Comrie 1976: 3) (building on Holt 1943: 6, "les manières de concevoir l'écoulement du procès même").

Our assessment of the literature, as presented in Chapter 2, brings us to the conclusion that research in linguistics has largely focused on aspect as it is used in written language. We believe it comes from an implicit assumption by many that the grammar of a language can be characterized without regard to the mode in which it is produced, be that written or spoken. This can be seen as a consequence of the written language bias in linguistics (Linell 2005) and in modern academia in general in the Western world. The research in psychology on event structure and aspect has largely reflected a similar bias; the work has focused predominantly on studies concerning the comprehension of written text materials, and only more recently have some turned to using spoken stimuli as input (see Chapter 6 for an overview of approaches in psychology).

In short, there is not much of a tradition of researching aspect in spoken language use. That is: we do not know much about aspect use in the interactional setting of what has been called the canonical encounter between humans (Clark 1973), that of face to face interaction by people who can see and hear each other. This context inherently involves two modalities of perception, the auditory and the visual. Therefore, we can say that we still have much to learn not only about how this linguistic category (as just one example of many others) is employed in oral language, but also to what extent aspectually different characterizations of

events are manifested in other forms of visually perceptible bodily expression, such as in speakers' manual gestures. In other words, we do not know much about whether, or how, aspectuality plays a role in relation to language use as a bimodal (audio-visually perceptible) phenomenon, or, as it is commonly labeled: multimodal. However, the turn to studying language in light of the multimodal nature of communication has been one of the major shifts in certain fields of linguistics (such as cognitive linguistics) in recent decades. (See Müller et al. 2013 and 2014 for an overview of these developments.)

2. Semantics approached from the perspective of conceptualization and mental simulation

In the field of cognitive linguistics, grammar is not portrayed as a purely formal system. Rather, a basic tenet is that a fundamental role of grammatical forms, and not only of lexical items, is the expression of meaning (Croft and Cruse 2004; Evans and Green 2006; Geeraerts and Cuyckens 2007). The theories of Cognitive Grammar and Construction Grammar both explicitly assert that grammar itself is meaningful (Fillmore et al. 1988; Goldberg 1995; Langacker 1987, 1991). Langacker (2008: 3–4) elaborates, "For one thing, the elements of grammar – like vocabulary items – have meanings in their own right. Additionally, grammar allows us to construct and symbolize the more elaborate meanings of complex expressions (like phrases, clauses, and sentences). It is thus an essential aspect of the conceptual apparatus through which we apprehend and engage the world."

This brings us to the point that in cognitive linguistic approaches, semantics is equated with some form of conceptualization; meaning is not a matter of reference to entities or states of affairs out in the world, but to language users' conceptualizations of their experience in the world. Furthermore, evidence from psycholinguistic studies increasingly supports the view that understanding the meaning of many kinds of linguistic expressions involves an, at least partial, experiential/embodied simulation of the situation being referred to (see, for example, Gibbs 2006; Gibbs & Perlman 2010).

3. Beyond language – visible action expressing conceptualization

Tying together the research on grammatical phenomena in spoken language and the cognitive linguistic approach to language as an expression of a certain form of conceptualizing, it takes us to what Slobin (1987) called thinking for speaking. While this is discussed further in Section 2.2.1.2, the gist is that a specialized form

of thought is mobilized for purposes of linguistic communication, which is different from thinking for other goals. However, the bodily movements we make in communicative contexts, what are usually called gestures, have also been shown to be integrally tied to processes of idea development while speaking (an argument that gained wide public attention with the publication of McNeill's 1992 book, *Hand and mind*). It is for this reason that the study of speakers' gestures has begun to play an important role in various fields of cognitive linguistics (Cienki 2010, 2013, 2016), especially as it can have a bearing on semantic analysis, including the analysis of grammatical semantics. Gestures can thus be said to provide insights into bodily-based conceptualizations of grammatical meaning (cf. Duncan 2002; Müller 1998a, 2000; Parrill et al. 2013).

Analyzing gesture with speech breaks us from a vicious circle: Gibbs and Colston (1995: 354) note that "Psychologists often contend that cognitive linguistic research suffers from circular reasoning in that it starts with an analysis of language to infer something about the mind and body which in turn motivates different aspects of linguistic structure and behavior." Gesture, however, constitutes a different semiotic system than that of spoken language (one in which spatial structures, rather than acoustic ones, predominate), yet gesture production is closely connected with certain kinds of thought processes, including thinking in spatial problem-solving as well as thinking involved in speech production (Chu and Kita 2008, 2016). Studying speech and gesture allows for triangulation to reason about what McNeill (1992) calls the growth points of ideas that unfold sequentially as people communicate with each other.

4. The main research questions

This brings us to the motivation for studying gesture in relation to aspect. It can potentially give us additional insight into the question of whether aspectual distinctions are simply differences in linguistic forms available to speakers of a given language, or whether they constitute fundamentally different ways of construing events. If the different aspectual categories available in a given language correlate with different kinds of gestural behavior across speakers of that language, it suggests that there are fundamental differences in how speakers are construing events when expressing them with the different aspectual categories. If this differs across different languages – following Slobin's proposal concerning thinking for speaking, it would support the idea that speakers of different languages indeed think differently about events if we look on the micro-time scale of moment-by-moment formulation of thoughts for speaking.

In previous studies on English and Mandarin Chinese (Duncan, 2002; Harrison 2009; McNeill 2003), differences were found between the type of grammatical aspect expressed in speech at any moment and the quality and duration of the co-speech gestures. A recent study on English by Parrill et al. (2013) presented participants with stories that differed in the aspect of a target event, namely the progressive aspect versus a non-progressive form (e.g., *was floating* versus *had floated*). After each story, the participants told the story to a friend whom they had brought with them to the experiment, and the researchers recorded and coded their speech and gestures. Parrill et al. found that only when the events in the stories were presented in the progressive (*was floating*) did participants make reliably longer stroke durations in gestures with progressive verb forms than with non-progressive verb forms when they retold the event to a friend. In contrast, when the presentation of the event in the story was in the past perfect (*had floated*) participants' co-speech gestures did not differ in gesture stroke duration in their retelling of the event using either progressive or non-progressive forms. Parrill et al. argued that when the participants were presented with the event in the progressive, access to the internal structure of the event afforded a stronger encoding of it. Thus when they recalled the event, they could retell it in richer detail: speakers produced longer-lasting and more complex gestures with progressive utterances than with non-progressive ones. This is similar to findings reported by many language comprehension studies that suggest that events become encoded in better detail due to greater access to the internal structure of the event via the progressive compared to the non-progressive (e.g., Ferretti et al. 2007; Madden and Zwaan 2003; Magliano and Schleich 2000).

While this research indicates the value of looking at the connection between aspect and gesture, the work has predominantly been conducted on English, a language without rich verb morphology for the marking of grammatical or lexical aspect. However, examining a given grammatical topic from a comparative linguistic perspective is valuable not only to better understand scope of the grammatical phenomenon under consideration, but also to better consider the potential of the grammatical category for multimodal expression. In turn, a comparative linguistic perspective allows for more nuanced research of questions about thinking for speaking and gesturing.

The present project considers three languages with structural differences in expressing the temporal contour of events. To characterize events in the past, Russian has only one past tense, but two grammatical aspects (imperfective and perfective), whereas French and German each have a one-word 'imperfect' past tense (*imparfait/Präteritum*) and a compound 'perfect' tense, in addition to other forms. Furthermore, Russian and German each employ sets of morphological markings for different lexical aspects or Aktionsarten.

Given that French, German, and Russian share two broad aspect(ual) categories in their verb systems, but mark aspectuality in different ways, we may pose the following questions:

1. Do speakers of these languages gesture similarly or differently (with regard to movement quality) when talking about events in the perfect(ive) versus in the imperfect(ive)?
    a. Specifically, do the ways they have of expressing the perfect(ive) correlate with greater use of gestures that express an event in a similar way, "in one fell swoop", as it were: with a pulse of energy, in what we call below a bounded gesture?
    b. Do the ways they have of expressing the imperfect(ive) correlate with greater use of gestures that also involve greater focus on the internal movement structure, with more controlled movement and no holistic pulse of energy, in what we call below an unbounded gesture?
2. Conversely, is the comprehension of video clips with verbs and gestures in these languages affected if a given clip shows a match versus a mismatch of verb category and gesture type?

These questions provide the bases for the production and comprehension studies presented in the following chapters. Considering aspect as a form of 'movement event' offers a common (embodied) ground for a comparative study of aspectuality across the three languages. First, we turn to the framework for studying aspect and event construal that provides the background for our project.

CHAPTER 1

Aspect through the lens of event construal

1. On events and aspect

We place the notion of *event* in the core of the present research on gestures used with aspectual verb forms, as we proceed from the common cognitive assumption that the capacity to segment our past, present, or future experience into events and construe them as durative or punctual, complete or incomplete entities, is a fundamental cognitive ability that manifests itself both in language and other modes of communication. It has been shown in recent cognitive studies that the choice of verbal and non-verbal (gestural) forms, and their co-occurrence, indicate certain ways of conceptualizing events by the speaker (Croft 2012; Langacker 2000; Parrill et al. 2013; Talmy 2000c).

1.1 Events: An historical and philosophical overview

1.1.1 *Events as phenomena on the levels of cognition, language, and communication (Iriskhanova)*

The event-centered approach adopted in this multimodal study of aspect and gesture is rooted in our understanding of events as multi-faceted phenomena that exist at the crossroads of several interrelated dimensions: cognitive, linguistic (morphological, syntactic, and textual), and communicative.

Firstly, as various philosophers and psychologists indicate, when we think and talk about interacting with the world, we organize our experience by choosing entities, assigning properties to them, and placing them in time and space. In other words, our dynamic experience is segmented into discrete events, and we rely on the boundaries between them in our perception of time and change (Liverence and Scholl 2012; Swallow et al. 2009; Treisman 1963; Zacks 2004). On a more general cognitive level, events are the manifestations of the ability of the human mind to chunk the flow of information and assign meaningful structure to experience.

That means that *the construal of the world is to a large extent the construal of events*.

Secondly, this cognitive ability is realized in the grammatical systems of languages. Numerous linguistic studies have shown that languages have a wide range of tools to denote events, their relations and features – lexical/word class (*a wedding, to*

marry), morphological (*marry, married*), semantic (*to marry, to wed)*, and syntactical (*They got married six months after they met*). Time, space, causation, change, participants (i.e., all the basic properties and components of events) are reflected in the structure of words, sentences and texts. Starting from the pioneering works by Holt (1943), Isačenko (1960), Comrie (1976) and up to the very recent studies in linguistics, grammatical and lexical aspect is widely accepted as a universal means of indicating how the speaker construes the inner structure of events (Bondarko 1971; Bybee 2003; Comrie 1976; Hopper 1979; Isačenko 1960; Lyons 1977; Olsen 1997; Walker 2010; inter alia). With a view to all this, we assume that aspect is a linguistic phenomenon that proceeds from the basic cognitive ability to construe events in speech in alternate ways, and looking into aspect means looking at events through the lens of linguistic (semantic and grammatical) phenomena.

So, *aspect is conceptually embedded in events, and events are linguistically embedded in aspectual forms of verbs*.

Thirdly, there is another linguistic dimension of events that manifests itself at the textual level. As we show further in this chapter, in narratology, events are regarded as structural units forming the plot of literary and everyday narratives (Fludernik 1996; Labov 2001; Ricoeur 1981; Shklovsky 1921/1965). Events are discussed within the context of two key issues. The first one concerns the difference between the story (*fabula* in Shklovsky's terms) and the plot (*sjužet* in Shklovsky's works). While the former notion represents events as raw material of a narrative, the latter points to events as arranged by the author who "focalizes", or "filters" them. The second issue is related to the narrative time and the non-linear representation of events in a plot that can lead to interruptions, such as flashbacks (Gennette 1980). The notions of the plot, the narrative time, the narrator ('voice') and the point of view indicate that the arrangement of events is subjective and the narrator uses various means to follow or break the natural sequence of happenings. Although literary narratology studies mostly written texts, the ideas about the subjective nature of events depicted in them and the role of certain expressions (figures of narrative) in creating the effect of non-linearity are relevant to the present study of storytelling. Importantly, in spoken narratives it is gestures that are often used along with the words to express the narrator's viewpoint (Parrill 2012). They also compress or partially substitute the expressions they co-occur with, cutting into the linear sequence of words.

In our study *a spoken narrative is a subjective construal of past experience by a speaker who witnessed some events or participated in them*.

Fourthly, in addition to the cognitive, grammatical and textual dimensions, we study events through the lens of discursive practices, and, more specifically, oral communication. The communicative dimension of events link this notion to social pragmatic and social semiotic works, on the one hand, and to the cognitive

usage-based theory, on the other hand. According to pragmatic and social semiotic views, during interaction we participate in communicative events comprised of a sequence of communicative acts (Hymes 1974; Searle 1969, van Dijk 2009, Geis 1995).

Hence, *narrative discourse is not only a chain of events being spoken about, but a communicative event "in its own right" with a certain sequence and components, such as scene, setting, participants and their goals, message, forms of speech, norms and channels* (Hymes 1974; Labov 1972).

Equally important for the present work is the fact that communicative events are produced through various semiotic modalities, or modes – such as music (e.g., "Flight of the Bumblebee" by Rimsky-Korsakov), image (e.g., paintings, photos), gestures (e.g., emblematic gestures of victory, positive evaluation, etc.), writing and others. As it was highlighted by social semioticians (Kress and van Leeuwen 1996), in the everyday construal of the world we use both verbal and non-verbal means, relying on several channels (audio, visual, tactile) and semiotic systems simultaneously. In all languages and cultures, the combination of words and gestures appears to be a universal multimodal set of semiotic resources used to construe events in narrative discourse. It can probably be explained by the commonalities between two modes: according to Kress, they both follow the same organizing principles in time and space (Kress 2010). This idea seems to be in partial resonance with what Müller writes about motion events, drawing the parallel between gestures as motion events proper and aspect as the metaphoric conceptualization of events' inner structure (cf. Section 2.2.2, Chapter 1, this volume).

The communicative perspective on events has found its way to cognitive linguistics, with a new twist. It transformed into the Usage-Based Theory introduced by Langacker in contrast to the formalist theories of language (Langacker 1987). The usage-based model is built on the assumption that "the speaker's linguistic system is fundamentally grounded in "usage events": instances of a speaker's producing and understanding language" (Barlow and Kemmer 1999: viii). Although the usage-based model is concerned mainly with the issues of linguistic entrenchment and the link between the specific and the general through language use, it provides some further insights into the issue of multimodality. It draws attention to spontaneous and specific instances of language use, highlighting its formal and conceptual complexity. According to Langacker, a usage event "resides in the pairing of a comprehensive conceptualization, representing a full contextual understanding, with an elaborate expression, in all its phonetic and gestural detail" (Langacker 2007: 425). It is also argued in the Usage-Based Theory that various communicative phenomena are grounded in a number of general cognitive processes. Among them are cross-modal associations that allow for establishing links between forms and meanings within and across different modes (Bybee 2010; Ellis 1996). We find similar attention to cognitive processes underlying multimodal communicative acts in Slobin's "thinking for

speaking" hypothesis, which laid the groundwork for the present cognitive analysis of co-speech gestures (see Section 2.1.2, Chapter 1, this volume).

So, in line with the communicative theories of events, *we study oral narratives from a multimodal perspective, focusing on usage events as instances of co-occurrence of linguistic units (namely, aspectual forms of verbs) and gestures*.

Generally, by placing the notion of event in the center of this research, we try to establish a more consistent link between cognition, language structure and the multimodality of natural communication. In doing so, we show the importance of events as units that organize our interaction with the world, the production and interpretation of narratives, and the multimodal flow of communication.

The multimodal approach to the analysis of events construed in oral narratives from three languages offered in this book relies on philosophical and linguistic theories that link event to aspect, aspect to event, and both of them – to communication in general, and to narrative practices in particular.

1.1.2 *Various approaches to the study of events in philosophy (Iriskhanova)*

In philosophical studies, the notion of *event* seems to be one of the most intriguing ones. The word itself originated from entrenchment over time of the Latin *ex+venire* 'come out, result, happen', and the concept plays an important role in both theoretical and applied fields of knowledge. *Event* is used not only in philosophy, but also in history, cognitive science, mathematics, physics, computer science, and linguistics. It is instrumental in the study of metaphysics, the segmentation and assessment of everyday experience, perception and memory, the functioning of the brain, the structure of narratives, syntax, and even modern architecture.[1] Despite its broad application in various fields of research, the term *event* still preserves its everyday meaning of 'something that happens'. The intuitive and indeterminate nature of *event* is one of the reasons why it is often viewed as an umbrella term and serves as the background for other, more specific designations.

From the historical perspective it seems to be quite obvious that *event* and *aspect* should be linked together, as starting from Antiquity, philosophers, logicians and linguists from various backgrounds have repeatedly demonstrated that different verb forms describe different types of events (actions, states, processes, etc.).

Aristotle, for instance, points at two kinds of events – motions (*kinêseis*) and activities (*energeiai*). Activities (like *thinking* or *seeing)* have internal goals, i.e., goals that are reached as soon as the events begin. So, both imperfect and perfect tenses can be used to make true statements about them. Motions (including in the abstract, such as *learning, appearing*) are incomplete, they have external goals, and

1. Italian architect Aldo Rossi wrote (1982: 22) that architecture is "the fixed stage for human events".

they stop as soon as they reach the goal. According to Aristotle, it is not relevant to say both *I am learning* and *I have learned* about motions, because the use of the perfect tense would mean that the process, or change, has come to an end and the motion is not happening any more.

In *Metaphysics* the philosopher writes:

> For it is not at the same time that one is walking [βαδίζει] and has walked [βεβάδικεν], nor building a house [οἰκοδομεῖ] and having built a house [ὠκοδόμηκεν], nor coming to be [γίγνεται] and having come to be [γέγονεν], nor being changed [κινεῖται] and having been changed [κεκίνηται], but these are different, and so too if something is bringing about change [κινεῖ] and has brought about change [κεκίνηκεν]. But the same thing at the same time has seen [ἑώρακε] and is seeing [ὁρᾷ], and is thinking [νοεῖ] and has thought [νενόηκεν]. So I call such a thing an actuality [ἐνέργεια], but that thing a change [κίνεσις]. (Aristotle 2006: 8)

Importantly, this much quoted paragraph shows that Aristotle not only makes a distinction between two kinds of events – motions and activities – but also indicates that this difference is manifested in the semantics of aspectual verb forms, reflecting the internal structure of events. Some researchers point out that Aristotle's ideas contributed to the distinction between telic and atelic verbs in modern aspectology, and paved the way to the notion of lexical aspect, or Aktionsart (see Filip 1999).

Despite the early mention of the interdependence between the types of events and verb aspect in philosophy, and vigorous studies of aspect in linguistics from the second half of the nineteenth century (see Section 1.2, Chapter 1), scholars did not seem to focus much on the linguistic side of the event until the middle of the twentieth century. This paradox can be partially explained by the fact that the two notions come from different backgrounds. While *event* has been largely viewed as a philosophical concept, *aspect* has been regarded as a purely linguistic phenomenon, pertaining to grammar. Besides, the *event* itself, universally recognized now as an important ontological notion, remained on the periphery of philosophical studies for quite a long time, overshadowed by other issues not directly linked to linguistic or other communicative phenomena.

Plato and Aristotle, for example, who were interested mostly in broad metaphysical questions, did not pay much attention to events, and considered them as secondary entities dependent on ideas (for Plato) or primary substances like objects (for Aristotle).

In the eighteenth and nineteenth centuries, events were discussed by German philosophers within the context of historical changes. The historical view on *event* expands on the ideas of Stoics who assumed that history was the course of events connected by causal relations. Similarly, Hegel (1824) considers the history of mankind to be a narrative of "world-historical" events, i.e., specific happenings that determine the transfer of society from one historical stage to another (e.g., the Protestant

Reformation or Napoleon's conquest). The philosopher focuses on the questions of what determines the causal chain of such events, to what extent they are governed by the Spirit, and whether they are rational or not.

Although the German philosophers of history offered an abstract philosophical treatment of events, the historical perspective raised the issue of events as narrative units and highlighted the subjective nature of the interpretation of historical events. These questions found its way into philosophical and linguistic works of the twentieth century, contributing to a more extensive and diversified use of *event* first in the philosophy of logic, and later – in the philosophy of language, structural semantics, linguistic narratology, pragmatics, and cognitive linguistics.

The starting point for the modern philosophy of *event* are the works by British logicians Russell (1914) and Whitehead (1929), who, in contrast to Aristotle, assumed that the basic ontological category was process (events), rather than substance (objects), and other properties – temporal, spatial, causal, etc., were derived from events.

Whitehead (1921) was the first to see events as perceptual experiences and define them as spatio-temporal happenings: "The ultimate facts of nature are events connected by spatio-temporal relations. These relations are in the main reducible to the property of events that they can contain (or extend over) other events which are parts of them" (Whitehead 1921: 227).

Following Whitehead, the French philosophers Deleuze and Badiou indicate that the complex interplay of events in time and space is at the heart of the constantly changing world, with *event* being either a ubiquitous part of this continuum (Deleuze 1990), or a rare rupture in it (Badiou 2000).

Interestingly, the philosophical difference in treating events as either omnipresent, pervasive entities (e.g., everyday activities and states) or unusual and important happenings (revolutions, for example) was projected into the philosophy of language, where similar difference in viewing events can be found depending on the national traditions. For instance, activities, states, processes are classified as events in Vendler (1967) and Davidson (1969), while in the Russian studies there is a tendency to view events as happenings or changes that are outstanding and socially important (Arutjunova 1988). According to Arutjunova, an *event* is a "stepping stone, and sometimes it's a turning point in life […] Events never go unnoticed" (Arutjunova 1988: 172).[2] The researcher points out that a record harvest of apples could hardly be named as *event* if it happened in the gardens that were abandoned (ibid.: 171). This view on events as something distinguished is

2. The philosophical opposition of events as being either mundane or extraordinary happenings found its way into narratology, where events are divided into event I (any change expressed by predicates in a text) and event II (result of the contextual interpretation of a happening as relevant, unexpected and unusual, i.e., as characterized by "tellability") (Hühn 2009; Labov 1972).

close to M. Heidegger's notion of *Ereignis* (event), often translated as 'concern'. For Heidegger *concern* means "to distinguish or discern which one's eyes see, and in seeing calling to oneself, appropriate" (Heidegger 1969: 27).

The recognition of the importance of events from the ontological point of view brought about the necessity to set them apart from other metaphysical categories, like objects, properties, and facts. We can see a variety of approaches here, and the terms are used in different ways.

Drawing the line between events and objects, most philosophers indicate that, unlike objects that *exist* within certain spatial boundaries and are relatively stable across time, events *happen* or *occur* in temporal continuum. The temporal boundaries of events are more "visible" than the spatial ones, because events are changes bounded in time (Hacker 1982; Quinton 1979). However, such philosophers as Whitehead (1929), Quine (1950, 1970), Lewis (1986) and many others, indicate that there are more similarities between events and objects than is usually expected. They can both extend across time and space, events can be characterized via objects and vice versa (Kim 1993), and there are events, like states, that are non-happenings or non-occurrences (Davidson 1969; Kim 1993; Lewis 1986).

Events are also compared with properties, and while some scholars believe that events as individual entities stand apart from properties, which are universal, others assume that events are properties instantiated at a certain time (Bennett 1988; Kim 1993; Lewis 1986; Montague 1969). Lewis, (1986: 244) for instance, considers events to be properties belonging to a class of spatiotemporal regions in this world or any other possible world.

Another important distinction is between events and facts. Most researchers point to the commonalities between the two categories, indicating at the same time that if facts are abstract and atemporal, events are concrete and located at a certain point or region in a spatio-temporal continuum (Bennett 1988). The singularity of events is often opposed to a more general truth-value account of facts: e.g., *the stabbing of Caesar* as an event took place at a certain time and in a certain place; *the stabbing of Caesar* as a fact is true at any time and in any place. The strong intuitive association between the two notions, and the differences in their linguistic expression gave rise to the idea that events and facts represent different construals of the same state of affairs (Chisholm 1970).

In general, most philosophical studies of events are focused on such "non-linguistic" issues as the ontological status of events, their logical predication, quantification, the identity conditions, causal relations between events, and some other issues. However, the attempts to compare events with other metaphysical categories (properties, objects, facts), to describe their composition in terms of propositional logic and to develop a typology of events contributed to shifting the focus from abstract metaphysical issues to questions more relevant for the linguistic study of

events. What types of entities can be considered as events and how can we differentiate between them? What are the main properties of events? How can we say that two events are identical? What elements constitute events? To answer these questions, philosophers eventually turned to the linguistic features and expressions that represent events and their properties.

The "linguistic turn" in the philosophical studies of event is most often associated with the seminal work "On the logical form of action sentences" by Davidson (1967), who demonstrated that the structure of event is rooted in the semantics of the sentence, and the latter cannot be explained without a commitment to events: " …without events it does not seem possible to give a natural and acceptable account of the logical form of certain sentences of the most common sorts; it does not seem possible, that is, to show how the meanings of such sentences depend upon their composition" (Davidson, 1980/1967: 166). Following the methodology of formal description of propositions, Davidson shows that the logical form of an action sentence contains a hidden variable that fills the position of an argument in the semantic structure of the sentence. He introduces the notion of event argument and suggests that verbs (*to stroll, to butter,* etc.*)* and adverbial modifiers (*slowly, at 2 p.m.*) can predicate events. The presence or absence of the event argument *e* accounts for the distinction between "event" and "state" sentences. This logical criterion was later applied to the distinction between verbs denoting events and states (Galton 1984; Sandström 1993).

Another issue that contributed to a stronger connection between the philosophical theories of events and the linguistic studies of the phenomenon was the typology of verbs. The most influential taxonomies were offered by Ryle (1949), Kenny (1963) and Vendler (1957/1967). Ryle singles out external (physical or bodily) and internal ("private", psychological) events, and, more importantly, distinguishes between achievements and accomplishments. According to Ryle, achievements are the changes of state associated with some "task", and accomplishments do not have tasks linked to them (cf. Aristotle's ideas about motions and activities) (Ryle 1949). Similarly, Kenny (1963) distinguishes between states, activities and performances, the latter being the events with natural endpoints (Kenny 1963).

Despite numerous attempts to classify events in philosophy, it was Vendler's typology that had a major influence on linguistic studies. It encouraged linguists to develop or revise the aspectual classification of verbs offered in his works (Bach 1981, 1986; Croft 2012; Mourelatos 1981; Verkuyl 1993). Vendler's differentiation between states, activities, accomplishments, and achievements is important for the present study as it was the first taxonomy of events that explicitly linked verbal expressions with event types, or, more precisely, the semantics of the aspectual forms of verbs with such features of the internal structure of event as the presence or absence of an endpoint, or boundary (Vendler 1967) (for details, see Section 1.2.4.1, Chapter 1).

This brief survey shows that it was the philosophers who set the major principles for describing events and introduced the main topics that were later transferred to the linguistic studies of the phenomenon. The philosophical treatment of *event* as a basic ontological entity that exists and changes across time and space was inherited by linguistic studies, especially in the philosophy of language. This approach still serves as a starting point for most works on event structure in linguistics.

1.1.3 *Various approaches to the study of events in linguistics (Iriskhanova)*

The linguistic studies of events are extremely heterogeneous and can take many forms. They follow the general trends in linguistics, such as structural studies, text and discourse studies and cognitive linguistics, and can be grouped, although somewhat arbitrarily, around five major strands:

a. the logical semantic theory of events;
b. the decompositional approach (often referred to as the Neo-Davidsonian, or argument-functional approach);
c. the narrative approach;
d. the social pragmatic approach;
e. the cognitive analysis of events.

Below we present a brief overview of major linguistic theories of events to demonstrate in what way the ideas offered by different scholars contribute to the present study of verbal and non-verbal dimensions of event construal in oral narratives in French, German and Russian.

The strands mentioned above show considerable variation, and they are connected in numerous ways, both directly and indirectly. The logical semantic approach (a) and the decompositional approach (b) are closely intertwined. They combine the logical semantic description with the view of events as structured entities that can be decomposed into a number of components, sub-events or stages of events (Dowty 1979; Rothstein 2004; von Stechow 1996). This approach is linked to formal processing of the event structure and to the syntactic typologies of events (Comrie 1976; Parsons 1990; Pustejovsky 1991).

Strands (c) and (d) take the study of events beyond the sentence structure. As we mentioned earlier, under the narrative approach (c) events are considered to be the constituents of the story line of a narrative text, determining its structure and contributing to different levels of its interpretation (Bruner 1991; Labov 1972; Lotman 1977).

The social pragmatic approach (d), deriving from Halliday's social semiotic theory of communication and Lotman's views on the semiosphere, discusses *event* as a set of communicative acts (verbal and non-verbal), relying mostly on such descriptive tools as participants, intentions, roles, identities and strategies. It should be mentioned, however, that in the majority of socio-pragmatic studies the term

event is used as a subsidiary notion to analyze instances (acts) of communicative practices in social contexts (e.g., Bateman 2008; Langlotz 2015; van Dijk 2009).

One of the latest developments is represented by the cognitive theory of events (e). Cognitive linguists describe events semantics in terms of mental construal operations and apply image schemas to account for various semantic features and contextual behavior of words and sentences denoting events (Croft 1991, 2012; Langacker 2000; Talmy 2000c).

In spite of the differences in defining the events and the variety of methods used to analyze them, there is at least one feature that is shared by all the linguistic theories. In contrast to philosophical descriptions, events are studied not so much for the sake of the event *per se*. Rather, it serves as an instrument for explaining linguistic phenomena, such as syntactic structure of sentences, morphology of word forms, semantic features of words and constructions, the structure of narrative texts, patterns of communicative behavior, and grammatical categories like tense, aspect, and modality (usually referred to as TAM categories).

Even the logical semantic approach (a), which draws heavily on the philosophical studies of events and, following Davidson's and Vendler's views, focuses on the formal description of propositional structures, is no exception. Unlike philosophical studies, logical semantics aims at explaining primarily linguistic phenomena connected to event patterns. Researchers consider such linguistic issues as mass-count-plural distinction in nominal systems (Bach 1986), semantics of different classes of verbs (Carlson 1980; Carter 1976), the internal structure of verb meaning (Levin and Rapaport 1988), adverbial modifiers (Dowty 1979), types of nominalizations (Arutjunova 1988), etc.

Arutjunova, for instance, investigates the difference between facts and events to compare the semantics of such sentences as *To, čto Ivan ujekhal, nas rasstroilo* ('[The fact] That Ivan had left upset us') vs. *Otjezd Ivana nas rasstroil* ('Ivan's departure upset us'). Drawing on the works by Ramsey (1927/1990) and Vendler (1967), Arutjunova differentiates between complete and incomplete nominalizations that denote events and facts, respectively. The scholar also indicates that in some contexts, the contrast between the two concepts can be neutralized. For example, in the sentence *The shooting at the demonstration on the 9th of January 1905 had a great effect on him* the nominalization *shooting* can be interpreted as an event, if the sentence refers to a witness, and as a fact, if *him* is a person who learned about the shooting from a newspaper. This observation is in line with the idea repeatedly stressed by cognitive researchers that linguistic expressions provide different ways of construing objects and states of affairs, depending on the context.

Another important contribution of logical semanticists, relevant to this study, is the assumption that events can be described as structured entities. This idea gave rise to various streams of research, usually grouped under the umbrella term

of *Neo-Davidsonian Event Semantics* (b). Inspired by Davidson's notion of event argument and by Dowty's attempt (1979) to decompose Vendler's event types into atomic predicates, linguists offered various ways of analyzing the semantic structure of verbs and sentences denoting events. The underlying principle is that event semantics mirrors the syntactic structure of sentences, and that events can be decomposed into components that are linked together by the predicates *do, become, cause,* etc. These components are event participants, such as arguments or thematic roles of Agent, Theme, Goal, Instrument, etc., and event stages or sub-events, such as preparatory phase, process, transition, culmination, result state and others (Beck, 2005; Higginbotham, 2000; Parsons 1990; Pustejovsky 1991; Rothstein 2003; von Stechow 1996).

To give a simple example, a macro-event like *Mary flew the kite* would be described via the argument functions of Agent and Theme and the sub-events *Mary flew the kite* and *The kite flew,* related to each other by entailment or cause. The presence or absence of the final stage sub-event in the structure of the macro-event is seen as the basis for the aspectual differences between telic and atelic events.

The argument-functional approach to describing event structure was adapted to various fields of linguistic research. One of them is the formal processing of event semantics in Pustejovsky (1991). The author criticizes the "conservative" method of decomposing events into a specified number of primitives: e.g., *The door is closed* is described as negation of a semantic primitive *open*. He suggests that decomposition should be performed *generatively* – through special rules that generate semantics of a linguistic expression. These rules are, in fact, operations that are performed on the internal structure of events, such as the qualia structure that comprises constitutive, formal, telic and agentive roles (Pustejovsky 1991: 38–39). The qualia structure is applied to the aspectual types of events (states, processes and transitions) and to different syntactic behaviors of verbs and its modifiers.

To give a more complete picture of event studies in linguistics, it should be noted that various modifications of the argument-functional analysis of the internal event structure can be found in theories of nominalization (Bierwisch 1989; Grimshaw 1990; Hoekstra 1986; Iriskhanova 1996, 2004; Rozwadowska 1997). Drawing on the argument structure analysis, Comrie (1976) and Koptjevskaya-Tamm (1993) develop the syntactic typology of nominalizations. Following Comrie, Koptjevskaya-Tamm describes the action nominal constructions in up to seventy languages, showing that languages vary in the degree of "nouniness" of the event constructions. In other words, languages differ in the way the internal structure of events expressed by nominalizations relates to the internal structure of non-derived noun phrases, on the one hand, and the constructions with finite verbs, on the other hand (Comrie 1976; Koptjevskaya-Tamm 1993). Thus, the typological studies indicate that languages may systematically differ in the way the internal structure

of events is represented in their grammatical systems. In the present research this observation is transformed into the question of whether the aspectual similarities and differences between certain languages carry over to the gestural behavior of speakers of these languages.

On the whole, the adoption of event semantics based on the notions of event arguments, thematic roles and sub-events highlighted the spatio-temporal constitution of events as reflected in event predicates. Interestingly, criticism of event structure approaches, as in Jäger and Blutner (2000) and Zwarts (2006), places additional accent on such an important quality of the inner structure of events as its scalar nature, i.e., its ability to transfer from one situation to another along an incremental path. The kind of spatial trajectory described by a verb determines its event structure and, consequently, its aspectual characteristics (*walk along the river* vs. *walk over the line)*. So, such qualities of events as duration, telicity, endpoint and starting point, and path came to be seen as crucial components of event structure and formed the basis for the analysis of aspect and, more specifically, of Aktionsart or lexical aspect (Krifka 1992; Krifka 1998; Partee 1999) (see Section 1.2, Chapter 1).

Narrative and socio-pragmatic theories of events (c) and (d) are compatible with the decompositional approach (b) in that all of them see the event as a constitutive feature of narrativity and as a structural unit of narrative discourse and communication in general. The difference between narratology and social pragmatics regarding event analysis is that the former approach focuses on storytelling in written literary or, much more rarely, in everyday oral narratives (Labov 2010; Labov and Waletzky 1967). The latter approach treats events as complex communicative acts that happen according to individual intentions, social practices and social knowledge (Geis 1995; Searle 1969; van Dijk 2009).

The textual and discursive studies of events are important for the cognitive multimodal research of narratives presented in this book in several ways. On a more general level, they indicate that communication is multimodal and based on the interaction of various semiotic resources (Bateman 2008; Halliday 1978; Knox 2007; Kress and van Leeuwen 1996).

On the more specific level of the study of narratives, it has been emphasized that, first, events are the means of interpreting and structuring reality (Bruner 1991). Second, narrative texts are structured as temporal sequences of events (see the works by the Russian formalists, Barthes, Genette, Bremond, Greimas, etc.). Third, in oral everyday texts, the narration of events follows specific patterns (Labov and Waletzky 1967). Fourth, spatial metaphor is important for narration, as narrative is organized topologically, i.e., based on spatial oppositions (Lotman 1977). Although the last observation was made by structural linguists and was applied mainly to written texts (cf. Propp's and Greimas' works on topological oppositions of values in fairy tales), it has certain implications for our cognitive multimodal research. The idea of

the importance of the orientation in space for narration is in parallel with the cognitive statement about the embodied basis for the construal of objects and events. Assuming the multimodal nature of communication, it seems natural to suggest that this overarching principle should manifest itself not only in speech, but also in such bodily movements as gestures. This can be seen as a more "direct" evidence of the embodied nature of cognition than words (see the notion of embodied cognition in Lakoff and Johnson 1980 and in the overview in Shapiro 2014).

The cognitive approach to the analysis of events (e) provides the theoretical and methodological basis for the present research. Since the background on the cognitive studies of events is presented further, here we briefly outline the main issues discussed in cognitive linguistics that are linked to events. It should be mentioned, however, that, with the exception of cognitive narratology, the notion of *event* remains at the periphery of the cognitive linguistic studies.

Under the cognitive approach, the participants and processes within the event structure form the dynamic relation of prominence or salience, usually referred to as the "figure-ground" relations. Though the entities are assigned with the archetypal roles (Langacker 2008) that are similar to the semantic roles in the argument-functional approach (agent, patient, instrument, etc.), they are assumed to be based on the *embodied experiences*, and the connections between them are derived from image schemas (e.g., the "billiard ball model" by Langacker (2008) and the "force dynamics model" by Talmy (2000)). Importantly, cognitive linguists point to the fact that the roles and relations between the components of events, as well as their features, are *construed* by the speaker. Linguistic expressions like verb phrases (*he interviewed the writer*) vs. noun phrases (*his interview of the writer)* represent alternative means of event construal.

The notion of *usage event* is another important development worth mentioning here. By introducing this notion, Langacker (1987) provides a firmer link between semantic and discursive studies of events in cognitive linguistics. He points to the fact that cognitive grammar "makes contact with discourse through the basic claim that all linguistic units are abstracted from usage events, i.e., actual instances of language use" (Langacker 2001: 144). The scholar shows the importance of numerous discursive interactions between linguistic (and presumably non-linguistic) units for the process of entrenchment. What is important here is the focus on the complex nature of conceptualization, which includes not only the speakers' construal of the events they talk about, but "their apprehension of the ground (G) and the current discourse space (CDS)" as well (ibid.: 144). By the former the researcher means the speech event, the speaker and the hearer, by the latter – the mental space "comprising those elements and relations construed as being shared by the speaker (S) and the hearer (H)" (ibid.: 144). For the present research it means that usage events provide the environment for establishing and reproducing perceptual and conceptual

links between the expressions (e.g., between aspectual verb forms and gestures) recurrently used by the speakers in their narratives (see Section 1.1.5, Chapter 1, for a more detailed account of cognitive linguistic approaches to event construal).

1.1.4 *Studying the internal structure of event construal: Points in common from philosophy and linguistics (Iriskhanova)*

In the previous sections we briefly introduced key theoretical bases for the present study of events, outlining the main strands in the field of event research. Currently, the theories of events in philosophy and linguistics represent a varied picture with different aspects of the phenomenon being highlighted in them. Despite the differences in theoretical stance and methods of analysis, there are common points in philosophical and linguistic works that can be carried over to our cognitive study of the multimodal construal of events in spoken narratives.

Our research is based on a number of general assumptions that lie at the intersection of the philosophical, logical semantic, decompositional, narrative, sociopragmatic and cognitive studies of events.

These assumptions can be summed up in the following way:

- events form a basic ontological and epistemological category that in a broad sense represents all kinds of changes (actions, processes, states) located in time and space;
- events are construed as entities with a complex internal structure;
- the components and properties of events are regularly expressed in the language by verbs, deverbal nouns, adverbial modifiers, clauses, etc.;
- depending on the relations between the participants of events and on the way the actions, processes and states unfold in time and space, there are several types of events (e.g., having an endpoint or not; gradual or instantaneous);
- differences in the internal structure of events are regularly marked in the language (e.g., by the aspectual forms of verbs);
- in relation to narrative texts events can be viewed as a two-fold phenomenon: as the reason why the story is told, and as a structural unit of the narrative;
- in oral communication, storytelling follows culturally and socially shared multimodal patterns;
- the relations within these multimodal patterns (the relations between certain features of verbs and gestures, in particular) are reproduced in numerous instances of the co-occurrence of the components, i.e., in usage events.

Based on these assumptions, we bring together the cognitive phenomenon of event construal, on the one hand, and gestures used with aspectual verb forms in narratives, on the other hand. In this way we analyze events in speech as a multifaceted and multimodal phenomenon that involves various aspects of our mental, communicative, and bodily experience.

1.1.5 *Recent cognitive linguistic approaches (Cienki)*

1.1.5.1 *Background on construal in cognitive linguistics*

Event construal can be seen as part of the larger topic of construal phenomena that are treated in cognitive linguistics. An underlying premise in cognitive linguistics is that language does not reflect objective reality out in the world, but rather, in any given instance (a usage event, as per Langacker 1988) it expresses some facets of the individual's conceptualization of the situation. On the level of a language as a whole, the forms that are distilled in the grammar and lexicon of the language (along the continuum between morphemes that are more free [more clearly lexical] versus more bound [grammatical] forms) are the framings of construals that speakers in the given culture have come to use the most. That is, as Du Bois (1985: 363) captured it, "Grammars do best what speakers do most".

Some of the important principles here can be traced back to the research in Gestalt psychology in the early twentieth century. As Wagemans et al. (2012: 1195) summarize, research in this area argued against the position of structuralists like Wilhelm Wundt "that past experience was the sole determinant of which region of the visual field was perceived as figure." Wertheimer (1923), instead, argued that rather than familiarity, other image properties were sufficient for the initial perception of configurations. "These image properties – convexity, symmetry, small area, and 'surroundedness' (or enclosure) – became known as the classic configural principles of figure-ground organization" (Wagemans et al. 2012: 1195), illustrated in Rubin's (1921) now famous example of the vase-faces figure-ground reversal, and studied in further detail by Harrower (1936).

The figure/ground distinction was brought into more contemporary linguistic theorizing with Talmy's (1975) paper, developed in Talmy (1978), which later came to be considered one of the earliest works in what is now known as the field of cognitive linguistics. (See Talmy 2000a for a further development of it.) Lexically the distinction can be easily seen in terms of the options provided by opposing pairs of spatial prepositions. For example, in English, whether one describes two people (Kim and Lee) who are adjacent to each other and facing us by saying that *Kim is now located to the left of Lee* or that *Lee is to the right of Kim*; or, if positioned in a queue, whether one says that *Kim is in front of Lee* or that *Lee is behind Kim*.

In linguistic terms, Talmy uses Ground to refer to the entity serving as the reference point and the Figure as the variable entity that is related to it, so: *The bike* (F) *is near the house* (G). The assignment of Figure versus Ground status comes down to a matter of perspective. This can be biased by physical properties of the referents involved (houses are usually larger and less mobile than bikes, and thus are more suited to being reference points than small, mobile bikes are) and/or – especially in describing a more symmetrical relation – governed by the specific viewpoint of the speaker; for example, the speaker might be closer to Kim or to Lee, physically

or in his/her imagination, and thus choose one or the other as the Ground. On the grammatical level, the same kind of highlighting of one participant over another can be found in the choice available when describing a given situation between an active construction that foregrounds the agent (*Pat broke the glass*) or a passive one that foreground the patient (*The glass was broken by Pat*). The specific "imaging systems" that Talmy describes in cognition and in language are presented below in Section 1.1.5.2, Chapter 1.

What we see here is also an extension of the early work on perception to thinking about principles of conception or conceptualization. Talmy later captures this with his term *ception* (Talmy 1996).[3] The theoretical implications of this connection between our percepts and our concepts has come to play an important role in cognitive science in general, e.g., in explicating how symbols on the cognitive level have their basis in percepts (Barsalou's [1999] perceptual symbol systems) and in general in the view that our cognizing is fundamentally structured by our embodied experience (a topic expounded upon as early as Lakoff and Johnson [1980] and Johnson [1987] in the early years of cognitive linguistics, and in cognitive psychological research).

Given that semantics in cognitive linguistics is generally framed as a form of conceptualization, semantic theory in cognitive linguistics embraces the fact that subjectivity plays an important role. That is, linguistic expressions are not viewed as referring objectively to states of affairs in the world, independent of the people talking about them, but rather as referring to people's conceptualizations of the world. An embodied, cognizing subject is therefore taken as the point of origin of linguistic expressions, rather than a construct such as a "language module" in the brain, or the mechanics of a potentially disembodied system of rules for generating grammatical utterances. The ways in which people (can) understand how events play out, and the potential for differences in this on the levels of cultural groups and individuals, is recognized in cognitive linguistics, in part by acknowledging the important role of construal.

In brief, introducing the notion of construal into linguistic theorizing is a way of characterizing the fact that there are different ways of viewing any given situation. As Langacker (1990: 61) notes, "A speaker who accurately observes the spatial distribution of certain stars can describe them in many distinct fashions: as a *constellation*, as a *cluster of stars*, as *specks of light in the sky*, etc." The notion of construal as alternate means of "viewing" is thus used in both the literal and metaphorical senses, the latter meaning "understanding". The connection between perception and conception (in the sense of conceptualization) is itself foregrounded via the

3. Note the independent arrival at the same term in work by Streeck (2009) on speakers' gestures.

use of construal as a construct in cognitive grammar. To elaborate on Verhagen's (2007: 49) explication of Langacker's choice of examples, the different descriptions differ with respect to the frames of knowledge according to which the conceived situation is characterized and with regard to the compositionality of the conceptualization normatively evoked: the mass or uniplex nature of the constellation versus the multiplex of the stars or specks of light (see Talmy [1988b] on the semantic category of "plexity" that is then manifested in lexical and grammatical distinctions). In this regard, there is a rather strict adherence assumed to the Saussurean (1916/1959) principle of sign composition, whereby a difference in the form of the signifier (the monolexeme versus noun phrase) presumes a difference in the signified (that is: concept-as-chunked-unit versus concept-as-compositional-structure). The semantics of each of these expressions are then viewed as different from each other from the perspective of cognitive linguistics because each is a different characterization of what is being talked or written about (or signed about in a sign language). This is pertinent for the discussion of the aspect and tense systems for characterizing events, to be discussed in this volume, in that the different forms available in a given language provide ready-made categories with which language users can characterize event types and structures (see Section 2.1, Chapter 1). In addition, a cognitive linguistic approach recognizes that individuals in given usage events of language have choices as to how they make use of the lexico-grammatical options available in the language they are using; the multimodal perspective taken on spoken language use in the present project helps reveal the fluidity with which the lexico-grammatical options are used. We see that the subjectivity of language use and of meaning-expression comes into play once again.

If we focus in particular on speakers' communicative expressions, and take the face-to-face encounter between people who can hear and see as a canonical example of a communicative context (as per Clark 1973), the expressive palette at speakers' disposal for talking about events affords the use of multiple modalities (audio and visual) and modes/codes (lexico-grammar, intonation, gesture, etc.) for communication. This adds a layer of complexity to analysis of event construal and its expression, both on the level of system (what the normal range of communicative resources is that is brought to bear by a particular cultural group) and of individual (how are individuals telling about events, making variable use of the multimodal array of resources available to them). Differences in how speakers can talk about events using the grammatical system in their language-of-the-moment, possibly accompanied by gesture, can reflect different kinds of construals of events (systematically by linguistic-cultural groups or on the level of the individual), and this forms the basis for the studies presented in this volume.

For a more in-depth characterization of construal, let us turn to the notion as it has been explored in two complementary approaches in cognitive linguistics,

both of which help lay the groundwork for thinking about speakers' understanding and expression of events. One is Talmy's explication of four imaging systems of language, and the other is Langacker's formulation of construal within one of the main grammatical theories in cognitive linguistics, namely cognitive grammar.

1.1.5.2 *Imaging systems in language*

Talmy (1988b, revised in 2000b) presents an analysis of four "imaging systems" of language, "that organize the structuring and the 'viewing' of conceptual material" (Talmy 1988b: 194). These provide important background for a cognitive linguistic approach to analyzing event construal and its representation in language (and potentially in gesture).

The first is "structural *schematization*" (italics added here and below for highlighting -AC), which includes "the category of scene-division properties and that of the 'partitioning' of space or time" (ibid.), something which could be seen in relation to the temporal divisions in the tense systems of the languages under consideration in this volume. The second imaging system Talmy describes is the "deployment of *perspective*". This clearly entails the metaphor of conceptualizing in terms of visual perception, as Talmy describes how it "pertains to how one places one's 'mental eyes' to look out upon that scene, including … the movement pattern of this conceptual perspective point" as well as the options of "'adopting a long-range vs. a close-up perspective'" (ibid.). The latter point clearly relates to the characterizations of aspectual distinctions found in several linguistic traditions, described in Section 1.2, Chapter 1. The third system is "distribution of *attention*", having to do with the potential for differential allocation of attention over aspects of a scene, including "the obligatory 'Figure/Ground' distinctions that language imposes on a referent scene" (Talmy 1988b: 195), discussed above. The fourth system is that of *force dynamics*; this concerns one's understanding of how entities in a scene exert forces on each other, but also how they relate to resistance, overcoming resistance, blockage, removal of blockage, etc. (as explicated in greater detail in Talmy 1985a and 1988a).

Though all of these systems can be related to different processes relevant to how we may understand, frame, and talk about events, the first system of structural schematization deserves special attention here. Later named by Talmy (2000b) the system of "configurational structure", it includes the distinction as to whether entities or processes are construed as discrete or continuous; witness the distinction between a *constellation* versus a *cluster of stars*, mentioned above. But in addition, a cross-cutting category is that of boundedness versus unboundedness (Talmy 1988b: 181). So, whereas a *cluster* of stars is an entity unto itself, *specks* of light in the sky characterize the stars in a way from which their relative positions are unknown in an unbounded layout. This option of casting an event through a bounded

or unbounded construal is one that plays a fundamental role in our analysis of aspectual distinctions.

1.1.5.3 *Construal in cognitive grammar*

Explicating what construal is can be seen as one of the preliminaries for laying out a theory of grammar that is based on what is known about processes of conceptualization. Thus, we find the topic of "construal" as a chapter even before the section called "fundamentals" in Langacker's 2008 presentation of cognitive grammar. In his first large-scale explication of this grammatical theory, Langacker (1987) gave the term "focal adjustments" to what would later (2008) be termed "construal operations", as Verhagen (2007: 53) explains. For simplicity, we focus on their later characterization. As Verhagen (2007: 57) further observes, the fact that different sets of construal operations have been claimed to be key by different scholars (see also the version of the classification in Croft and Cruse 2004) suggests the range of diversity of these operations. These lists should therefore not be taken as exhaustive ones.

Langacker (2008: Chapter 3) identifies one dimension of construal as that concerning the granularity of resolution used, or "specificity". In terms of events, for example, one can say *Something happened, One car hit another*, or *A Ford SUV ploughed into a Volkswagen sedan*, each involving a finer degree of granularity. Verhagen (2007: 54) notes how "specificity" largely corresponds to Talmy's imaging system of "schematization". Another class of construal operations concerns "focusing", which encompasses (a) the foreground/background distinction (of figure vs. ground), and in this way relates to Talmy's system of "distribution of attention"; (b) the composition of component symbolic expressions into a composite (a consideration which takes on special interest and complexity when considering multimodal expressions, such as speech and gesture); and (c) the scope involved in the focusing. The last facet has particular relevance for construal in relation to event structure, as explained in the following section. A third dimension is that of "prominence". One way to think about this might be as the way in which one entity is being understood in relation to another, what Langacker calls "profiling", e.g., a *spoke* and a *hub* profile different components of a bicycle wheel. Another way to think of this is in terms of the alignment arrangement between the entities as described. This was illustrated above in the examples concerning how one talks about the spatial arrangement of Kim and Lee. It thus relates to the distribution of attention, discussed by Talmy. A fourth dimension Langacker describes is that of "perspective". This has to do both with the "viewing arrangement", including the presumed vantage point taken on the event (e.g., more subjective vs. more objective) and the temporal dimension of dynamicity, "how a conceptualization unfolds through processing time" (Langacker 2008: 73). Here the notion of mental scanning comes into play, which is of particular relevance for analyzing construal in relation

to events and speakers' representations of them. It is the cognitive equivalent of visual scanning of a scene, involving the flow of attention over a profiled relationship or scene. Sequential scanning, "mentally tracking an event as it unfolds through time" (Langacker 2008: 111), can allow for future summary scanning: "sequenced mental access is a means of building up to an overall conception of some complexity" which then becomes "active and available as a simultaneous accessible whole for a certain span of processing time" (Langacker 2008: 83). A consequence of this is that we can shift over time in a narrative between different perspectives on the same event, at one point explicating features of its internal complexity, but at another point taking the event as a whole, without focusing on its internal constituency. In grammatical terms, whereas a verb profiles a process, implying sequential scanning, a participle (for example) can involve the same content, but viewed in summary fashion (Langacker 2008: 112).

1.1.5.4 *Looking ahead*

The link between cognitive construal and aspect was made explicit in Croft's (esp. 2012) work on aspect and event (causal) structure, which extends Langacker's and Talmy's explications of construal operations. Croft shows that the construal operations are applicable to events as a whole, and to their aspectual characteristics in particular. This provides an especially useful way of looking at semantic distinctions not only from the point of view of the temporal order of events, but in terms of how the events are construed along the temporal scale, i.e., as "the sequence of qualitative states that characterize a particular event type" (Croft 2012: 53). This allows for a two-dimensional model that proves particularly useful for detailed analysis of lexical semantic distinctions, traditionally discussed in terms of Aktionsarten. We return to the interaction of lexical and grammatical aspect in our analysis of our Russian verbal data in Section 4, Chapter 3.

Zooming out from the cognitive linguistic approaches, discussed above, the following section presents an overview of the French, German, and Russian linguistic and country-specific traditions of studying aspect, with a special focus on its grammatical manifestation. As will become clear, the respective national and language-specific traditions provide converging argumentation for the relevance of a classic distinction between ways of construing events, namely: in terms of them being construed as bounded or unbounded. However, as anticipated by Croft (2012: Section 3.1.2 in that book), and as becomes clear below, this seemingly simple distinction can itself be understood in different ways.

1.2 Aspect across traditions: Main lines of research (*Iriskhanova*, *Morgenstern*, *Müller*, *Richter*)

The research questions of our study, as presented in Section 4 of the Introduction, concern three Indo-European languages, which have specific differences from each other in terms of their morphological expression of tense and aspect, namely French, German, and Russian. There is already a long history of researching these issues within each language, and specifically within each language tradition by scholars in France, Germany, and Russia (including when it was part of the Soviet Union). Therefore, this section presents an overview of the main lines of research of aspect, with a view on the three European traditions. We show that, although their views on aspect have varied in many respects, most scholars have agreed on the general idea that the relevant aspectual forms mark two distinctive ways of describing events – as having some limits (endpoints or boundaries) in time and space, or as not having them. Thus, starting from the first mentions of the phenomenon, they paved the way to the present-day cognitive understanding of aspectuality as the ability to construe events in alternate ways.

1.2.1 *Aspect* – *Aktionsart* – Vid – *Aspectuality*

Investigating aspect from a cross-linguistic and cross-modal perspective, it appears crucial to distinguish between the notions of "aspect", "Aktionsart", "*vid*" (in Russian), on the one hand, and "aspectuality", on the other hand.

There is a certain amount of confusion in the literature concerning these notions, as well as the notions of grammatical and lexical aspect. This can be explained by the differences between the verbal systems in various languages (including French, German, and Russian), and the differences between the national traditions of studying aspect, discussed in this chapter.

In French, for instance, the verbal system is quite different from that of Germanic and Slavic languages, let alone from that of Proto-Indo-European. Grammarians and linguists have thus tried to adapt the notion of aspect to the characteristics of French in various ways.

The category of aspect is described by French grammarians Meillet and Vendryes (1924: paragraph 257) as "the various modalities expressing duration, according to whether we consider the process at one particular point in time or according to its whole development, in its beginning or at its end, as finished or unfinished, limited to itself or extended without a result, etc." (translations into English here are by AM).[4]

4. "Les modalités de la durée, suivant que l'on considère le process dans un point ou dans l'ensemble de son développement, dans son début ou dans son terme, suivant qu'on le suppose inachevé ou achevé, limité à lui-même ou prolongé sans un résultat, etc."

Verbal aspect is mentioned throughout Ferdinand Brunot's book (1953) that is fundamental for many specialists of French, but the distinction between grammatical and lexical aspect is rather blurred. *Le bon usage* by Maurice Grevisse (1953: paragraph 607 bis) however, proposes a general definition of aspect as "the character of the action considered in its progress; the particular angle from which the accomplishment (the "process") of the action is viewed".[5] For Imbs (1960: 86), through aspect, "events are considered from the angle of their internal progression".

The meaning of the word *aspect* itself as applied to French varies from one author to the other. Even Grevisse's (1953) grammar sustains the confusion. There is no consistency in the application of the definition given to the examples used. Grevisse lists the "principal aspects" with examples that illustrate his own confusion between grammatical aspect, the lexical aspect of the verbs used and the aspectual differences due to the specific discourse phenomena involved. Some categories have to do with lexical categories: a prefix such as *re-* (*relire une lettre*/'to read a letter again') indicates repetition, for example; some are tense forms, such as *imparfait* and *passé simple*, and some are syntactic collocations (*je suis en train de lire*/'I am reading', described as durative aspect).

This fuzziness in the definition of aspect applied to French has led to a certain amount of criticism. Jespersen (1924) does not believe that the notion of aspect should be applied to all languages and suggests that the terms perfective and imperfective should only be used for Slavic languages. For de Boer (1947), as for a number of subsequent linguists working on French, the only aspectual difference, which he finds preserved in French is the opposition between the three past tenses, *passé composé* (a compound, perfect tense form), *imparfait* (the imperfect tense), and *passé simple* (the simple past). Damourette and Pichon (1911–1936) explain that aspect is not marked in a systematic way in the French system as a whole. Mounin (1974) does not believe aspect is a grammatical category of French. For him there are semantic values attributed to the verb and its context.[6] Tesnière (1976: 76) rejects the notion of aspect as well: "aspect is totally irrelevant to French, even though a number of French speakers, who have never used aspect, who have never felt it by actually speaking a Slavic language, do not hesitate to talk about it indiscriminately".[7]

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5. "L'aspect du verbe est le caractère de l'action considérée dans son développement, l'angle particulier sous lequel l'accomplissement (le "processus") de cette action est envisagé".

6. "Valeurs sémantiques attribuées au verbe et au contexte" (Mounin 1974: 41–42)

7. "L'aspect est complètement étranger au français, bien que nombre de francophones, qui ne l'ont jamais pratiqué, c'est-à- dire senti en parlant réellement une langue slave, comme par exemple le russe, n'hésitent pas à en parler à tort et à travers."

If compared to French studies, in German and Russian traditions the status of aspect is probably less controversial, however there is still much difference of opinions and definitions. To deal with the variety of aspectual manifestations in languages scholars often differentiate between grammatical aspect, lexical aspect, and aspectuality.

In German linguistics aspect was described both on the level of verb-semantics (Aktionsart), and on the level of tense meaning (the German term *Aspekt*). German linguists note that all languages are able to express aspectuality, but not all languages have grammatical aspect as a separate grammatical category. In order to express events in their aspectual reading several systems have evolved and one of the (grammatical) categories for the expression of aspectuality is the grammatical category of aspect (Klein 2009; von Stutterheim et al. 2009).

Aspectuality has been often referred to as a linguistic category, responsible for how an event is being viewed by a speaker. Thus, *Aspekt* and Aktionsart express aspectuality in different linguistic ways. Typical markers of aspectuality analyzed by German scholars are: word formation or derivation (especially concerning the phases of verbs), lexemes (such as adverbials, nouns or verbs), set phrases, conjunctions and phraseological units or grammatical aspect, as well as Aktionsart (cf. Gladrow 1998; Lehmann 2009: 537). With these different linguistic markers, speakers indicate their specific view of the course of an event.

Leiss (1992) suggests that aspectuality can be described as a category for showing the inner and the outer perspective on an event. In case a language leaves the option to express both readings in the same verb, we speak of "aspect". The speakers themselves will experience only one perspective, but as Leiss says, one can make both interpretations visible by switching from one aspectual form to the other. In Gabka (1985) the following explanation is offered: aspectuality is grounded in a frame of communicative conditions and results in a conceptual differentiation of the course of an action that finds its expression in the correlative forms of perfective and imperfective aspect (Gabka 1985: 92).[8]

The relation between the terms of *aspect* and *aspectuality* is even more complicated in Russian linguistics, since Slavic languages have a highly developed system of grammatical aspect on the level of derivational verb-morphology, which to a great extent determines the specifics of the terminology and approaches to this phenomenon.

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8. "…Vorstellung von Handlungsabäufen ist untrennbar mit einer bestimmten gedanklichen Differenzierung verbunden, die sich […] in der Redesituation ergibt. […] Gehalt der Kategorie des Verbalaspekts läßt sich demnach definieren als die vom Sprecherstandort bestimmte gedankliche Differenzierung des Handlungsablaufes, die in den korrelativen Formen des perfektiven Aspekts und des imperfektiven Aspekts ihren Ausdruck findet" (Gabka 1985: 92).

Although Russian *vid* was, in fact, a point of departure for other traditions, the Latin term *aspect* was borrowed by Russian aspectologists and is now widely used together with *vid*. Its use brought about the necessity to differentiate between the concepts of *vid, aspect,* and *aspectuality*.

It is generally accepted in present day Russian studies that *vid* should be related to the aspectual oppositions in Slavic languages that are traditionally viewed as forming a grammatical category. *Aspect* (in Russian *aspekt*), though used quite often as a synonym to *vid,* is applied across languages and usually refers to any kind of opposition concerned with the alternative ways of construing the internal structure of events with grammatical or lexical means. *Aspectuality* (*aspektual'nost'* in Russian) serves as a cover term for *vid* (grammatical aspect) and lexical aspect ("manner of action", cf. Aktionsart), and is defined quite similar to what we find in the works outside Russia. For example, similarity can be found between Comrie's definition of aspect as "different ways of viewing the internal temporal constituency of a situation" (Comrie 1976: 3) and Bondarko's definition of aspectuality as a functional-semantic field that relates to "the nature of the action's passing in time" (Bondarko 1983: 76). The concept of aspectuality can be found in Maslov's works, who links it to the semantics of *vid*, i.e., to "the internal temporal structure as it is understood by the speaker" (Maslov 2004: 23). So, the concept of aspectuality indicates that grammatical, lexical semantic, and pragmatic (deictic) features of aspect as a linguistic category are closely interrelated, which is commonly recognized by French, German, and Russian scholars.

With a view to the differences and similarities in defining aspectuality and aspect in the three traditions, we regard aspectuality as the cognitive ability to conceptualize the internal structure of events in differing ways – as having boundaries or not, as telic or atelic, or as a complete whole versus as a process unfolding in time. As we show further, we build on work in cognitive linguistics (cf. Croft 2012; Janda 2004, 2007) in considering aspectuality as involving the construal of events in terms of their boundedness or unboundedness.

Aspect (both grammatical and lexical) is viewed as a linguistic category that relies on aspectuality as a cognitive ability to construe events in a particular way. This ability is manifested in the aspectual systems of languages in numerous ways. As we have shown before, for various linguistic traditions it is quite common to differentiate between two ways of expressing aspectuality, and aspect, in a given language: the grammatical aspect (e.g., as part of the tense system, as in French, or the morphological grammar, as in Russian) and the lexical aspect (Aktionsart for German, or the "manner of action" for Russian).

We partially follow this tradition and consider the differences between aspect in the three languages in terms of their overall "inclination" towards grammatical (more

abstract, tense-based) or lexical-semantic (more concrete, morphology-based) representation of aspectuality in the language. At the same time, we take the notion of aspectuality even further, arguing that this cognitive ability can be multimodal in its manifestation. It can spread into both verbal and non-verbal (gestural) modes of communication, and in the analyses of the use of gestures with aspectual forms of verbs, we show the intricacies of the links between grammatical, lexical, and pragmatic features of aspect, on the one hand, and the related features of gesture use, on the other hand.

Thus, the cognitive and multimodal perspective on aspectuality provides us with a common cross-linguistic and cross-modal basis for the analyses of various manifestations of aspect in spoken narratives. At the same time, we take into consideration the distinctive ways in which aspect comes through in French, German, and Russian narratives.

In Sections 1.2.2 and 1.2.3 of this chapter, we demonstrate both universal and distinctive features of aspect in the three languages as they have been analyzed by French, German, and Russian grammarians starting from the nineteenth century until present time. Importantly, these parts of the book will not only help the reader to compare these traditions in terms of the prevailing trends in the studies of aspect, but serve as a frame of reference for the analyses of the aspectual verb forms in the narratives presented in Sections 2, 3, and 4 of Chapter 3.

1.2.2 *Early studies of aspect in French, German, and Russian linguistics*

As it was indicated in Section 1.1.2, Chapter 1, the first mention of aspect goes back as far as the ancient times, although in Europe the study of aspect as a linguistic category started in the nineteenth century.

In French and German linguistics the category of aspect was introduced thanks to the influence of specialists of Indo-European and of Slavic languages in the nineteenth century (Wilmet 2003). Agrell proposes the notion of "aspectology" in 1908 in his work on the Polish verb. The comparison with other languages began with specialists of German before it reached Romance languages, and then English as well as Asian languages.

The notion of aspect applied to the French system was used to clarify the differences between the three past tenses, *passé simple, passé composé*, and *imparfait*. Guillaume (1929), for instance, introduced a theoretical analysis of aspectual differences for French past tenses and worked on it extensively and in detail. In his terminology, simple verbs are in the *tensive* aspect, compound verbs in the *extensive* aspect. Syntax is thus to be taken into account when describing grammatical aspect. Guillaume skillfully characterized *passé simple, passé composé*, and *imparfait*. According to him, the three types of aspects involved are:

- The "global" aspect, which is described as being an aoristic, perfective, or inceptive aspect. It is expressed by the *passé simple* and gives an account of the event in its entirety: *il entra dans la maison* ('he entered the house').
- The aspect *accompli*, which expresses a resulting state with the *passé composé*: *il a terminé son travail* ('he has finished his work').
- The aspect *inaccompli*, which views the event from an internal perspective: the temporal boundaries of the event are not taken into account and only part of the process is presented, namely with the *imparfait*: *il mangeait* ('he was eating').[9]

German grammarians of the nineteenth and early twentieth centuries had a typological focus. They were particularly interested in studying the history of Indo-European, and especially Slavic, languages. In their comparative studies, they discovered that languages differ in how they express aspect: be it as a grammatical category of the verb, as in the Greek distinction between the imperfect and the aorist (marked morphologically by inflection, e.g., as inflected paradigms of verbs), or be it as a semantic feature of verb paradigms, also marked morphologically, but by derivation (e.g., falling under the rubric of word-formation) typical for Slavic languages (cf. Sasse 2001: 11ff).

These early theoretical reflections were shaped by the specifics of Slavic languages and their system of morphological inflections marking a binary distinction between a viewpoint on a given event expressed in the verb action as a complete whole or not. Note that this perspective characterizes aspect as involving (a) a psychological perspective (e.g., aspect as the specific viewpoint a speaker is taking on an event) and (b) a characterization of the event as such (e.g., as being complete or not).

The views on Aspect and Aktionsart in relation to the perspectivization of an event can be found in early works by German grammarians. The binary opposition of perfective and imperfective was seen as framing an event as completed or uncompleted, or as bounded (*vollendet*) or unbounded (*unvollendet*) (Behaghel 1924: 95). In this sense, the German grammarian Behaghel describes perfectiveness as presentation of a process with regard to its boundedness, that it is viewed as an undissected whole (translations into English here and below are by CM and NR).[10] The imperfective aspect, on the other hand, characterizes a process without regard to its boundedness, and as something having an extent, as something that is unfolded or unfolding.[11]

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9. Gosselin (2004), along with other linguists, takes up those categories but adds "prospective" aspect (*il allait traverser*, 'he was about to cross the street').

10. "Bei der perfektiven Aktionsart wird ein Vorgang vorgestellt im Hinblick auf seine Begrenzung; man kann theoretisch sagen: er erscheint al seine unzerlegte Einheit" (Behaghel 1924: 95).

11. "Bei der imperfektiven Aktionsart wird ein Vorgang vorgestellt ohne Gedanken an seine Begrenzung, er wird als etwas Entfaltetes, als sich Erstreckendes aufgefaßt" (Behaghel 1924: 95).

This means, in a nutshell, that in the German linguistic tradition the idea of aspect as differentiation of events (in the form of verb-actions) as an either "completed or uncompleted viewpoint of an action" was present early on and it was taken for granted that in German, aspectuality can be expressed on the level of Aktionsart (e.g., lexically) or as part of the past tense meaning of the *Perfekt* and the *Präteritum* (e.g., grammatically).

Similar to the French and German traditions the beginning of the study of aspect as a separate category in Russian studies is associated with the end of the nineteenth century. However, the first reflections on the issue date as far back as the end of the eighteenth century.

From the very beginning aspect, or *vid* (from Russian *videt'* 'see, observe'), was viewed as a phenomenon that existed at the intersection of tense grammar, word-formation and lexical semantics of the verb. This approach is rooted in the specifics of aspect in Russian as a Slavic language that has a rich morphological system and complex semantic relations between stems and affixes (prefixes and suffixes). On the one hand, what we observe in Russian aspect is a rather symmetrical opposition of verbs spreading into imperative forms (*slušaj*^{Imperf} vs. *poslušaj*^{Perf} translated as 'Listen!'), participles (*čitaja*^{Imperf} *vs. pročitav*^{Perf} 'while reading' vs. 'having read')', and infinitives (*čitat'*^{Imperf} *vs. pročitat'*^{Perf} 'read' vs. 'read through'). On the other hand, starting from the eighteenth century, researchers have repeatedly highlighted the irregularities of Russian perfective and imperfective forms in terms of their structure, meaning, and use.

Early scholars focused mainly on the derivational morphology of aspectual verb forms, analyzing affixation, and paid attention to the semantic relations between affixes and stems. It should be noted that, at that period, they saw aspect as part of the complex system of tenses that comprised, as some researchers believed, up to ten tenses (e.g., Šafranov 1852). This tendency was later criticized by those scholars who spoke of the necessity of differentiating between tense and aspect (Pavskij 1842).

It is noteworthy, that aspect as a separate system for the Russian language was first mentioned by the theologist Meletius Smotritskij in his Church Slavonic grammar of 1619. Much later, in 1755, the natural scientist, poet, and historian Lomonosov published his influential *Russian Grammar*, in which he regarded the tense forms of verbs as a means of expressing the way actions unfolded. Although he did not use the term *vid*, he was the first to point to a major pattern of forming perfective verbs from imperfective stems in Russian (Lomonosov 1951).

Lomonosov did not differentiate between tense and aspect in his Grammar and regarded such verbs as *vedaju*^{Imperf} and *uvedal*^{Perf} ('[I] know' and '[I/he] found out') as different tense forms of the same word. However, his idea about the regularity of grammatical oppositions, that presupposes regular semantic differences between verbs, lay the ground for more detailed description of *vid* by Russian grammarians

of the nineteenth century, and eventually gave rise to numerous studies of aspect as an independent phenomenon in later works (Aksakov 1855; Fortunatov 1897; Greč 1827; Nekrasov 1865; Potebnja 1874/1977; Vostokov 1867). As a result, from the beginning of the nineteenth century, some Russian linguists started treating *vid* as a separate category, differentiating between multiple (habitual, repetitive), single (one-time) and indefinite verb forms (Boldyrev 1812; Davydov 1853).

Generally, most questions raised by the Russian scholars of the nineteenth century continued into the aspect research in the twentieth century, and many of them are still being discussed. Importantly, the ideas of the early period of Russian aspectology shaped the present-day assumptions about this phenomenon, such as: its binary nature (perfective vs. imperfective aspect) (Fortunatov 1897; Greč 1827; Vostokov 1867), its ability to refer to the way an action is carried out (grammatical vs. lexico-grammatical status of aspect – cf. Fortunatov 1897 vs. Potebnja 1874/1977), the role of affixes in forming aspectual oppositions (Uljanov 1895 vs. Fortunatov 1897), etc.

These issues, when applied to prefixes in particular, were later transferred into the study of the process of "accomplishment" and the "manner of action" (*soveršajemost', sposob dejstvija*), called *Aktionsart* in German linguistics. So, this concept, which was implicitly present in Lomonosov's Grammar, is the evidence of the similarities not only between the aspectual systems of Russian and German, but also between the two traditions of viewing the phenomenon. Another point worth mentioning is the fact that when scholars started looking into affixes and their role in relation to aspect, it encouraged them to provide more nuanced research into the semantics of verb forms. This, in its turn, resulted in the early interest of Russian scholars in such qualities of actions as their beginning, end or fulfillment, which can be viewed as the first step towards the notion of boundedness/unboundedness (e.g., Aksakov 1855; Nekrasov 1865; Potebnja 1874/1977).

1.2.3 *Present-day studies of aspect: Some specific issues*

In the twentieth century the gradual influence of structuralism, with the work of Saussure and the Prague School linguists, helped capture, restrict, and define aspect for each of various languages. Indeed, as long as linguists failed to recognize the structural differences between the languages taken as examples, and the fact that the various aspects involved might form a system, the study of aspectual characteristics was limited to certain phenomena, either grammatical or lexical, within particular languages, and could only lead to confusion. In structuralism, the meaning of each unit depends on its place in a system of signs. Therefore, each item is no longer studied in isolation, but taken as part of the system. Even parts of speech, such as nouns, are described as having different values in a system like Chinese (in which, for example, there is no plural marking on nouns) or French.

That new conceptualization of language and the importance of analyzing each language system as a whole had a great influence on linguists' way of thinking about aspect, especially in West European studies. A comment on aspect made by Benveniste (1959: 260) illustrates the change of framework: "the Slavic verb has provided the framework for the theory of aspect and its oppositions. However, when we start analyzing aspectual systems outside the Indo-European world, we become aware that Slavic languages do not represent a very common type; on the contrary, it is an exceptional type."[12]

Ivanova (1961),[13] among others, reminds the scientific community that authors have to specify the differences between the Slavic languages in which aspect is neatly distinguished by pairs of verbs that have reciprocal relations, and aspect in Germanic languages, that is expressed through variations of the forms of the same verb (as far as the notion of aspect can really be projected onto such languages). Some linguists have thus chosen to replace the notions of perfective/imperfective in non-Slavic Indo-European languages like French by the pair "completion/incompletion", as illustrated in the Larousse dictionary of the twentieth century. There it is also written that completion is expressed with a compound form: an auxiliary carrying tense followed by the past participle of the verb.

In French linguistics the focus shifted to more specific definitions of grammatical aspect. The notion of aspect applied to the French system was thus rekindled in order to clarify the differences between the three past tenses, *passé simple, passé composé*, and *imparfait*. Tense locates the event in time, mood indicates the relation between reality and the event the predicate refers to, and aspect enables the speaker to characterize the progression of the event. That explains why three forms could be used to express aspectual differences and still refer to the same past time in the same mood. In addition to those morphological variations, several linguists also focus on semantic differences between verbs that refer to events that inherently tend towards an achievement (such as the verb 'close') and those that do not contain an end ('read'). Garey (1957) calls them telic/atelic, whereas Russian linguists analyzing French, such as Ivanova, talk about verbs with and without a limit, and Referovskaja (1948) calls them *terminative* versus *cursive* or *durative* verbs.[14]

In contemporary spontaneous oral French however, the *passé simple* is not used anymore. It is described as having been replaced by the *passé composé* and

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12. "C'est le verbe slave qui a fourni à la théorie de l'aspect son cadre et ses oppositions. Or, quand on envisage les systèmes aspectuels hors du monde indo-européen, on s'aperçoit que le slave ne représente nullement un type commun; au contraire, c'est un type exceptionnel".

13. Cited by Schogt (1964).

14. Cited by Schogt (1964).

in a lot of cases of vivid descriptions, by the narrative *présent*, as we see in the oral data video-recorded for the production studies reported on in Chapters 3 and 4. It is thus difficult to formally distinguish what Guillaume called *aspect global* and *aspect accompli* as they are very often both expressed by the *passé composé*. Thus, interestingly enough, in French, the compound form (*passé composé*), which could be considered as predominantly aspectual rather than a manner to refer to the chronological past, developed a primarily time-referential value as it took on the function that used to be expressed by the inflectional form, the *passé simple*. Concerning its earliest use in French, the *passé composé* is described as referring to the present result of a past event (e.g., the function of the present perfect tense in contemporary English). In the Middle Ages, it was progressively used to describe actions leading to present results when verbs were telic/terminative. It now can be used to refer to any past event for verbs with any semantic meaning, even when the action has fully ended and is clearly disconnected from the present time. In contemporary French, lexical aspect does not condition the use of grammatical aspect, as all verbs can be used in all past forms. But the progressive disappearance of the *passé simple* from oral French, and to a large extent written French, has lead to a reorganization of the other tenses and to new uses of them. We also find telic/terminative forms of the *imparfait* in narratives and of the *présent simple narratif* in discourse. The *imparfait* used in narratives *(*called *de rupture, pittoresque, dynamique* or *impressionniste)* and its discursive effects are sometimes described in terms of acceleration or deceleration (Bres 2000: 67) and could be translated in German using the preterit.

After 1990, under the influence of Guillaume and the linguists who adopted his theory, the notion of aspect was widely used in French grammars. This notion was simplified and redefined: "as for aspect, it is difficult to define. We can say in a general way that it concerns how the speaker views the proceeding of the event and, unlike with mood, its degree of fulfillment" (Gardes-Tamine 1990: 104).[15]

Tense and aspect are thus difficult to dissociate in French, since the same grammatical tense can be used to localize the event in time but also to carry aspectual distinctions through the opposition between simple and compound tenses. Indeed, there is a syntactic component, since in French, inflectional forms (called "simple" forms) mark the aspect "*inaccompli*", and compound forms, the aspect "*accompli*" (Cohen 1989; Gosselin 1996, 2005; Guillaume 1951). But Benveniste (1966) insists on the fact that compound forms are ambiguous and cannot be treated as

15. "Quant à l'aspect, il est difficile à définir. On dira de façon générale qu'il s'agit de la manière dont le sujet envisage l'événement dans son déroulement, et non plus, comme le mode, dans son degré de réalisation."

only expressing aspect. He introduces the distinction between "*histoire*" (narrative mode) and "*discours*" (discursive mode) and explains that when used in "*discours*", the *passé composé* can be treated as referring either to the chronological past or to an aspect expressing completion. French linguists now focus on the fact that verbal aspect in French can only be analyzed in relation to tense and modality – in the larger framework of TAM (*Temps-Aspect-Modalité*/Tense-Aspect-Modality). They are treated as inseparable components of the same system.

In German linguistics the binary distinction between perfectivity and imperfectivity was originally developed not for a descriptive analysis of German, but to describe the Russian system of aspect (e.g., addressing aspect on the level of verb-morphology). Only later, was it transferred to a description of aspect as included in the meaning of past tenses, especially the strongly grammaticalized differences between the French *imparfait* and *passé simple*. Hence aspectual meaning was now being addressed on the level of grammatical inflection (e.g., as part of past tense meaning) (Sasse 2001: 12).

> Aspects, in the morphological sense, were regarded as holistic categories, constituting a morphological opposition between imperfective and perfective aspect, usually defined as the "uncompleted and completed viewpoints" of an action. These viewpoints were taken to be manifest in the verbal paradigms of individual languages, for example in the "aspectual pairs" in Russian, the aorist 1 imperfect distinction in Greek, or the distinction between passé simple and imparfait in French.
> (Sasse 2001: 12)

This shift in language went along with a typological distinction between aspect and tense languages depending upon "the primary semantic orientation of the verbal paradigm (whether it was basically tense oriented (perhaps with added aspectual distinctions), or whether it was basically aspect-oriented)" (cf. Sasse 2001: 14). With this shift, the binary distinction of aspect as marking the boundedness or the unboundedness of events was transferred from Slavic to other languages, including the Romance languages.

In contrast to Romance and most Slavic studies of aspect, German grammarians traditionally separated Aspect from Aktionsart. Although the majority of linguists agree on the fact that both of them form part of the so-called TAA triad (tense-aspect-Aktionsart), due to the specifics of the German aspectual system (cf. Section 3, Chapter 3) there is a common assumption that while Aspect describes the event as a completed whole or something in progress, Aktionsart is not directly linked to the grammar of tenses, and relates mainly to the semantics of verbs, or even clauses via composition – morphological or syntactic (Declerck 1979; Pollak 1967; Verkuyl 1972). It should be noted, however, that in more recent German studies,

aspectual properties are more explicitly integrated into the "stream of time" and linked to the temporal characteristics of verbs, especially past tenses (Klein 2000). Influenced by Anglo-American researchers (see Section 1.2.4.1, this chapter), most contemporary descriptive grammars of German are based on the bi-dimensional view of constructing events as perfective or imperfective ones; this is the leading frame of reference in describing aspectuality (Eisenberg 1986; *Grundzüge* 1981; Klein 2000). It results in the fact that distinctions between Aspect as a grammatical category and Aktionsart as a lexical category become blurred, as both of them refer to some the temporal constituency, or the internal structure of an event.

A brief overview of the Slavic works on *vid* shows that the issues discussed by Russian researchers since the second half of the twentieth century are closely intertwined with the French and German studies of aspect.

Vid is generally treated as a lexico-grammatical category, as an integral part of the TAM (tense-aspect-mood) system. On the one hand, there are a number of general questions analyzed in Russian aspectology, such as the status and the overall structure of *vid* or *aspekt*. Namely, researchers discuss whether aspect is a grammatical, deictic or lexical-semantic category, whether it is structured as a binary opposition or a prototypical category with the center and the periphery (Bondarko 1983). On the other hand, there is a variety of more specific topics in modern Russian aspectology that are rooted in the grammatical design of the language and the varied nature of the meanings expressed by Russian *vid*.

The semantics of aspect encouraged Russian linguists to work out a lexico-grammatical classification of verbs based on the "manner of action" (cf. German *Aktionsart(en)*)

It has been highlighted in numerous studies that the system of *vid* embraces all the Russian verbs and is characterized by the symmetrical binary opposition of imperfective and perfective forms related to each other via regular derivational processes of prefixation and suffixation. Affixation may or may not result in the change of *vid* of a verb form*:* compare *khodil'*$^{Past\ Imperf}$ vs. ***pri****khodil'*$^{Past\ Imperf}$ ('went' vs. 'came') and *prygal*$^{Past\ Imperf}$ vs. *pryg****nul***$^{Past\ Perf}$ ('was jumping' vs. 'jumped'). However, the imperfective component of the opposition is traditionally viewed as unmarked, and is described negatively through the absence of perfectivization on the morphological and semantic levels.

If the derivational processes do not lead to lexical semantic changes, the related verbs are viewed as *aspectual pairs* (*vidovye pary*): *pisat'*$^{Imperf\ Inf}$ – ***na****pisat'*$^{Perf\ Inf}$ 'write' – 'finish writing'. If there are lexical semantic modifications (temporal, resultative, evaluative, etc.), they are regarded as *manners* ("kinds") *of action* (*sposoby glagol'nogo dejstvija)* (Agrell 1908; Maslov 1959; Petrukhina 2009; Russian Grammar 1980).

In the latter case the verbs are divided into lexico-grammatical classes, denoting:

- a phase of an action, like beginning or end (***za**pet'*[Perf Inf] 'start singing'; ***do**delat'*[Perf Inf] 'finish doing');
- quantitative features of an action, such as single, repetitive, mitigatory, etc. (*pikh**nut'*** [Perf Inf] 'push once'; *prokhažy**vat'sja***[Imperf Inf] 'walk back and forth'; *prikry**vat'*** [Imperf Inf] 'cover partially');
- the result of an action (***razdat'***[Perf Infinitive] 'give away to many people', ***pere**varit'*** [Perf Inf] 'overboil').

The taxonomy of verbs based on the manner of action underlines the fact that grammatical and lexical aspect form a closely integrated system in Russian, demonstrating the importance of both the inner structure of events for aspectual behavior of verbs and the key status of the notion of boundedness for aspectuality as a whole.

The focus on the semantic contribution of perfective and imperfective verbs and their structural components to the grammatical system of *vid* raised some other specific issues in modern Russian aspectology, such as the role of affixes in the formation of aspectual pairs of Russian verbs; the use of perfective and imperfective infinitives with modal expressions like *neľzja, možno, nado* ('cannot/should not, can/may, should/need') (Bondarko 1983; Divjak 2009; Janda and Lyashevkaya 2011; Šakhmatov 1941; Vinogradov 1938/1972).

Due to structural and semantic complexity of the Russian aspectual system, there are a lot of Slavic works on Russian aspect that offer focused analyses of particular cases or specific phenomena. Plungjan's (2001) research of anti-resultative constructions provides an illustration of this type of study. Though such constructions refer to a natural result or its absence, and implicate boundaries, they are not necessarily used with the perfect aspect of verbs. In Russian, anti-resultative constructions are often formed with the copula verb *byt'* ('to be') and a short form of passive past participles (*Okno **bylo***[Cop] ***razbito***[Past Part] 'The window was broken', *Ja **byla***[Cop] ***razočarovana***[Past Part] 'I was disappointed'). Anti-resultative meanings indicate, among others, conative actions, i.e., unsuccessful attempts to achieve some natural result, or boundary. What is interesting here is the fact that the absence of boundaries in such cases can be marked by repetitive use of imperfective verb forms: ***pisal-pisal***[Past Imperf] *roman* 'he wrote and wrote [and did not succeed in finishing] the novel' (Nedjalkov 1988; Plungjan 1989, 2001). Anti-resultative constructions constitute an interesting case for our research because, as shown in Section 4, Chapter 3, the verb *byt'* is frequently used in informal spoken narratives in Russian.

Among other examples of specific issues raised by Slavic linguists is the analysis of the frequency of the constructions with imperfective and perfective *verba dicendi* (*otvečat'*[Imperf Inf] vs. *otvetit'*[Perf Inf] 'say, answer') in Russian literary narratives in Folejewsky (1953); a comparative study of aspectual usage in constructions of negation in Russian and Czech (Dickey and Kresin 2009); aspectual characteristics

of utterances with verbs of lifestyle (Matkhanova 2015); tense-aspect restructuring in heritage Russian (Laleko 2010; Mikhaylova 2012); perfective and imperfective imperatives (Grinsell 2012; Timberlake 2004), etc.

1.2.4 *Present-day studies of aspect: Points of convergence*

Despite the differences in the aspectual systems and the specific ways of analyzing them, in the second half of the twentieth century, the continental studies of aspect developed some common features – i.e., a tendency to background the distinction between grammatical and lexical aspect (especially in Western European studies), on the one hand, and the reinvention of the concept of boundaries and boundedness, on the other hand. While the former is the result of the influence of Anglo-American theories of aspect, the latter is the transformation of the original dichotomy of perfectivity vs. imperfectivity, which is still very much present in continental linguistics.

1.2.4.1 *The influence of Anglo-American theories of aspect: Blurring grammatical and lexical aspect*

The bi-dimensional approach to aspect as the dichotomy of perfectivity vs. imperfectivity that has been characteristic for German and Slavic linguistics (cf. Koschmieder 1928/29) appears not to have had a significant impact on Anglo-American linguistic theories of aspect. Furthermore, in modern theories of aspect, the older kind of viewpoint distinction does not appear to play a big role. Exceptions are Comrie (1976) and Dahl (1985) (cf. Sasse 2001: 14) and Holt (1943) who also takes a bi-dimensional approach for French. Building, as he notes, on Holt's (1943: 6) definition of aspect as "les manières diverses de conçevoir l'écoulement du procès même" ('different ways of conceiving the flow of the process itself'), Comrie (1976: 3) indicates: "aspects are different ways of viewing the internal temporal constituency of a situation".

In Anglo-American linguistics, however, a different approach to aspect as temporal structure has developed, i.e., Vendler's situation approach, which remains extremely influential in international linguistics (Vendler 1967) and is the leading paradigm for experimental research on aspect in cognitive psychology/psycholinguistics (see Chapter 6, this volume). It has also been highly influential on continental research on aspect. Moreover, our cross-linguistic study shares with cognitive psychology the goal to understand better how aspect is actually used by speakers; so it seems important to briefly relate Vendler's approach to other theories of aspectuality.

Vendler's time-schema approach goes back to Ryle (1949) and through the work of Dowty (1977, 1979) has been heavily influential in linguistics. Sasse (2001: 18) summarizes, "The basic tenet of these early approaches was to set up classes of situations according to a logical concept of temporal constitution, which defines the different inherent temporal characteristics of states, events, processes, etc. in a

coherent way, by referring to basic ontological distinctions". Vendler singles out four situations distinguished by four different time-schemas: *states, activities, accomplishments*, and *achievements*. These time-schemas have served to systematize different situation types as well as for the distinction of semantic features, such as [±punctual], [±durative], [±telic], [±dynamic] and they have become very widely used in formal semantics and computational linguistics (see Section 1.1.2, this chapter). Apparently, Vendler's notions have also found their way into Langacker's (1987, 1991) cognitive linguistic take on aspect: Sasse (2001: 17–18) notes, "He [Langacker, CM] does not employ Vendler's terms but his subcategories of "atemporal and temporal relations" roughly translate into time-schemata, though he confusingly uses the imperfective/perfective terminology for what is usually called atelic/telic. Incidentally, this is relatively widespread in the English-speaking tradition".

Vendler's situation approach foregrounds the temporal constituency of situations, whereas the traditional continental approach focuses on the boundaries of events (as denoted in the verb actions) and the viewpoints speakers take on them. Sasse (2001: 19) critically notes that "one of the most problematic aspects of the literature in the time-schema tradition is its general vagueness with respect to the level of linguistic analysis on which the time-schemata obtain".

Thus, it appears important to bear in mind that Vendler's theory is built on an analysis of what traditional German linguistics termed *Aktionsarten* and what partially corresponds to the Russian *manner of action* (see Section 1.2.1, this chapter). Put differently, lexical aspect is what is primarily addressed by Vendler's 'temporal constituency' approach to aspect. As a consequence, in continental linguistics as well, the distinction between Aktionsart and the different forms of grammatical aspect that were described in the Slavic languages (aspect as expressed via derivational morphology) and for the Romance languages (aspect as a form of inflectional tense marking) were backgrounded, and the notion of aspect became less terminologically fixed:

> It seems that for the English-speaking linguistic world, "aspect" was from the very outset not so narrowly interpreted as the translation of the Slavic grammatical term *vid* with its typical fixation on the binary distinction between perfectivity and imperfectivity (ASPECT^{I}), as it was during the same period for the Germans or the French. It appears to have been much closer to the everyday usage of the word "aspect". (Sasse 2001: 15)

It is worth mentioning that the influence of Vendler's verb typology did not only result in the blurring of boundaries between grammatical and lexical aspect in various European and non-European linguistic traditions, but also led to a more nuanced analyses of the semantics of verbs relevant for the studies of aspect and aspectuality in different languages.

In general, blurring the distinction between grammatical aspect and lexical aspect on the one hand and giving up on the bi-dimensional approach of aspect in terms of perfectivity and imperfectivity, on the other hand, is what characterizes the English speaking linguistic tradition of aspect theories. It seems likely that this different conception was influenced by the nature of English as the object of study (cf. Sasse 2001: 20). English expresses aspectual meaning very differently from Slavic, from German, and also from Romance languages. Rather than focusing on the morphological aspect opposition of perfectivity and imperfectivity, those theories of aspect depart from the temporal constituency of events (typically, without considering them as metaphorically based on motion event structures).

An important consequence of such an approach for a comparative study of aspect involving languages that convey aspect on different levels of linguistic structures is that it eliminates possible differences in meaning that may come with the different forms in which aspectuality is expressed in a given language. Notably, the influential semanticist John Lyons insists on a systematic distinction between aspect and what he considers the aspectual character of the verb (cf. Sasse 2001: 17–23). He underlines that, although aspect and aspectual character ultimately "rest upon the same ontological distinctions", they are "interdependent", but not the same (Lyons 1977: 706).

In short, while in Anglo-American linguistics different lexical expressions of aspect remained in the foreground of linguistic attention (and with them, the notions of punctuality, telicity, durativity), continental linguistics continued to deal primarily with grammatical aspect (e.g., perfectivity and imperfectivity). This involved the above-mentioned complication that grammatical aspect in the Slavic languages is expressed in the derivational morphology of verbs (e.g., it concerns paradigms of verbs) while in the Romance languages this aspectual pair is encoded on the level of tense (e.g., it concerns a flexive category). From the point of view of English linguistics, it makes perfect sense to focus on the lexical marking, since the grammaticalized dichotomy of perfectivity and imperfectivity, the point of departure for continental aspect theories, is less obvious on the level of grammatical forms in English. Instead, the progressive aspect attracted attention, which again makes sense, since it is the only grammaticalized aspect form for the English language. As one consequence, interest in aspect marking on the level of present tense increased, whereas the traditional continental approach to aspect was mostly concerned with the past and future.

It is, however, precisely the Anglo-American perspective on aspect that has motivated recent psycholinguistic studies of typological variations and their potential impact on the conceptualization of events. To test Slobin's "thinking for speaking" hypothesis (1987, 1996) (cf. Section 2.1.2, this chapter), von Stutterheim et al. (2012) investigated visual attention in terms of eye-movements when watching naturalistic

motion events shown in video-clips of everyday motion-event situations, such as a car driving along a country road, heading towards a village. Combining the eye-tracking analysis with information selection in language use and a memory task, they found that speakers of languages that have a grammaticalized progressive aspect (English, for instance) as compared to speakers of languages without a progressive aspect (such as German, for instance) differ significantly with regard to endpoint fixation (e.g., with regard to visually attending to the endpoint of an event more than to its internal course). In their study imperfectivity is equalized with progressivity. Under these circumstances, English becomes an aspect language whereas German, Dutch and Czech are considered not to be. The aspect-language group in this study includes English, Russian, Spanish and Modern Arabic because they are all claimed to have grammaticalized progressive forms. This perspective also involves the shift from connecting aspect with past and future (in the continental tradition) to aspect in the present. For the purpose of an experimental comparative study focusing on one specific kind of aspectuality, here progressive marking versus no grammaticalized marking of progressivity, can be absolutely appropriate. What the study shows, however, is that the continental tradition of analyzing aspect has been replaced by the Anglo-American perspective on aspect even when it comes to languages that have a bi-dimensional contrast between perfectivity and imperfectivity (such as Russian, Spanish, Czech, or even German).

While admitting that their typological classification is a simplified one, we can note that it still illustrates the influence of the Vendlerian time-schema aspect theory, that focuses on the temporal constituency of situations, and shows how departing from English as an object of study influences one's perspective on what is considered aspect in a Slavic, Semitic, or Germanic language.

It appears therefore that the continental linguistic tradition, with its theorizing of aspect in terms of event-boundaries, does not come into play in current international research of aspect as a typologically variable category that could offer further answers to the question of whether typologically variable grammatical structures shape speaker's online conceptualization, e.g., their "thinking for speaking". Although such a focus might be absolutely useful for the purposes of an experimental study, it does seem somewhat problematic to describe German in general as a non-aspect language, while basically all descriptive grammars of Germans clearly admit a tense-related aspectual system for *Perfekt* and *Präteritum*. Similarly, it seems misleading to disregard the strongly grammaticalized opposition between perfective and imperfective tenses for Spanish, since, as we have outlined above, Romance languages have traditionally been regarded as languages with a binary tense-aspect system (the French aspectual opposition between the *passé simple* and *passé composé* versus the *imparfait* are a classical case of a perfective/imperfective aspect distinction). Along the same lines, not considering Czech as

an aspect language appears counterintuitive, since the notion of *vid* was discovered and developed in the eighteenth and nineteenth century by Indo-Europeanists, driven by the specific nature of Slavic languages that show a complex aspect system on the level of derivational verb-morphology. This specific structure of Slavic languages as objects of study has been vital in motivating the continental theory of aspect with its binary characterization of aspect as viewing events in their bounded entirety (perfective) or in their ongoing character (imperfectivity).

The applicability of the Vendlerian classes of verbs to different languages has been discussed by a number of researchers (Brecht 1985; Dowty 1979; Padučeva 1996; Rothstein 2004; Smith 1991). The Russian linguist Padučeva (1996), for instance, provides the empirical data to demonstrate that the semantic classes of verbs cut across the grammatical aspectual system in Russian. She argues that activities and states are expressed through imperfective forms, and achievements are referred to with the help of perfective verbs. Showing that accomplishments form so-called bounded pairs (*predel'nye pary*), Padučeva highlights the fact that they can be described by both perfective and imperfective verbs. The choice depends on whether a process was completed after it reached its inner limit (*dejstvie obyčnoje* 'a regular action'), or is still going on (*dejstvie v razvitii* 'an action in progress'): *Ivan pročital*$^{Past\ Perf}$ *knigu* vs. *Ivan čital*$^{Past\ Imperf}$ *knigu* ('Ivan read a book' vs. 'Ivan was reading'). She also expands on Vendler's classification by adding delimitative actions described by such perfective forms as *počital, poguljal* ('read/walked for some time') (Padučeva 1996). Her study confirms the correspondence between the binary grammatical (perfective and imperfective) distinction of aspect and the lexical types of events, or the semantic properties of verbs, thus reconciling the the bi-dimensional and the Vendlerian approaches.

1.2.4.2 *Using conceptual boundaries*

Although Vendler's typology of events has encouraged some European researchers to background the differences between grammatical and lexical aspect, the distinction between perfectivity and imperfectivity still remains in the focus of French, German, and Russian studies of aspect. In the three traditions, the dichotomy is taken up, reintroduced, and reinforced as the concept of open and closed boundaries, which is considered by various linguists as fundamental for the study of aspect (e.g., Desclés and Guentchéva 1996: 27).

For instance, in Culioli's approach (1972), aspect is described in terms of open or closed intervals but is meant to be analyzed in close connection to four overlapping parameters: Aktionsart, modality, quantification, and temporal topology (Culioli 1999).

The "*déroulement du procès*" (the progress of the event) is described as either an interval with boundaries (open or closed) or without boundaries. The boundaries delimit the interval that is necessary for the progress of the event. Culioli makes a distinction between two types of events:

– Unbounded events (*procès non bornés*). There are two categories: (a) The boundaries are not conceivable or are not known. It is the case of the gnomic present (and gnomic *imparfait*) used to state eternal truths, mathematical laws, or cosmic evolutions such as the "Earth spins around the sun". (b) If the event has two open boundaries (if you do not know the beginning or the end of the event) and if the landmark is between the two boundaries, the event will be described as in progress and uncompleted (*inaccompli*).
– Bounded events: they could be partially bounded at the start (inchoative, as in *to fall asleep, to leave*) or at the end (*to reach, to land*) or global (*to shave*).

Contemporary linguists very often illustrate the boundedness and unboundedness of events in French by drawing full and dotted lines with open and closed boundaries in their papers.

This framework is linked to a speaker-centered view of language in which aspectual oppositions depend on how the speaker views the event: as either "*accompli*" (completed), or as "*inaccompli*" (uncompleted), depicting it as it unfurls, from within the unbounded interval in which it is in progress. There is thus an overlap in current theoretical approaches to French aspect between referring to the metaphor of boundaries and adopting Comrie's definition of aspect in terms of internal and external perspective on the event.

Analyzing "boundary schemas" for aspectual patterns is a way of capturing how they express event structures. Along with previous authors in several linguistic traditions (see Sections 1.2.2 and 1.2.3, this chapter), we have associated imperfective aspect with construal of an event as unbounded and thus expressed most of the time with the *imparfait* in French, and perfective aspect with a bounded construal of an event, expressed most of the time with the *passé composé*.

Ultimately, it is difficult to disentangle the authorship of the metaphor of boundaries, since it has also been taken up by other theoreticians of aspect in different countries who focus on the linguistic representation of situations in terms of their boundaries, such as Smith (1991/1997) who calls them "initial" and "final endpoints" or Lyons (1977) who mentions "intervals".

There continues to be wide agreement on the dimensions of 'boundedness' versus 'unboundedness' as the basic semantic difference in a binary aspectual system. For example, Sasse, using the notation Aspect[1] and Aspect[2] to distinguish between grammatical aspect and Aktionsart, indicates:

> Rather, the ASPECT[1] [i.e., grammatical aspect, CM] definitions proposed by more recent adherents of a bi-dimensional approach all rely, explicitly or implicitly, on the notion of boundaries and thus establish semantic distinctions closely related to ASPECT[2] [i.e., lexical aspect/Aktionsart, CM] distinctions. And in fact, everything we know so far about aspect systems in the languages of the world points to an

> intimate relationship (often stated in terms of markedness) between "perfectivity" and "telicity" or "punctuality" on the one hand and "imperfectivity" and "stativity" on the other. *The former affinity is often interpreted in terms of a general notion of "boundedness", while the latter is interpreted in terms of "unboundedness".*
>
> (Sasse 2001: 8; italics CM)

Against the background of such a conceptualization of aspect, the Aktionsart distinctions of telicity-nontelicity and durativity-punctuality are placed in parallel with the perfective-imperfective ones, and the basic idea of both forms of expressing aspectuality is the characterization of an event as being bounded or unbounded (Table 1.1):[16]

Table 1.1 Boundedness vs. non-boundedness: Shared meaning of aspect and Aktionsart

Aspect[1] /grammatical aspect	imperfective	perfective
Aspect[2] /Aktionsart/lexical aspect	stative	telic/punctual
Shared meaning	***non-bounded***	***bounded***

Similar to the French and German traditions, most definitions of *vid* in Russian aspectology explicitly or implicitly rely on the metaphor of boundaries (Russ. *predel)*, namely, its presence for the perfective aspect, or absence for the imperfective aspect (Bulygina 1982; Plungjan 1989; Vinogradov 1938). Vinogradov (1972: 394), for instance, writes: "[…] the main function of the perfective aspect is to limit or eliminate the representation of an action as continuous, to focus on one of the stages of a process as its boundary" (translation by OI).

While Vinogradov defines *vid* through the concept of grammatical boundary, more recent studies of aspect take a different angle on boundedness, suggesting that there are two types of interrelated boundedness – grammatical (in Vinogradov's sense) and lexical. The latter is understood as the ability of verbs to denote internal (qualitative) boundaries in their lexical meaning. Thus, semantically, verbs are divided into terminative and non-terminative (in Russian, *terminativnye* and *neterminativnye glagoly)*, with terminative verbs indicating some limit, irrespective of the aspectual form they are used in. For example, in *padat'*$^{Imperf\ inf}$ and *upast'*$^{Perf\ inf}$ ('fall' and 'fall down'), both imperfective and perfective forms semantically presuppose boundedness. At the same time, some scholars point to the fact that in Russian there are non-terminative verbs that can express boundedness by grammatical means – through perfectivizing prefixes: e.g., ***po**šumet'*$^{Perf\ Inf}$ 'make noise for some time'; ***ot**šumet'* $^{Perf\ Inf}$ 'stop making noise (lit.), pass, be over (figure about war, storms, rain, etc.)'; ***za**šumet'*$^{Perf\ Inf}$ 'start making noise' (Petrukhina 2009: 41).

16. The overview is a slightly revised version from Sasse 2001: 8, Table 1.

This shows that the relation between grammatical and lexical aspectual properties is an "open question", and varies not only across languages, but even within one language, depending on the verb and the context.

Maslov (1984), Bondarko (1986), and Padučeva (1996) note that there are different types of *predel* (boundary) and different ways of reaching it, expressed by the aspectual pairs of terminative verbs. The researchers distinguish between natural (gradual), instantaneous, unpredictable and relative boundaries: e.g. *sozdavat'*$^{Imperf\ Inf}$ – *sozdat'* $^{Perf\ Inf}$ 'create' (gradual boundaries); *terjat'*$^{Imperf\ Inf}$ – *poterjat'*$^{Perf\ Inf}$ 'lose' (instantaneous boundaries); *sdavat'*$^{Imperf\ Inf}$ – *sdat'*$^{Perf\ Inf}$ 'take/pass an exam' (unpredictable boundaries); *staret'*$^{Imperf\ Inf}$ – *postaret'*$^{Perf\ Inf}$ 'get older' (relative boundaries).

In sum, the concept of boundaries, while preserving the aspectual dichotomy highlighted for many languages, such as French, German, and Russian, points to the interrelation between lexical, grammatical, and functional (pragmatic, discursive) features of aspect. At the same time, it shows that the choice of an aspectual form depends on the way the speaker mentally construes an event at any given moment of discourse – as having or not having boundaries. So, on the one hand, the cognitive parameter of boundedness can be viewed as a feature that correlates with temporal, morphological, and lexical-semantic characteristics of verbs. On the other hand, as shown further on (Section 2.2.3, this chapter), the concept of boundedness can be viewed as an important component of gestures accompanying verbal expressions of events. Thus, boundedness appears to be a concept that contributes to the cross-modal understanding of aspectuality adopted in this research.

1.2.5 *Conclusion*

Despite the aspectual specifics of the languages, the issues raised in French, German, and Russian aspectology are closely intertwined. The reason for this connectedness lies in their common assumptions about:

a. the link between tense, aspect, and modality (TAM categories);
b. the binary character of grammatical aspect (perfective vs. imperfective forms);
c. blurring of boundaries between grammatical aspect and the Aktionsart distinctions of telicity-nontelicity and durativity-punctuality;
d. the correlation between aspectual and lexical-semantic characteristics of verbs that manifests itself at the structural (morphological) and functional (discursive) levels;
e. the relatedness of grammatical and lexical aspect to the way the speaker describes, or in cognitive terms, construes, events – as bounded or non-bounded.

The difference between the traditions lies partially in the terminology and in major accents placed on various issues related to the phenomenon.

The present study of aspect is concerned with questions that, to our knowledge, have *not* received much attention yet. The first issue is the study of aspectual behavior of verbs in the natural environment of spoken communication. Most of the works on aspect are focused on isolated syntactic constructions, and, with the exception of a few corpus studies, researchers do not go beyond sentences in their observations. The studies dedicated to textual behavior of aspectual verb forms are carried out primarily on the basis of analyzing literary prose.

The second issue can be viewed as a result of the researchers' "bias" towards written texts, which means that aspectuality has been treated as a purely linguistic (grammatical or lexical semantic) phenomenon. However, recent findings have demonstrated that aspectuality extends across modalities, and can be regarded as an important feature of both verbal and non-verbal behavior (e.g., Duncan 2002; Parrill et al. 2013). In Russian aspectology, for instance, the beginning of the multimodal turn can be observed in some recent studies of Russian Sign Language (Filimonova 2015) and spontaneous gestures used with speech (Grišina 2016). Grišina, for example, explores gestural profiles in the instances of verb-gesture use in the multimodal sub-corpus of the Russian National Corpus, MURCO (http://ruscorpora.ru/search-murco.html). Analyzing Russian movies, she shows that such gesture qualities as repetition and energy mark the difference between perfective and imperfective verbs (Grišina 2016).

Basing ourselves on the previous studies, in the present research we focus on the correlation between gestures and verbal aspect in natural spoken narratives in three languages. On a more general level, the question is to what extent the aspectual properties, for example, the binary opposition and the partial asymmetry of the perfective and imperfective forms, or the complex interplay of more abstract grammatical meanings and more specific lexical meanings, discovered in a particular verbal language, translate into non-verbal, specifically gestural, behavior. In other words, how does the internal structure of events that we construe when we talk in French, German, or Russian, manifest itself in different components of multimodal usage events "verb + gesture"?

Such a viewpoint offers interesting background for considering multimodal expressions of aspectuality, since looking at how speakers of different languages gesture when using aspectually marked utterances allows for insights into both: the subjective perspective of a given speaker and the characterization of an event as being complete or not (both visible in the movement qualities of the gestures). Whatever kind of gesture somebody is employing along with an aspectually marked verb, we will see in the gestures whether there is a correlation with the verbal aspectual form used (Duncan 2002; Hostetter and Alibali 2008; Müller 1998c, 2000; Parrill 2013), and if so, we can gain insight into how the event mentioned verbally is conceptualized, namely as a bounded or an unbounded one.

In such a way, understanding aspectuality as the cognitive basis for lexical and grammatical aspect provides us with the possibility to analyze aspect through the bi-dimensional model of perfectivity vs. imperfectivity, and, in addition, to take into consideration various manifestations of aspectuality in different languages – grammatical (tenses), lexico-grammatical (morphology), and relations to pragmatics.

2. Background on talk-based multimodal communication

2.1 Thinking for speaking and gesturing (*Cienki*)

2.1.1 *Linguistic relativity hypothesis*

The previous section provided an historical overview of the theorizing about the different grammatical means of expressing aspect and tense in French, German, and Russian. Considering this in light of the discussion of construal phenomena in Section 1.1 of this chapter raises the question of the degree to which similar or different grammatical options available in different languages reflect, and allow for, different ways of thinking. Debate about how the language we speak shapes the way we (can) perceive reality can be traced back to Von Humboldt (1820) (if not even to the eighteenth century, as Koerner [1977] and others have pointed out) and Boas (1911), through Sapir's (1921 and subsequent publications) and Whorf's (1956) works, leading to what is commonly referred to as the Sapir-Whorf Hypothesis. As various historical overviews on the subject (see, for example, Hill and Mannheim 1992; Lucy 1992) have made clear, that label is misleading in several respects, not the least of which being that Sapir and Whorf did not co-author any given work, and what is commonly taken as "the Sapir-Whorf Hypothesis" is not even usually phrased as an hypothesis. Rather, it is an axiom (Hill and Mannheim 1992: 383) abstracted from various writings by them and others. As an example, Lucy (1992: 46) helpfully pieces together a number of quotes from Whorf to show his view of language as "a formal classificatory device" which provides linguistic analogies that "are used in thought as guides in the interpretation of and behavioral response to experienced reality":

> Whorf had no single term or expression for this process, referring variously to language "conditioning" or "shaping" thought (1956: 135–147), to thought "marching in step with purely grammatical facts" (1956: 211), to language as a "program and guide for the individual's mental activity" (1956: 212), to thought being "pointed by … grammars toward different types of observation" (1956: 221), and to thinking following "a network of tracks laid down in the given language" (1956: 256)."
>
> (Lucy 1992: 46)

Of the various refinements that have been made over time to these proposals, the one we are concerned with below pertains to the time scale that is relevant here to the discussion of "thought" and "grammar" or "language". This is an issue tackled in Slobin's approach of "thinking for speaking".

2.1.2 *Thinking for speaking*

Slobin (1987, 1996, 2003) proposes a contemporary and moderate linguistic relativity hypothesis that is focused on a dynamic framing of the issues involved. He writes, "I propose to replace **thought** and **language** with a related but rather different pair of terms: **thinking** and **speaking**. The consequence of this shift from names of abstract entities to names of activities is to draw attention to the kinds of mental processes that occur during the act of formulating an utterance" (Slobin 1996: 71, emphasis in original). The "thinking for speaking" hypothesis puts attention on the on-line cognitive processing of the speaker as well as his/her real-time language production. In doing so, it highlights the micro-time scale perspective of moment-by-moment language use. Essentially, the issue of linguistic relativity is thus reframed as: "To what degree does the language we speak focus how we conceptualize an event in the moment that we are talking about it?" The focus in research on thinking for speaking is on semantic domains encoded by special grammatical constructions or obligatory lexical selections in the language(s) under study (Slobin 2003: 161). It is worth noting that this approach is complementary in interesting ways with Vygotskij's (1934) views in his book *Thinking and speech*. As Landolf (2006: 80) notes, "Slobin's hypothesis is commensurate with Vygotskij's view that speaking completes the thinking process."

Some have noted (see. Lucy 1992: 53), however, that trying to study this (or these processes) by just analyzing languages themselves draws us into a vicious circle of reasoning, namely the logic that "language reflects thought – which we know because we see the concepts in the language", which could be paraphrased in light of Slobins's work in terms of "speaking reflects thinking in a certain way – which we know because the thinking processes are made manifest in the speaking".

How can we avoid this cyclical reasoning? Inspired in part by Vygotskij, McNeill (1992, 2005, and elsewhere) has argued for the value of analyzing gesture with spontaneously produced speech in order to gain an independent window onto speakers' thought processes. Manual gestures reflect imagistic aspects of the concepts we are using as we are thinking for speaking. Research by McNeill's former students (e.g., Kita and Özyürek 2003) has demonstrated that speakers of languages with typologically different grammatical structures in fact gesture differently when, for example, describing different kinds of motions, depending on whether the language provides more readily available options for characterizing the path of the motion (in, out, around) versus the manner of the motion (slow, smooth, accelerating). Gesture is

in itself a dynamic, spatial medium that affords expression of different properties than words do, providing its own form of insight into the "special form of thought that is mobilized for communication" (Slobin 1987: 436). This then leads us to a new way of thinking of Slobin's hypothesis, namely as "thinking for speaking and gesturing" (Cienki 2008; Cienki and Müller 2006; cf. McNeill and Duncan 2000).

Interestingly, the potential for theorizing about gesture, or other behaviors, in this respect is already anticipated in some discussions of Sapir and Whorf's work. As Brown (1976: 128) characterizes it, one of the hypotheses that Whorf appears to put forward is that "Structural differences between [two] language systems will, in general, be paralleled by nonlinguistic cognitive differences, of an unspecified sort, in the native speakers of the two languages." Furthermore, Lucy (1992: 46) notes, "Whorf's task was to provide evidence for the cognitive appropriation of linguistic analogies" (emphasis in original), but "[o]ne can imagine a number of kinds of structures that might be so appropriated: language is only one" (ibid.). Indeed, one might extend this reasoning to develop a gestural relativity hypothesis, concerning how the recurrent gestural patterns found among speakers in a given culture might reflect and shape their thought.[17]

While this possibility awaits further development, in the following section, we explore the specific issue of what the movement quality of speakers' gestures might reveal in relation to these issues.

2.2 Gestures as movement

2.2.1 *Visual and proprioceptive modalities*

In gesture studies, the dominant approaches come from Kendon's and McNeill's work (e.g., Kendon 1988, 2004; McNeill 1992, 2000, 2005). There are three fundamental issues here: those of imagistic thinking, vision and gesture perception, and the static conception of gestures.

2.2.1.1 *Gestures derive from imagistic thinking (Boutet)*

As McNeill claims, gestures derive from imagistic thinking: "…a true psychology of language requires us to broaden our concept of language to include what seems, in the traditional linguistic view, the opposite of language – the imagistic, instantaneous, nonsegmented, and holistic. Image and speech are equal and simultaneously present processes in the mind" (McNeill 1992: 2).

This imagistic conception of gesture focuses on the shape at the expense of the qualities of the movement, such as velocity and gesture dynamics. The tracing

17. Witness the recent work on the topic of recurrent gestures (esp. Bressem and Müller 2014b; Ladewig 2014b).

performed by gestures are therefore the main meaningful feature of any gesture. However, according to the way a circle is traced in a gesture, the representation could be a series of circles, a repetitive phenomenon, or the figuration of a ripple effect. Those three representations cannot be inferred just using an imagistic approach. For that we need an approach that is movement-centered.

2.2.1.2 *Visual perception of gestures (Boutet)*

The contemporary paradigm of gesture studies puts emphasis on the visual modality in terms of how we perceive gestures, and especially their structure (Kendon 2004; McNeill 2009). The iconicity concerned is one mainly based on images.

The body part(s) producing the gestures is considered, at best, as a supporting mechanism. For Kendon and McNeill, the essence of how gestures are structured is not anchored in physiological facts of the body *per se*. Nevertheless, if we consider the example of a round gesture, as seen above, the process of transcribing indicates that a coder sometimes needs to re-enact the gesture to feel the quality of the movement involved in the gesture. Vision is helpful to get the sketch of any gesture, but is helpless to assess what exactly is going on. A more embodied way of appreciating the true nature of gestures is needed. We read, as it were, and fully understand a gesture through our body.

2.2.1.3 *The importance of proprioception (Boutet)*

For McNeill, all types of gesture production are encompassed within a continuum, based on Kendon (1988). The most obvious type of gesture in this continuum is the category of emblems or what Kendon calls "quotable gestures" which are basically gestures understandable without any speech. The majority of emblems are reducible to postures. More than that, the main families of gestures are organized according to a principle of locations and orientations of the hand (Open Hand Prone and Open Hand Supine families (Kendon 2004: 249–280). Movement itself is a tertiary feature in the structuring of gestures for Kendon. At this level, just one feature of the movement is evoked: direction. Even in Kendon's typology itself, the nature of the features is influenced by an imagistic, static, way of thinking the gestures. Pushing away the other characteristics of the movement, which is the productive part of gestures – there is no gesture without any movement – is simply not sufficient for the study we plan to do about speakers' expression of the quality of events.

We believe that the study of gesture must also be conducted according to another modality that is derived from the production of gestures: proprioception (Berthoz 1997; Paillard 1974). For manual gestures, the sensors of this proprioception are spread on the segments of the upper limb. The neuromuscular spindles located on the muscles of the upper limb give proprioceptive information about the position and speed of the bodily segment that are relevant to each muscle (Berthoz

1997: 34). Other receivers (called de Golgi receivers) situated on the tendons, participate according to the effort exerted on the muscles. Tension, amplitude of the muscular contraction, acceleration, as well as reflex contraction of the antagonistic muscle all enable us to locate each of the segments in the possible amplitude of the articulation of movement. Thus, from the point of view of localization and of movement through acceleration, proprioception gives us direct access to static and dynamic information.

Proprioception frames movement on the segments of the upper limb (arm, forearm, hand, fingers) while the visual modality does not take into account the constraints of the movement. We can say that the visual modality "records" where proprioception controls the movement itself, and thus, in that way, it structures our gestures.

2.2.1.4 *'Gain control' (Becker)*

The discussion above relates to a notion discussed in cognitive psychology known as *gain control* (Glenberg and Gallese 2012, drawing upon Grush 2004). Its meaning can be elucidated by the following example. Consider a situation in which a man gives a woman a single rose. Does he stab the stem through the air, like a fencer in a duel? Does he make a clear pulse of effort at the beginning of the action in order to throw the flower as quickly as possible to transfer it to her? Most likely this is not the case. The goal is not purely to transfer possession of the gift, but to present it. Thus, imagine he holds it delicately between only his thumb and index finger, and smoothly, in a controlled manner, moves his hand upward and away from his body toward the recipient. *Gain control* gives the action this sustained, steady movement quality. The signal to act is carried out via the motor cortex to the muscles in the arm, although the gesturer's eyes may monitor the course of the action. Sustained effort over time is necessary to carry out a smooth movement. As such, the action must be inhibited to some degree or the rose would simply be flung at the woman. Gain control inhibits the completion of the action to create the slow, controlled presentation of the flower.

Gain control also plays an important role in gesture production. Glenberg and Gallese (2012) argue that as people speak, they partially perform the action-related content of the speech, and it is because of gain control that the action is not fully carried out. Instead, consistent with the Gestures as Simulated Action framework (Hostetter and Alibali 2008), what people produce as they speak is a partial enactment, or a gesture. We extend both of these frameworks by studying whether, and if so, how, the grammatical choices made for the characterization of an event verbally relate to the quality of the gesture movement itself, as controlled throughout, or as produced with a pulse of effort.

2.2.2 *Gestures as motion events (Müller)*

Based on earlier work on the gestural expression of motion events in German and Spanish (Müller 1994, 1998a, 1998c, 2000; see Müller 2015 for a summary) we consider gestures as prototypical movement events themselves. How does this relate to the linguistic notion of aspect? We have seen in Section 1.2 of this chapter that grammarians of different languages and theoretical backgrounds share a very fundamental understanding of aspect as a grammatical perspectivization of events as having clear-cut boundaries or not (see for example, Behaghel 1924; Croft 2012; Coseriu 1976; Eisenberg 1986; Holt 1943; Sasse 1991a, 1991b for a review). Obviously, aspectual marking refers to any kind of event; however, movement events might provide a prototype kind of conceptualization for the idea of aspectual event marking more generally. At least when we look at the gestures that speakers employ along with a verbal expression of aspect, this appears to make sense, since we see that any kind of gesture comes with a specific quality of movement. No matter whether a gesture has a pragmatic, a concrete representational, a metaphoric, or interactive function, or whether it is pointing or depicting, any gesture is a movement in space, and as such, it will have a bounded quality or not.

There is quite a body of research that has substantiated a tight relation between the semantics of verbal expressions and the meaning of gestures. One semantic field that has been very important in that respect is the expression of a conceptual structure of motion events in motion verb complexes (Talmy 1985b). The work of the cognitive linguist Leonard Talmy on typologically differing lexicalization patterns of motion verb complexes (verbs and satellites, e.g., prefixes and prepositions for the most part) has also triggered cross-linguistic gesture research that has investigated what co-speech gestures express when accompanying verbalizations of motion events (Duncan 1996, 2006; Kita 1993, 1997; Müller 1994, 1998a, 1998b, 2015; Özyürek and Kita 1999; Özyürek et al. 2005, 2008).

This line of research indicates that gestures adjust to the semantics of motion verbs and tend to follow the lexicalization patterns of the typologically differing languages. That is: speakers of satellite-framed languages would use more gestures depicting manner of motion, which goes along with manner being encoded in the verb (e.g., enacting rolling, climbing, swinging, running); whereas speakers of verb-framed languages would tend to use more path gestures, which aligns with the path of a motion event encoded in the verb (e.g., pointing or sketching paths) The critical question in this research was: do lexicalization patterns influence gesture performance? Or, put differently: are gestures and speech co-expressive (Duncan 2006), which follows from McNeill's 1992 "semantic synchrony rule" concerning the relationship between gestures and speech. If yes, then this would show that those semantic patterns are cognitively attended to and actively experienced in language use (Müller and Tag 2010). Gestures would be a form of embodied

conceptualization of abstract semantic patterns. And indeed, there are a number of studies that have offered support for a complex semantic relationship between gestures and speech, which is influenced by the typological variation of languages on the level of the lexicalization of motion events (Duncan 1996, 2006; Kita 1993, 1997; McNeill and Duncan 2000; Müller 1994, 1998c, 2015; Özyürek and Kita 1999; Özyürek et al. 2005, 2008). Typologically differing lexicalization patters are reflected in gestures: so, speakers of languages that foreground path in their lexicalization patters of motion verbs tend to highlight path gesturally, whereas speakers of languages that encode manner of movement in their motion verbs will tend to use more gestures expressing the manner in which a motion event took place. Duncan (2006) spells out the complexities of this relationship with regard to a comparison of Spanish, Chinese, and English; Kita and Özyürek (2003) suggest that gestures reflect both a specific lexicalization pattern and the visual characteristics of the stimulus event (e.g., of a cartoon). Notably, this line of research was interested in gestures as an expression of linguistic meaning on the level of depictive gestures (iconic gestures in McNeill's 1992 terminology). Put differently, the focus of this research was on the iconic resemblance between the gesture and one of the typologically differing aspects of lexicalization patterns, e.g., manner of motion or path. Gestures *depicted* an aspect of a lexicalized motion event scene. This also holds for earlier work on gestures accompanying the verbal expression of aspect and/or Aktionsart. Duncan (2002) found that gestures accompanying verbs with a progressive aspect took longer in time and were more agitated in their manner of motion, even when produced without verbal expressions of aspect.

More recent experimental research on progressive versus non-progressive aspect in English confirmed Duncan's earlier findings: descriptions of events involving progressive aspect came with longer and more complex gestures, but only if progressivity was included in the stimulus material (Parrill et al. 2013). Müller (1998c, 2000) argued that gestures could be regarded as conceptualizations of lexico-grammatical notions such as *Aktionsart* in German. This assumption was based on the empirical observation that German speakers used gestures to express *Aktionsart* notions (lexical aspect), such as egressivity and ingressivity by highlighting the beginning or the endpoint of a gestural movement, iterativity by repeated back and forth (wiggling) movements of the index finger, and durativity by repeating a cyclic motion (cf. also Ladewig 2010, 2011, 2014). These observations derived from descriptive analysis have gained further support from experimental studies on the relation of verb semantics and aspect/Aktionsart more particularly (Becker et al. 2011; Lis and Navarretta 2013).

What this earlier research on gestural expression of aspectual and *Aktionsart* notions already indicated was that since gestures are movements themselves, they can express dimensions of movement in a non-depictive, non-mimetic way. For

example, it is the kinesic nature of repetitive movements to be iterative, or, of movements with a harsh endpoint, to be bounded. This is particularly interesting for multimodal comparative investigations of aspect, since one basic semantic notion of aspect is the marking of the boundedness or not of an event. This is in fact what every gestural movement does: regardless of whether it is a representational or a pragmatic gesture, it will always be performed with a clear boundary quality or not. Gestures, like any other kind of body movement, have a certain *movement quality* that always shows either marked beginnings, marked end-points or just moves gently without any marked rupture or stop.

Our study hypothesizes that the movement qualities of gestures are embodied expressions of the aspectual qualities of verbalized events. In other words, we hypothesize that aspectual meaning is expressed in the quality of a gesture's movement, and that this applies to all kinds of gestures, even when they neither express motion events nor have a semantic, representational function. We propose that looking at gestures as movement events themselves can offer insights into the embodied grounding of aspectual event construal.

2.2.3 *Introducing the notion of boundary schemas (Müller)*

The dimension of movement as bounded (in terms of involving a pulse of effort) or not is a basic one in terms of kinesthetic, sensorimotor experience. This general bodily experience applies to gestures as well. Hand and arm movements are movements in space. Being bounded or not is one of the core dimensions of their kinesic character, of the *meaning of the gestural form* (cf. Müller's "form-based approach to gesture" 2010, 2014a; Müller et al. 2013a, 2013b). Notably, this character applies to any kind of gesture, since any gesture involves movement. Since gestures are multifunctional (as verbal language is), the movement quality of a gesture can express dimensions of meaning other than the ones included via another parameter, such as the configuration of a hand-shape, for instance (cf. Müller 1998b, 1998c). This quality of movement may have affective functions (Bühler 1933), but it may also be used to express properties of movement itself. Looking at gestures from the point of view of movement qualities provides an experiential source domain for the conceptualization of motion events, which then could be generalized to the grammatical notion of constructing events as having clear-cut boundaries or as ongoing, unbounded ones (Müller 2014b). (Bressem and Müller [2014a, 2014b] offer more detail on the embodied grounds of gestural meaning and emergent grammaticalization of gestures.)

We propose that gestural movement patterns thus lend themselves to expressing aspectuality. The observation of such a gestural way of connecting to aspect and *Aktionsart* (e.g., grammatical and lexical aspect, see also Section 1.2.1, this chapter) first emerged in the context of a broad empirical comparison of verbo-gestural

expressions of motion events in German and Spanish (Müller 1998a, 1998c, 2015). As a consequence of describing a set of several hundred gestures produced along with verbal expressions of motion events, it appeared that a most fundamental kinesic characteristic of hand movements is that it can either involve a clear pulse of energy or not. This lead to the hypothesis that maybe the movement experience of the hands in motion (and maybe even of the entire body) might serve as an embodied ground for aspectual event construal as being either bounded or unbounded, since different grammatical theorists (working on different languages and in different theoretical frameworks) characterize aspect in precisely this way: as describing an event as either bounded (perfective) or unbounded (imperfective) (see Section 1.2 of this chapter for an overview and discussion).

We are thus suggesting that bounded movements are a gestural way to embody perfectivity while unbounded movements embody imperfectivity (Figure 1.1). How these boundaries show up in the gesture is subject to variation. A gesture might either mark the onset or the offset of a movement, or it might even highlight both the beginning and the endpoint of its movement trajectory through space (Figure 1.1) (cf. Müller 1998c: 163–167).

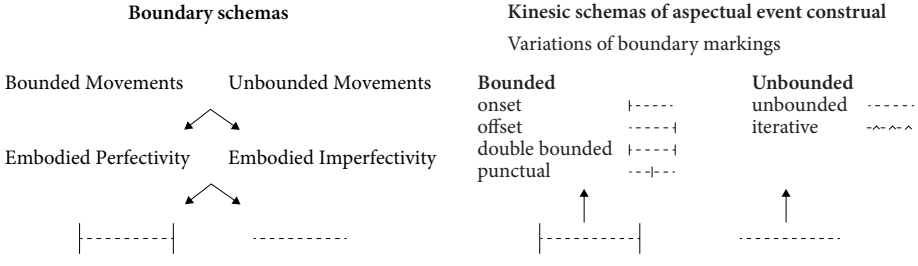

Figure 1.1 Boundary schemas as kinesic schemas, with their variants

Langacker's cognitive grammar account of aspect also distinguishes a perfective and an imperfective process. His sketches show similar visualizations of aspectual event construal as the kinesic boundary schemas for embodied perfectivity and imperfectivity (Figure 1.2).

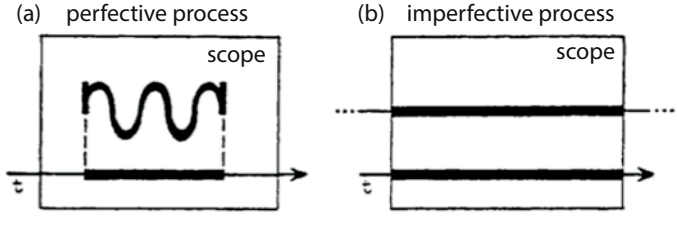

Figure 1.2 Langacker's (1991: 88) visualization of a perfective and an imperfective process

Figure 1.3 Unbounded gesture, controlled and steady motion throughout

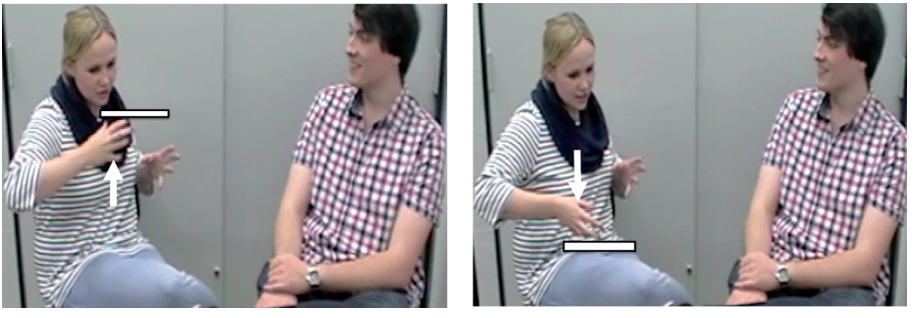

Figure 1.4 Double-bounded gesture, e.g., boundary at onset and at offset

In fact, when we look at the qualities of the course of movement in bounded and in unbounded gestures, it is quite reminiscent of Langacker's characterization. The frame grab in Figure 1.3 shows a German student performing an s-curved gesture that has a steady and controlled motion throughout and does not show any kind of marked beginning or endpoint. In Figure 1.4, on the other hand, we see a gesture that shows a clearly marked onset and offset. It is what we call a double-bounded gesture. Further details of how we operationalized this notion for our study of boundary schemas in gesture is given in Section 4.3, Chapter 2.

2.3 Summing up: Aspect as amodal or as modality-dependent (*Boutet*, *Morgenstern*, *Cienki*)

Beyond being simply a parameter of the form of gestures, movement and its quality are part of gestures' meaning. There are no gestures without movement. But are the bodily movements that speakers make just another form of expression for manifesting ideas (like the words the speakers utter)? In that case, the body is simply

another medium of expression of ideas that are modality neutral. Or do speakers' bodily movements constitute part of what they are expressing? In that case, gesture directly participates in the formulation of the ideas as they are being expressed, and ideas as expressed are tied to the modalities of their expression.

In relation to aspectuality, the body could simply be the medium for it expression. This would mean that aspectuality has an amodal existence, which would be realized differently according to the modality used (verbal/gestural) without the very principle of boundaries needing to be modified. The boundaries of gestures would therefore correspond to the bodily enactment of aspect without the active participation of the body. Or is "thinking for speaking and gesturing" what is in play, such that the distinctions of boundedness versus unboundedness unfold differently with the different grammatical manifestations of perfectivity and imperfectivity in French, German, and Russian?

The various types of gesturality used by speakers of these languages give us an opportunity to measure the effect of variations on the gestures associated with aspectuality as a cognitive phenomenon, linked to aspect as a linguistic category. In any case, speed, acceleration or sudden stops are representations of various gestural performances. In order to understand movement in depth, its quality, and its impact on associated speech, we must expand our approach to gesture, and adopt a *kinesiological* conception. Besides the visual modality, which is already focused on in gesture studies, this type of approach gives more importance to proprioception. It also modifies the frame of reference through which gestures are generally studied. It specifies their internal 'geometry' and their dynamics. Such an approach will enable us to understand what we call movement kinematics including speed, acceleration, and potential jolts in the gesture that constitute the key elements of the boundary schemas we analyze in this study.

CHAPTER 2

Researching aspect in multimodal communication

Consequences for data and methods

1. Introduction (*Cienki*)

Chapter 1 presented various approaches to the study of events and aspect, similarities and differences in how aspectual distinctions are expressed in French, German, and Russian, and recent theorizing about the role of gesture in relation to thinking for speaking. Taken together, they give a more complete picture of the bases for our research questions. To revisit the questions from the Introduction for our production study, they concern the following:

- Given that French, German, and Russian share two broad aspect(ual) categories in their verb systems, but mark aspectuality in different ways, do speakers of these languages gesture similarly or differently (with regard to movement quality) when talking about events in the perfect(ive) versus in the imperfect(ive)?
  - Specifically, does their use of the perfect(ive) correlate with greater use of gestures that also capture expression of an event in a similar way, with a pulse of energy, in what we call a bounded gesture?
  - Does their use of the imperfect(ive) correlate with greater use of gestures that also involve greater focus on the internal movement structure, with more controlled movement and no wholistic pulse of energy, in what we call an unbounded gesture?

Chapter 3 concerns the expression of event structures in terms of verbal grammatical categories of aspect and tense, and Chapters 4 and 5 focus on how gestures with different movement qualities (*bounded* versus *unbounded*) were used in relation to these verbal forms. These three chapters thus have to do with our production study.

In addition, we investigated the uptake of multimodal communication in terms of the following question:

- Is the comprehension of video clips with verbs and gestures in each of these languages affected if a given clip shows a match versus a mismatch of verb category and gesture type ('mismatch' in terms of our original hypothesis about perfect(ive) verbs going with bounded gestures and imperfect(ive) with unbounded gestures)?

This is the question that is addressed via a reaction-time experiment, presented in Chapter 6.

2. The choice of data and method of elicitation for the production studies (*Cienki*, *Becker*)

The collection of data for the research on verb and gesture production takes us to the origins of the project – namely in a follow-up to the study by Becker et al. (2011). That research concerned semantic Aktionsart in English in relation to gesture use. The present project originated as an extension of that, to investigate these phenomena in three language families that are typologically different in terms of how they express Aktionsart and aspect: Romance, Germanic, and Slavic languages. As a Romance language, French does not have overt morphological marking of Aktionsart, nor of grammatical aspect, except in terms of the differential use of past tense forms as discussed in Section 1.2.1, Chapter 1. German does have various forms of morphologically marking Aktionsart, and also has the differentiated use of past tense forms with an aspectual character, presented in Section 1.2.2, Chapter 1. Russian, like other Slavic languages, has morphological marking on verbs both of grammatical aspect and of certain kinds of Aktionsart (see Section 1.2.3, Chapter 1).

As in the Becker et al. study, the decision was made not to use existing audio-visual recordings as data. The occurrence in such material of the verb forms of interest would likely be low, meaning a very large amount of data would need to be analyzed in order to find sufficient occurrences of the verbs in question. In addition, one needs video in which manual gesturing (or the lack of it) is visible, as well as video recordings of sufficiently high quality to allow for fine-grained analysis. Therefore, we opted for recording our own data. However, this raises other questions. Recording completely spontaneous conversations has the advantage of resulting in more naturalistic language and gesture use. However, the disadvantage is the practical one cited above, that this calls for a large amount of material in order to find sufficient exemplars of the verb forms being researched in order to allow for meaningful quantitative analysis of them. One solution could be to employ a method that has become widely used in gesture research, which is to have participants retell a story that they saw in a picture book or in a cartoon. Advantages are that the researcher knows what the intended referents and actions are that the speakers are talking about, and those referents are the same across all the speakers, since they are based on the exact same stimuli. Disadvantages are that the task is then rather artificial, and beyond the task itself, participants in such studies usually speak to a confederate to ensure that the listener does not

influence the speaker's gesturing with their own and to prevent the task from becoming a dialog. Furthermore, the speech and gesture are then largely limited to one semantic category, namely physical motion events, which are what are portrayed in the stimuli.

Our production study thus used the same stimuli (translated into the respective languages) and procedure as those employed in Becker et al. (2011). The procedure entailed recruiting university student volunteers in each country who in each case were native speakers of the language of interest. The French data were recorded in Paris, France, the German data in Bochum, Germany, and the Russian data in Moscow, Russia between 2012 and 2014.[18] We recruited participants in pairs who were friends or classmates to facilitate ease of interaction between them. Each pair was invited to come to the recording location, which was usually a classroom at a university. Communication with them was in their native language throughout the procedure. Informed consent was obtained with a two-part form (see Appendix A for an example in English; the form was translated into the native language of the participants in each location). The first part concerns participation in the study and was administered before recording began; at this point, participants were simply told that the research was about communication (a neutral approach, so as not to reveal our interest in verbs or in gesture, which might affect how naturally they might behave during the video recording). The second part was given to participants after recording, to allow them to choose how their video recording could be used for research purposes (they could choose the degree of anonymity). After recording, participants also filled in the Language Experience and Proficiency Questionnaire (LEAP-Q) (Marian et al. 2007) in their own language, which we could use to confirm their status as native speakers (i.e., target language as primary language used over most of their lives). They were then debriefed about the true goals of the study and thanked for their participation.

The stimuli were prompts for conversation and consisted of three main questions. (See Appendix B for the conversation prompts as given in each of French, German, and Russian) The first was a warm-up question, intended to help participants get into the task and to help them become more relaxed. This is especially important for obtaining more natural gestural behavior. The prompt was:

1. Tell about your favorite place in the world (city, region, or place you have visited).

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18. We gratefully acknowledge Camille Debras and Torsten Müller for collecting the French and German data (respectively) under the supervision of Raymond Becker, and Andrej Petrov and Jelena Karpenko for assistance with collecting the Russian data with Alan Cienki.

The second and third prompts allowed participants to choose from a set of possibilities, allowing them to talk more easily about whichever relevant situation or incident they remembered soonest. The second prompt concerned situations that would have taken some time and involved some effort:

2. Pick one from either of these two categories:
   Tell about a time when you had difficulty doing one of these things:
   Dealing with bureaucracy
   You ordered dinner in a restaurant in a foreign language.
   You were trying to get to sleep.

   Tell about a time when you did something you were proud of:
   You took up a personal challenge
   You organized a surprise party for a beloved one
   A close friend told you how much you had helped him/her.

The third prompt concerned something that would have happened quickly:

3. Pick one from this category:
   Tell about a time when you witnessed one of these situations:
   An accident
   Winning a sports event
   A random act of kindness
   A bizarre event
   A confrontation
   Something surprising.

The logic behind the two sets of categories was that it would allow for telling short narratives about events of different qualities – some took some time to transpire, and others that highlighted sudden events. The experience from Becker et al. (2011) showed that this succeeded in getting participants to tell stories about a variety of event types, and in so doing, to produce different verb forms and also gestures with different forms, functions, and movement qualities. Importantly for our study, it also resulted in the use of many past tense verb forms, since participants were talking about situations that had actually transpired, rather than talking about their dreams for the future, for example.

The fact that they were personal narratives had the advantage of making the participants more involved in what they were talking about (as opposed to having to tell about some stimulus that was presented in the lab). They were also conversational narratives, which helped make the situation more natural; we did not need solo monologs by the participants, so there was no problem if their talk was interrupted by their interlocutor for questions or feedback. The participants were instructed to each tell a story for each of the three main prompt categories, and they could each

choose the same or a different prompt subject. Both participants answered prompt 1 before moving on to prompt 2 and then 3.

The questions were provided on a computer monitor in front of the participants or on a piece of paper that was handed to them briefly (but not held by them while answering). The set-up for recording was essentially as shown in Figure 2.1. The camera was placed at sufficient height so as to be looking down slightly at the participants; this technique allows for easy viewing of gesture movements along all three axes (vertical, lateral, and sagittal), as shown in Figure 2.2. External microphones were added to cameras as needed for improved audio quality.

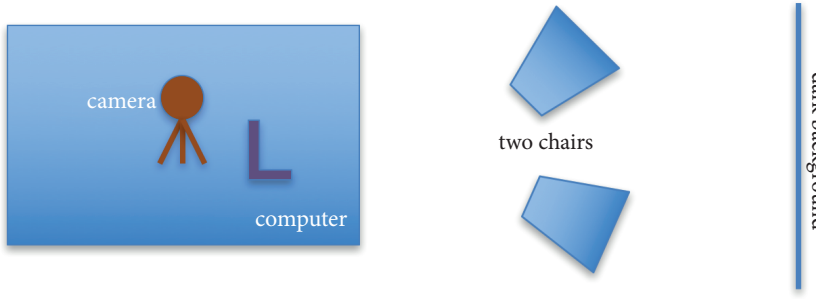

Figure 2.1 Set-up for recording conversations for the production study

Figure 2.2 Typical view of participants as video-recorded

Each session per dyad produced about ten minutes of talk. At least ten pairs of participants were recorded per language. In some cases, more dyads than that were recorded (for French 12, and for Russian 18). In those cases, we chose ten videos for analysis that were closest to the mean time of ten minutes (excluding exceedingly long or short sessions). This resulted in a corpus for each language of approximately 120 minutes of talk.

3. Categories used for the analysis of event construal in spoken language (*Cienki*)

The video-recorded conversational narratives were first analyzed for how event construal was expressed in each of the spoken languages (French, German, and Russian). A set of verb tense coding categories was devised for each language. The specifics are introduced in Section 5 of this chapter, where we explain the role played by the ELAN software in structuring and facilitating the standardization of the coding. The strategy for the coding began with a highly detailed division into verb tense categories, with an eventual focus for analysis on the specific past tense forms relevant to our research questions.

Performing this kind of coding with spoken language data introduces some additional considerations beyond what would be encountered in coding forms in a written, edited, published text, for example. The transcription of speech is itself a form of linguistic analysis (Edwards 1993). Decisions need to be made in the process of turning the fluid, dynamic spoken (audio) utterance into an objectified, static form, codified through discrete keystrokes on a computer. For our project, we transcribed partial utterances of words as they were spoken and only coded them using our categories for verbs if a sufficient amount of the word was uttered to allow for a categorization of the tense form. Omitted verb forms (i.e., via elision) were not transcribed or coded (even if they could be anticipated from context), since they were not uttered. Repetitions of words were transcribed, and repeated verbs were coded as their own units of analysis. Verb forms in reported speech were coded for the tense forms uttered.

An additional category coded for was "time meaning": past, present, future, and ø for infinitives and imperatives. This was introduced mainly to account for use of the historical present – narration about past events using a present tense verb form. To explain this with an example in English, the verbs in a phrase like, "I opened the door and I *see*…" would both be coded as involving a past time meaning, even though the second is a verb in the present tense. While ultimately this category was not one included in the scope of our comparative analysis, it remains one for potential future exploration, given its particular function in event construal of providing a shift in perspective.

4. Categories used for the analysis of event construal in gesture

4.1 Features for the gesture phases: Determining the unit of analysis (*Boutet*, *Müller*)

Conceiving of gestures as visible actions, Adam Kendon developed a system for the description of the phase structure of gestural movements (i.e. gestural actions; Kendon 2004: 111–113). Distinguishing gestural phases (smaller segments of a movement) from gesture units (bigger segments) was important in his undertaking of describing the sequences of gestural movements, of determining their meaning and their coordination with speech. At first sight, it appears simple to determine where a gesture begins and where it ends; but when trying to set up criteria for determining the beginning and the endpoint of a gesture, or to distinguish when a series of gestures is a repetition of one gesture or constitutes a complex gesture, this turns out to be quite challenging. Note that for any kind of statistical analysis of gestures the definition of units of gestural movement is the cornerstone. Deciding whether a succession of rhythmical beat-like movements is a repetition of several gestures or forms one complex gesture will have significant consequences for the results of one's analyses. In his search for valid criteria, Kendon was inspired by Laban and Bartenieff's movement analysis and their ideas of *effort* and *shape* with which a certain body movement was carried out (Bartenieff and Lewis 1980; Laban and Lawrence 1947). This most effortful part of the movement excursion of a limb movement, i.e., the part of the gesture in which "the movement dynamics of 'effort' and 'shape' are manifested with greatest clarity", are what Kendon (2004: 112) termed the *stroke* phase, forming the most meaningful part of the gesture. The phases that lead into and that follow from the stroke phase are termed *preparation* and *recovery*. A gestural stroke might be held after its peak of movement, which is termed a *post-stroke hold* (Kita 1993). In conjunction with the *preparation* (i.e. the movement leading into the stroke), the stroke and the post-stroke hold are considered a *gesture phrase* in Kendon's terms. A *gesture unit* will involve the recovery phase and may contain one or several gesture phrases:

> The *stroke*, then, and any *post-stroke* hold that there may be, as well as any preparation that leads up to the stroke, including any pauses or holds there may be in this phase of movement, define the *gesture phrase*. […] The *recovery* movement, when the hand (or other body part) relaxes and is returned to some position of rest is not considered to be part of the *gesture phrase*, although it is, of course, part of the *gesture unit* which contains the *gesture phrase*. (Kendon 2004: 112)

In a slight variation of Kendon's notion of gesture phrase and gesture unit, we defined *preparation* and the *stroke* of a gesture and the *recovery* as our basic unit of analysis, e.g., the gesture unit in Kendon's terms. Whenever the gesture consisted

only of a single stroke we included the recovery (sometimes also termed retraction); however, when the stroke was the last stroke in a multi-stroke sequence, we included the retraction phase of the last stroke.

The basic idea for determining whether a body movement is considered a gesture is that it constitutes a significant excursion of a limb and shows a basic sequential structure of preparation, stroke, and recovery. Bressem and Ladewig (2011) offer a refined account of phase structure analysis and of gesture phase annotation (Ladewig and Bressem 2013). For our study, however, we focused on the rather general distinction of the three phases as the unit for our comparative analysis of gestures employed with verb aspectuality expressed in speech.

Figure 2.3 sums up the composition of a gesture unit in visual terms. A gesture unit consists of phrases, and each phrase involves at least one phase (the stroke) and usually more (preparation and possibly a post-stroke hold). Figure 2.3 illustrates one gesture unit from the French data.

4.2 Pulse of effort as a kinesiological criterion (*Boutet*)

We chose a form-based, kinesiological account to determine the category type of a given gestural movement (Boutet 2001, 2010, 2015). This means that we coded gesture movement with regard to its physiological properties, and notably, without consideration of the type of co-occurring verbal expression. Annotators of gestures were blind to the co-occurring verbs (and thus also the verb semantics) in that boundary coding for gestures was done with the tier for verbs hidden in the ELAN annotation software, as explained further below.

It is also important to be aware that categorization based on visual perception from a video recording has a technical bias (depending on the amount of frames per second recorded by a given video camera), which, naturally, requires training for the annotator to get used to. The significance of the effect of this bias on the annotation procedure depends on which bodily segment actually moves. If the hand is the only segment in motion, the fingers may appear less blurry on the screen than if the arm moves, provoking a displacement of the forearm together with the hand. In this latter case, the hand will appear much more blurry (caused by the leverage effect induced by the arm and the forearm). Our annotation procedure accounts for these possible visual differences.

In short, we identified what we called *bounded* versus *unbounded* gestures (as introduced in Section 2.2.3, Chapter 1) based on the qualities of the movement, and here specifically, the acceleration and deceleration of the movement and the pulse-of-effort. We also used specific sub-categories of the boundary schemas, noted below, to decide if a gesture fell into the category of bounded or unbounded

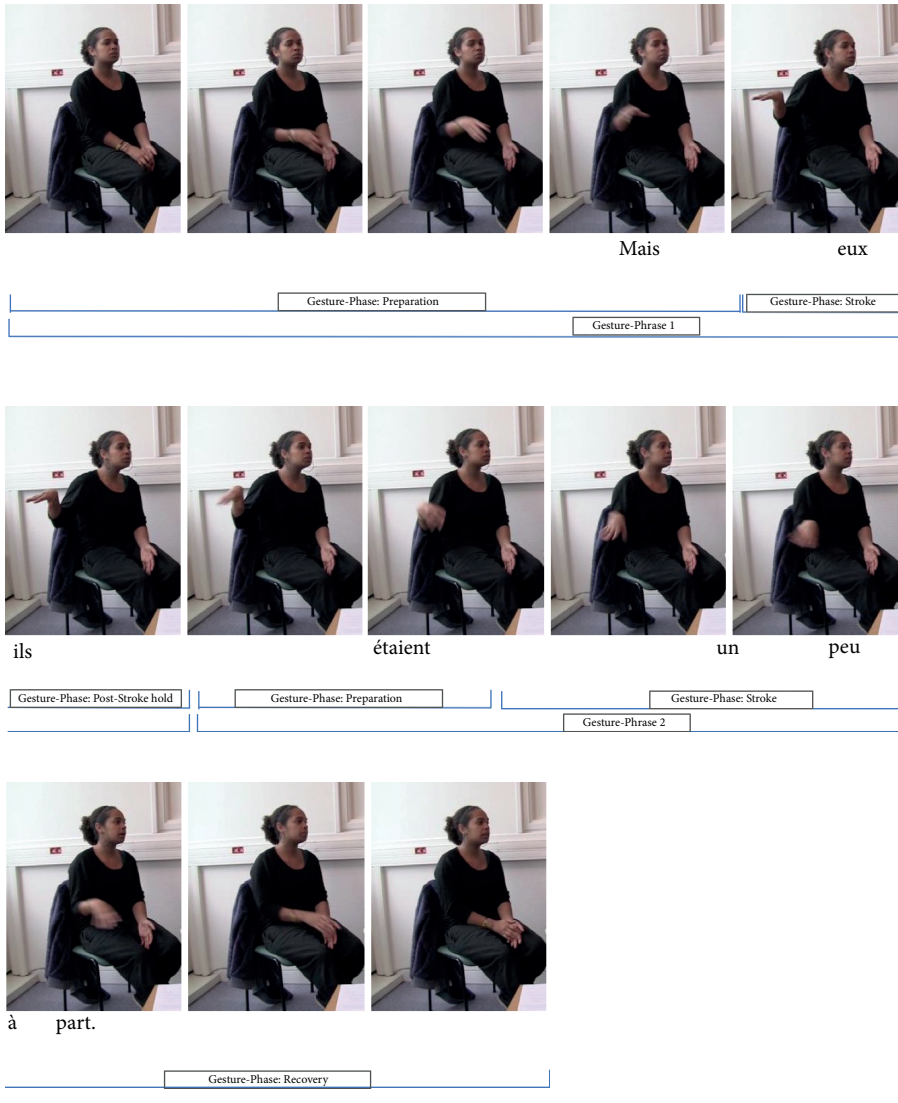

Figure 2.3 One entire gesture unit, its component phrases, and their component phases. The speaker says, "*mais eux, ils étaient un peu à part*" ('but them, they were a bit on the side').

ones. Manner of motion is the criterion that is most relevant for our study. Different forms of a gestural trajectory can contribute to expressing aspectuality in a kinesic medium. Whether curved or straight movements constitute bounded or unbounded movements for our study depends on the movement quality of their performance. For example, with a strong acceleration and a clear pulse of effort either at the beginning, or the endpoint of the movement, a curved gesture will

embody boundedness. Without such an acceleration and without a clear pulse of effort, when the movement is performed with a continuous, steadily controlled manner, a curved gesture will be unbounded.

These kinesiological dimensions in which gestures can express aspectuality involve a kind of decomposition of the gestural movement. A static (unchanging) hand-shape, the orientation of the hand, and the form of the movement trajectory tend to be congruent. The more of these features that co-occur, the more clearly a specific gesture can be coded as bounded or unbounded. We can consider these levels as congruent and interrelated kinesiological layers. Thus, the orientation of a hand is the result of a certain motion during the preparation phase of the gesture. In order to form a hand-shape, an initial motion of the fingers is compulsory. Even the trajectory of the movement depends upon which of the hand- or finger-segments is the first to move and in which order the segments are moving. Nevertheless, sometimes a gesture might be unbounded by its trajectory (e.g., a wave line) but bounded due to its acceleration. In these kinds of gestures we encounter a layering of expressive functions: while the trajectory depicts an unbounded form gestalt (which might connect with the lexical level of the verb), the quality of the movement (e.g., its acceleration) can express a bounded take on an event (as a pulse of movement, *in one go*). For our contrastive study of aspect construal, we have chosen the quality of the gestural movement, first, because this quality appears to connect/relate with our interest in the grammatical notion of aspect. Hand-shape, orientation, and form (shape) of movement, on the other hand, appear to resonate more with lexical aspect (which is not the focus of our study, and so these form parameters of gesture were not coded). This is what research on gestural conceptualizations of lexical aspect has indicated. Duncan (2002: 203) for instance writes that: "We saw instances in which gesture features that covary with verb aspect were incorporated even when doing so partially distorted iconic representations of the witnessed events."

Second, the quality of movement appears to be fairly independent of the remaining formational features of the gestures (hand-shape, orientation, form of movement) and this could be considered a kinesic parallel between a lexical and a grammatical level of meaning in language.

4.3 Bounded and unbounded schemas (*Boutet*, *Müller*)

For the boundary schema coding of gestures, we thus distinguished between two main types of schemas: unbounded and bounded. An unbounded movement shows no clear pulse of effort and a continuous control of movement (compare the notion of *gain control*, presented in Section 2.2.1.4 in Chapter 1). A bounded quality of

movement shows at least one clear pulse of effort, typically correlated with a strong acceleration or an abrupt deceleration. The pulse of effort might also involve a kind of tension in the gesture, as if the movement was restrained. In this case, the gesture deals with a counter force. Because of the contraction of the antagonistic muscles, the gesture struggles with the unfolding of these opposite forces.

We also settled on the following sub-categories as a means to hone in on the qualities of boundedness or unboundedness. For bounded movements this involved marked onset or offset, double-boundedness, multiple boundedness or punctual forms of marking a boundary through the movement quality. While these are characterized further in the description of the coding manual in Section 1.1, Chapter 4, we describe each of these briefly and imagistically as follows.

Subcategories of bounded gestures:

- Onset: An onset boundary involves a pulse of effort at the beginning of the gesture stroke, a ballistic movement, as might be used in throwing a ball with one hand.
- Offset: An offset boundary involves a pulse of effort at the end of the gesture stroke, which can entail a jerk – a rebound – at the end of the movement.
- Double-bounded: Double-bounded gestures involve an onset and offset pulse of effort, a kind of bounce at the beginning and at the end of the stroke.
- Multiple-bounded: Multiple boundedness involves a repetition of an onset or offset pulse more than once in a complex gesture stroke. An example would be a one-handed cyclic movement as if whipping cream in a bowl using a whisk: the cyclic motion is accented with the internal structure of rhythmic peaks of quick acceleration and deceleration.
- Punctual: Punctual boundedness involves a single pulse of energy in a quick forth and back movement, for example, a poking movement.

Unbounded movements included iterative movement patters as one alternative to the controlled and steady movement:

- Unbounded: Unbounded gestures involve controlled movement without a visible pulse of effort.
- Iterative: Iterative unbounded gestures involve a controlled movement in a repeated pattern, making a complex gesture stroke; an example would be a cyclic movement as if tracing the outside of a wheel rotating at a constant speed (a smooth movement structure).

The basic categories of bounded and unbounded gestures and the sub-types used for helping recognize them can be illustrated with the graphic form shown in Figure 2.4 (from Figure 1.1, repeated here for clarity).

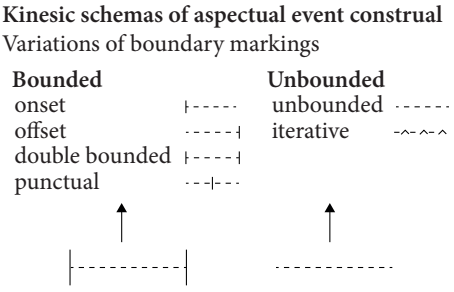

Figure 2.4 Schematic diagram of the gesture coding categories *bounded* and *unbounded* and their sub-types

In the next Section (5), we present how we used the software ELAN for annotating and coding the data, including the choice of the template and the hierarchy used for setting up the coding tiers. Later, in Section 1.1 of Chapter 4, we present details of the coding protocol used for the gesture analysis. This illustrates in more detail our criteria for doing the coding of the boundary schemas.

5. Bringing it all together: Annotation and coding (*Boutet*, *Morgenstern*)

Transcription and annotation of the data were conducted using the ELAN multimodal annotation software (Sloetjes and Wittenburg 2008) developed at the Max Planck Institute for Psycholinguistics in Nijmegen. ELAN is a professional tool designed for the multimodal annotation of audio and video resources. Transcription and annotation of the speech in our data were conducted according to temporal alignment based on the audio signal and gestural alignment was based on temporal alignment with the video signal. ELAN also enables researchers to make multilingual transcriptions in different alphabets, which was essential for our project as we needed both the Cyrillic and the Latin alphabets for the three languages we analyzed.

Each tier was created with the relevant configuration. The coding we designed consisted in a number of tiers with their respective labels, the content of each tier with its controlled vocabulary (see Section 5.1 below), the dependent links between tiers, as well as the type of dependence needed. This flexibility in our settings was very helpful for our multilingual coding as we used several fonts and had to link several semiotic resources.

Moreover, ELAN gives the possibility to define lists of items (controlled vocabularies) that can be linked to certain tiers. Thus, all the temporal forms associated to verbs in the three languages were coded using controlled vocabularies specific to each language in order for annotations to be exhaustive, stable, and as precise as possible.

The annotation schemas of the three languages were combined in the common template of the project (see Section 5.2 below). Each team had to activate the language they were working on in order to annotate the ten datasets collected for each language. The controlled vocabularies were well documented and can be used by other transcribers and other teams as well. The template we created is therefore durable and can be used for other languages.

In Section 5.1 we provide a synthetic presentation of the controlled vocabularies used, and in Section 5.2 we present the tiers we created, as well as the relations between them. At the beginning of Chapter 4, which presents the results of the gesture analysis, further details are given. These include the details of the coding protocol and the choices that were made (Section 1.1, Chapter 4); this will assist in understanding the assessment of gestural boundaries as well as the quantitative results presented in that chapter. During our coding process, we also set up several coding protocols in order to reach the best inter-coder agreement possible. They are presented in Section 1.2 of Chapter 4.

5.1 Choice of controlled vocabulary

A controlled vocabulary (CV) is a closed lexicon used in one or several tiers and which specifies a crucial annotation category for the analysis. Specific CVs were created for the four tiers common to the three languages: Tense, Time meaning, simultaneous presence of Hand Gesture, and Gesture Aspectual schema. Those CVs enabled us to maintain stable descriptive features for all the datasets we coded and a common vocabulary, which was possible because the three languages had those, features in common.

For the tiers that concern annotation of tense, the number of items and their labels varied according to the languages. We have

- 25 different items for German
- 24 for Russian
- 23 for French.

Those items include all the types of grammatical tenses that we encountered in our data. For past compound tenses such as *passé composé* or *plus que parfait* in French, or *Perfekt* and *Plusquamperfekt* in German, as well as for modal + main verb forms in each language, the coding consistently included both an auxiliary (AUX) and a participle (PART). When there was a succession of auxiliaries, we called them (AUX, AUX 2, AUX3, and when there were multiple participles PART, PART2, PART3, etc. (see Appendix C for further details).

For the three languages, we used a common vocabulary for time meaning and for gestures. The labels for time meaning were past, pres (present), fut (future) and 0 (absence of temporal reference). In this project, we focused on all the forms that were coded as past time as justified in Section 1.2, Chapter 1.

The controlled vocabulary for gesture coding was designed to categorize pulse of effort as the criterion to distinguish bounded and unbounded gestures. The controlled vocabulary is shared for the three languages. It is linked to the gesture Aspectual schema tiers. As described in Section 4.3, Chapter 2, the bounded gestures include the subcategories we called: *onset, offset, double-bounded, multiple-bounded*, and *punctual*. The unbounded gestures include the subcategories called *unbounded* and *iterative*.

The coding phase of the gesture boundaries was disconnected from the coding of the verbal content (both Tense and Time meaning tiers were masked when the coding of gestures was in process and the sound was off). During gestural coding, only the tiers for *Hand Gesture* for each speaker were visible. Gestural coding was conducted by native speakers who had not coded the verbal tiers, so that they could not have any memory of the verbal content and would not be influenced in their choices of gestural boundary coding.

The distribution of tiers is part of the coding configuration, which we present in the next section.

5.2 Choice of the type of template and hierarchy

A coding schema includes the whole structure of the coding (transcription and annotation) and thus contains the links between the different tiers, the relations with temporal alignment of the signal as well as controlled vocabularies. The coding schema in ELAN is called a template. Once it has been designed for specific data, it is possible to export it and re-use it with other data. The annotation schema does not include directions to actually conduct the coding (such as the order in which the coding is performed, the simultaneity or succession of the coding, etc.). Those details are presented in Section 1.1, Chapter 4.

The structure and the parenting (dependency) relations of the tiers are presented in Figure 2.5. Since each of the videos we used as data consisted of a pair of speakers, set up in the same way (described in Section 2, Chapter 2), we were able to identify the speakers according to their respective spatial locations on the screen; using "Loc" as the abbreviation of the French *locuteur* (for *speaker*), we identified them each time as *Loc*(utor) *left* and *Loc*(utor) *right*. What is said by each speaker is transcribed on their respective tiers. The transcription of speech was often segmented into intonation units or clausal units in order to avoid excessively long annotations.

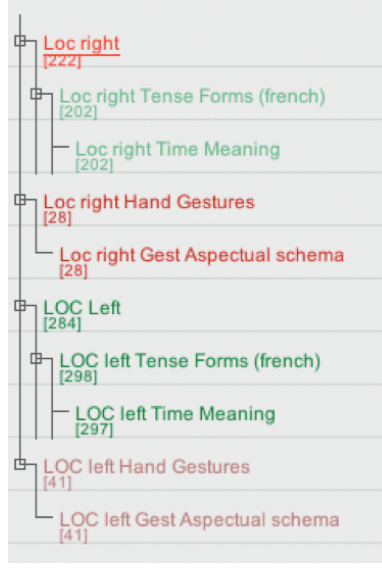

Figure 2.5 Relations between the different tiers of the annotation template designed in ELAN

The other tiers all contain different annotations. Two of the dependent tiers (also known as child tiers) of our transcription in the figure give the details of *Tense Forms* and *Time Meaning* and are associated to a specific CV, as explained earlier. The *Tense Forms* tier indicates the grammatical tense of each verb. Each of the verbs or its constituents (auxiliary, participle) was annotated according to the duration of its vocal production. As mentioned earlier, we only annotated the gestures if they overlapped the production of a verb. It was crucial to locate the moment of production of the verb very precisely. The *Time Meaning* tier is a child of the *Tense Forms* tier. It takes up the exact contours of each verb annotated in the *Tense Forms* tier and indicates if the verb is in the *past, pres*(ent), *fut*(ure) or *0*. When the verb was in the past and a gesture overlapped with its production, the *Hand Gestures* tiers (and later, the *Gest Aspectual schema* tiers) were also filled out.

Those two annotation tiers for gestures indicate not only the presence of a gesture co-occurrent with a verb in the past, but also its type of boundedness or unboundedness. Those two tiers are dependent and follow each other as the second one takes up the exact contours of the first one. If we take the example of *Loc right* in Figure 2.5, the number of gestures performed at the same time as a verb in the past is 28, just as the number of gestural boundaries. In the gestural coding, we considered only one type of boundary schema per sequence, performed with the dominant hand of each speaker (most frequently the right hand). We needed two gesture tiers since the second coder – the one coding gesture boundary schemas – had to

know the contours of each gesture without seeing the temporal label associated to it by the first coder. Part of the structure of the annotation schema was thus required by our coding protocol. We needed a clear separation between the verbal and the gesture coding but the coding of the gesture was also conditioned by a certain type of *Time Meaning* (*past*).

Having laid the groundwork of the data and methods of analysis we used for the production studies with native speakers of French, German, and Russian, the following three chapters present the results on the level of verb forms used (Chapter 3) and on the level of gesture use (Chapters 4 and 5).

CHAPTER 3

Speakers' verbal expression of event construal
Quantitative and qualitative analyses

1. Introduction: Construal of events in spoken narrative (*Iriskhanova*)

1.1 Basic features of narrative discourse

In this chapter consideration is given to general differences between written and spoken narrative texts, based on existing literature and on what we found for spoken language in the present research. Specifically, we look into the characteristics of the use of verbs in the data obtained during our empirical study of French, German, and Russian.

We proceed from the basic assumption that the way the speakers construe events and the linguistic forms they use while presenting the events, are dependent on the type of discourse they are engaged in. As it was described in Chapter 2, the research is based on the investigation of texts that are (a) narrative, (b) spoken, (c) elicited, i.e., produced orally by participants who fulfilled a series of storytelling tasks.

In relation to the aspectual properties of verbal event construal, the most crucial feature of narrative is that, unlike descriptive, expository, persuasive, argumentative, and other types of discourse, it is organized in time and typically renders a sequence of actions, processes, and states presented in a story.[19] Narrative discourse tends to be iconic in such a way that it usually follows the chain of events that happened in the past (Ungerer 2007).

This feature makes verb forms a key structural and semantic element of the construal of events in narrative discourse. Providing the temporal anchoring of events, verbs locate them in time, relate them to other events, zoom in or out of them with the help of various tense forms – past, present, future, continuous or simple. As we showed in Section 1.2, Chapter 1, aspectual forms of verbs, being closely intertwined with tense and mood, contribute to the temporal frame of a text. Most importantly, they indicate whether an event is construed as a complete whole, or as an entity that unfolds both in the speaker's mind and in the spatio-temporal continuum of the story.

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19. The word "verbal" is intentionally ambiguous here, as we mean event construal that is both "spoken" and "in verbs".

Basic characteristics of narratives have been extensively described by literary narratologists who relied on the structuralist and post-structuralist ideas of the Russian formalists (Propp, Tomaševskij, etc.), French semioticians (Barthes, Gennette, Bremond), and other researchers from various semiotic schools and traditions (e.g., Kristeva, Lotman, Chatman). Introducing the dichotomy of *fabula/sjužet* (*histoire/discours, histoire/récit, story/plot*), and the notions of *narrator, voice, mood,* and *focalization*, they showed that the construal of events, i.e. their order and duration as presented in a story, is subjective and depends on the speaker's viewpoint (see also Section 1.1.1, Chapter 1). What is important for the present research is that the broad approach, adopted by semioticians, encouraged multimodal studies of different modes of discourse, including gestures. However, works in narratology are mainly focused on literary discourse, and through that – on the structure and linguistic means of written texts (see Harrison et al. 2014 as a recent example of cognitive research in literary narrative discourse).

For the present study, it is also worth mentioning that some scholars, inspired by Benveniste (1959) and Weinrich (1964), investigate the grammatical markers of narrative literary discourse, including temporal and aspectual forms of verbs, as a separate issue (Fleischman 1990; Padučeva 1996; Petrukhina 2000; Plungjan et al. 2008).

1.2 Basic features of spoken narratives

Recently, researchers have been indicating that it is spoken storytelling that constitutes the prototype of all narratives (Fludernik 1996; Herman 1999). Scholars in oral discourse analysis cite the pioneering works by Labov and Waletzky (Labov 1970; Labov and Waletzky 1967) as a starting point for spoken discourse analysis. Labov and Waletzky (1967) suggested that in spoken narratives, oral delivery of events corresponded to such structural elements as abstract, orientation, complicating action, evaluation, results, and coda. As we show below in Section 4.2, Chapter 3, taking the Russian data as an illustration, these structural elements influence the usage of aspectual verb forms and gestures. Importantly, Labov and Waletzky's works introduced oral natural storytelling as a subject of linguistic research, which gave rise to numerous studies of conversational discourse in sociolinguistics, conversational analysis, psycholinguistics, and cognitive linguistics (e.g., in Eggins and Slade 1997; Emmott 1999; Kibrik 2003; Langlotz 2015; Linde 1999; Norrick 2000; Reilly et al. 1990; Rumelhart, 1977; Sacks 1995; Schiffrin 1996; Tannen 1989; Wolfson 1978; Zemskaja 2004). However, it should be noted that few discourse analysts study oral narratives, if compared to the many who analyze dialogical interaction.

Apart from the basic structural principles and strategies of storytelling, researchers generally investigate key linguistic features of the oral mode that are manifested in spoken narratives in various languages. Let us briefly present the properties mentioned most often in the literature on narratology:

1. Oral narrative, like written narrative, *represents temporal sequencing of events*, which means the following:
   - Past tense forms of verbs are a basic feature of this mode of communication. Languages differ in the number and functions of past tense forms they have in the perfective and imperfective aspects (cf. the use of tenses and aspectual forms of verbs in the French, German, and Russian data in Sections 2, 3, and 4 in Chapter 3).
   - Some events are foregrounded against others, which is realized through the opposition of perfective and imperfective forms.
   - One of the widely spread characteristics is the use of the conversational historical present to create the effect of zooming in on the event.
2. Storytelling is *embedded in the communicative situation*, which has a number of implications.
   - Various deictic means are used to construe the frame of reference – both within the story (e.g., temporal and spatial deixis) and within the context of interaction (e.g., personal and social deixis).
   - Elliptic constructions, and verbs and nouns with general meanings, are extensively used by many storytellers and at various points in the narratives, especially when the situation allows for semantic indeterminacy.
   - Verbs with concrete meanings are also common, especially for everyday topics (e.g., verbs of physical actions, movement, emotional states (internal or psychological events), verbs of speech, etc.).
3. Spoken narrative is *intersubjective*, or listener-oriented, and often contains elements of dialogic discourse, such as:
   - intensifying constructions;
   - emotional words and expressions;
   - repetitions that mirror the listener's communicative behavior;
   - quotations of other speakers, which can bring about shifts in tenses and aspect.
4. Spoken narrative is *spontaneous*, resulting in the following syntactic, lexical and pragmatic features:
   - simpler syntax;
   - loose coordination between clauses: an abundance of additive constructions (*and, so)*;

- a limited repertory of lexical and grammatical means (e.g., copula verbs [*was, to be*]; auxiliary and modal verbs [*should, can*], epistemic verbs [*to know, understand*], etc.);
- parallel constructions;
- self-repairs, hesitations, pauses;
- deviation from grammatical norms;
- conversational clichés, discourse markers that can include verb forms (e.g., Russian *tak* ***skazat'***$^{Perf\ Infin}$ 'so to speak, well').

1.3 Some preliminary remarks on the textual data

As we demonstrate in Sections 2–4 of Chapter 3, most of the properties mentioned above are to be found in the data in the three languages.

The last observation concerns the feature of the texts that was mentioned at the beginning of this introductory section, namely, the elicited nature of the spoken narratives under analysis. It is often stressed by researchers that elicited narratives should be distinguished from spontaneous narratives, because the former are usually told to interviewers in the "artificial" environment of an experiment (Fludernik 1996; Labov and Waletzky 1967). Nevertheless, we consider the texts from our data to be fairly natural discourse (see Section 2, Chapter 2), because the communication took place in each case at a university between students who were well acquainted with each other, which means that the environment was close to that of their everyday interaction. Besides, the tasks encouraged the participants to produce real-life stories and to spontaneously share their personal experiences with each other. One extra argument in favor of the spontaneity of the texts is the fact that the speakers made extensive use of different kinds of co-speech gestures, which points to the natural character of their communication.

Therefore, although we were aware of the fact that the experimental environment could make the participants feel self-conscious, we found that all the key features of natural spoken narratives were manifested in the texts that we videotaped for the present research.

In the sections below we present general quantitative and qualitative analyses of the use of aspectual verb forms with past meanings in French, German, and Russian. Although the materials were all obtained in a similar way, the analyses are not identical, offering different accents depending on the language structure, and on the results obtained in each data set (see Section 1.2, Chapter 1, for more details on the three traditions). For example, in the French section we look at the use of tenses and their grammatical aspectual meanings, paying attention to such features of the tense use as the historical present tense and its role in the spoken

narratives; the German section, following the present-day tense-grammatical approach in describing aspect, provides an additional analysis of some Aktionsart characteristics of verbs as they manifest themselves in the spoken storytelling. The Russian part, offering a lexico-grammatical pattern of analysis, describes temporal, morphological, and semantic properties of the aspectual forms of the verbs, linking them to the structure of spoken narratives offered in Labov and Waletzky (1967). Thus, it is shown in this way that the complex entanglement of grammatical and lexical properties of aspect in this language calls for a more refined semantic and pragmatic analysis at this stage of research.

2. The French speakers' verbal expression of event construal (*Morgenstern*, *Boutet*, *Debras*)

This section focuses on the analyses and specific features of the verb forms produced by the native French speakers in the data collected for the project. As explained in Chapter 1, traditionally, three main tenses in French were said to be in competition to refer to past events: *passé simple, passé composé,* and *imparfait*. The *plus-que-parfait* (past perfect) is also used to mark anteriority and to break the chronology of the narration – for argumentative purposes for example. However, contemporary oral French is characterized by the disappearance of the *passé simple*. It is replaced by the *passé composé* and the use of "historical" or "narrative" *présent simple* when reference to time is sufficiently explicit either in the extra-linguistic context or in the dialogue.

Our first observations of the data confirm that the *passé simple* does not occur and that the speakers whom we video-recorded use narrative present when they are making vivid descriptions of events they have participated in or have witnessed and when the "affordances" (Gibson 1979) of the situation and the context are relevant for past tense not to be marked morphologically on the verbs. The focus of this chapter is to further characterize the various functions of those forms in context through quantitative and qualitative analyses of the data.

2.1 Background on the uses of tenses in narratives

Formal studies of the uses of tenses in French in written narratives (Coseriu 1976; Guillaume 1971; Martin 1971; Vet l980; Wilmet 1970), employing very different approaches and terminologies, all resort to the notion of perfective and imperfective to explain the differences between the uses of the *imparfait*, the *passé simple*, and the *passé composé* in French. Weinrich (1964) proposed another analysis as his

hypothesis was that rather than marking an aspectual difference, *imparfait* and *passé simple* formed a grammatical system with the purpose of putting the narrative into relief. According to him, the *passé simple* indicated the foreground of a narrative and could string events together. The *imparfait* was used for the background and to describe a situation or actions that were simultaneous to the events focused on; they could be continuous actions as well as hypotheses or comments. The events in the *passé simple* were a factual report of the past, whereas the events in the *imparfait* directed the reader or hearer through the world as it was narrated and made them focus on certain events. The alternations between the two tenses were described as being based on this distinction (Weinrich 1964/1973: 115–117). Reid (1976) took up this hypothesis and differentiated the *passé simple* as indicating a focus on events, whereas the *imparfait* indicated little attention to the event. If we compare those views to more general research on aspect, we find that Hopper (1979) also associated perfectivity with the foreground and imperfectivity with the background.

Wallace (1982: 209) discussed Hopper's views by differentiating languages: if a language marks a clear contrast between perfective and other aspects, then part of the meaning of perfective aspect in narration is devoted to the description of main sequential events, whereas part of the meaning of the non-perfective aspect, and especially the imperfective, is to give background to additional information. Bres (1988) in his analyses of written French, also contends that French past tenses express clear aspectual distinctions that might be used for specific discursive effects.

As mentioned earlier, in oral French the *passé simple* has been replaced by the *passé composé* and by the narrative present, as we also illustrate with examples from our data. In many cases, rather than having a dyadic system with two aspects for the same reference time, there seems to be an alternation between the three tenses used to refer to past events: *imparfait*, narrative/historical present, and *passé composé*. We turn to the analyses of extracts of our data in order to capture the aspectual distinctions between the tenses that speakers use with subtle discursive and pragmatic values. Each tense is analyzed in context and in opposition to the others.

2.2 Quantitative analyses

We coded time meaning and tense for each verb in the data, as described in Sections 3 and 5 of Chapter 2. Our results for the coding of time meaning confirm the fact that our protocol elicited a majority of references to the past. In line with our previous work on spontaneous interactions, we expected that in oral discourse, on average, the present time should be predominant (Parisse and Morgenstern 2012). In the data we collected for this study, thanks to our protocol focused on narrative elicitation, 52% of the verb forms used referred to past time. References to the future are quite rare (3%). The present tense (*présent simple*) is the most frequent tense form used

in the data, it represents 45.7% of all verb forms used in the data, out of which only 10% refer to past time.[20]

In our analyses we focused on the verbs used in the *imparfait, passé composé*, and narrative *présent simple* (*présent historique*) and compared the rates for each tense. Interestingly enough, the percentage of the use of the present tense to refer to past events is quite important (13%), as expected in French informal conversations, but has not replaced the use of *imparfait* and *passé composé* (87% in total) (see Table 3.1).[21]

Table 3.1 Number and percentage of verb forms used with past time meaning (French)

Imparfait	*Passé composé*	*Présent historique*	**Total**
457	443	130	1030
44%	43%	13%	100%

If we compare the use of perfective and imperfective aspectual forms in the French narratives, we see that their distribution is almost equal, with 44% for the *imparfait* and 43% for the *passé composé* from the total amount of the verbs with past tense meanings.

In our qualitative analyses that follow we focus on the subtle differences between the uses of *imparfait, passé composé,* and *présent simple*.

2.3 Qualitative analyses

We chose to focus on three examples in order to analyze the functions of the three grammatical tenses *passé composé, imparfait* and *présent simple* in relation to each other and according to context. Our analyses also show how the use of grammatical tense in French is to be analyzed according to the verb's lexical aspect.

2.3.1 *Difference between the* passé composé *and the* imparfait

In Extract (3.2.1)[22] we find two forms of *passé composé* and two forms of *imparfait* used with verbs that refer to different types of events.

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20. All the other forms refer to present time save two occurrences referring to the future.

21. For the sake of simplicity, Tables 3.1 and 3.2 for French and German focus only on the particular tense forms listed, and so do not get into other possibilities with past time meaning (such as past perfect tense).

22. Extract numbers consist of the chapter number (here: 3), main section number (here: 2), and the particular example number, yielding, in this case: (3.2.1).

Extract 3.2.1 Two participants identified here as "LAU" and "CLA" (time code 2:29)[23]

*CLA: Elle **est tombée**, et en fait elle a dû dévaler les [/] les marches et personne n'**est allé** la voir.
('She **fell** and in fact she must have tumbled down the stairs, and no one **went** to check on her.')

*LAU: *puzzled expression*.

*CLA: Donc euh tout le monde **passait** à côté.
('So, um, everyone **was walking** past her.')
Et i(l)s en **avaient** rien à faire.
('And they **could**n't care less.')

The two occurrences of the *passé composé* have two different functions. In the context, *elle est tombée* ('she fell') describes a punctual event that happened once: as she was running down the stairs, the person mentioned by CLA fell. This could correspond to what could have been a *passé simple* in written French. The second use of the *passé composé* is a global assessment, *personne n'est allé la voir* ('no one went to check on her') and presents a result: there is a scanning process marked by the noun *personne* ('no one'), which integrates negative quantification. Out of all the possible subjects that could have stopped to help, no one has fulfilled the predication mentioned. This probably happened over a certain length of time, but duration is not focused on; the event is described in terms of its result and is presented as a whole.

The two forms of *imparfait* are also used with slightly different functions. The first form, *tout le monde passait à côté* ('everyone was walking past [her]') describes an event with its internal composition and its duration. The verb *passer* is fitting here, as it is an activity verb without telicity. The grammatical subject *tout le monde* ('all the people') marks a totalization of all the possible people who walked past her and the event is presented as ongoing: each discrete occurrence of a person passing by is added to the others and the total forms a continuous event.

The second occurrence *ils en avaient rien à faire* ('they couldn't care less') is stative; it characterizes the people passing by. Both forms could be analyzed in Ducrot's terms (1979: 6), "when an utterance is in the *imparfait*, the state or the event are presented as properties or features of the theme and qualify it in its totality".[24] This perspective seems to apply to the two *imparfaits* used here as they qualify the people and focus on their properties. Ducrot's characterization of the *imparfait* can also explain why we find so many state verbs in the *imparfait*. Indeed out of all

23. Translation in English of the extracts are made so as to provide as many cues as possible to understand the tenses, verbs, and syntax used when necessary for the analysis. The translations are thus sometimes more literal rather than more stylistically felicitous.

24. "Lorsqu'un énoncé est à l'lmparfait, l'état ou l'événement constituant son propos sont présentés, comme des propriétés, comme des caractéristiques du thème, et qualifient celui-ci dans sa totalité."

the lexical verbs in the *imparfait* coded in the data, 72% are either state or cognitive verbs. In this extract, if we use Vendler's categories (1957), the verbs used in the *passé composé* are an achievement verb (to fall) and an accomplishment (to go and see her).[25] The verbs used in the *imparfait* are an activity (to pass by) distributed over a number of people (*tout le monde*/'everyone') and a state ('not to care'). They are congruent with the tenses used. An analysis in terms of background and foreground could be made. The focus of this extract of the story is the woman who fell and what happens to her. The main information is given in the *passé composé* and foregrounded. The information given in the *imparfait* could be seen as a response to the interlocutor's puzzlement, rendered with a facial expression, to which the speaker reacts immediately by giving more background information. But those narrative properties are derived from the aspectual values that the grammatical tenses *passé composé* and *imparfait* express: punctuality of the event or resultative for the *passé composé*, characterization and ongoing activity for the *imparfait*.

2.3.2 *Use of the present tense in narratives*

The *imparfait* enables the speaker to construct the framework in a narrative, but the present tense is chosen to depict some of those events, once the temporal distance has first been set and maintained over a few turns with the use of the *imparfait*, as shown in Extract (3.2.2).

Extract 3.2.2 SYL and ANI (time code 6:02)

*SYL: Ben ce qui me vient à l'esprit là tout de suite +… c'est une confrontation dans laquelle je me **trouvais**.
('So what comes to my mind here … is a confrontation in which I **was involved**.')

*ANI: *Shakes her head*. Forcément! ('Well of course!')

*SYL: Forcément. Donc j'**étais** avec un groupe d'amis.
('Of course. So I **was** with a group of friends.')

*ANI: Un fouteur de merde. ('A trouble maker.')

*SYL: Non mais c'est pas moi en plus. ('Not at all, it's not even my fault.')

*ANI: *laughs*.

*SYL: Je suis la victime dans cette histoire. On se **baladait** avec des amis, il **était** quatre heures du matin. On **accompagnait** quelqu'un pour prendre un bus, quand soudain une voiture s'**arrête**.
('I am the victim in this story. We **were taking a walk** with friends, it **was** four in the morning. We **were accompanying** someone to the bus, when suddenly, a car **stops**.')

*ANI: *laughs*.

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25. Vendler's categories to differentiate lexical aspect have been largely criticized in subsequent literature, but for the purpose of this study, the distinctions he drew are useful when correlated to the use of grammatical aspect.

*SYL: *laughs*. Et cinq mecs **sortent**, et **commencent** à casser la gueule d'un pote. Du coup je **commence** à rentrer dedans, et je me **fais** défoncer.
('And five guys **get out** and **start** smashing one of my friends' faces. So I start fighting and I **get** totally crushed.')
*ANI: T'**es** sobre bien sûr. ('You **are** sober of course.')
*SYL: Ouais non pas trop. ('Well, not really.')
*ANI: *laughs*.
*SYL: c'est vrai qu'après au commissariat pour le test [*laughs*] moyen. Et euh et donc ouais donc euh je me **relèv**e, j'en **vois** un autre.
('To tell the truth, afterwards, at the police station for the test [laughs] it was not great. So then hum well, I **get up**, I **see** another guy.')

This extract is characterized by the alternation between *imparfait* and *présent*. The *imparfait* allows the speaker to clearly mark that the event took place in the past and gives all the background: *je me trouvais* ('I was'), *on se baladait* ('we were taking a walk'), *il était quatre heures du matin* ('it was four in the morning'), *on accompagnait* ('we were accompanying'). When the speaker has finished setting the scene, he then introduces a punctual sudden event with the adverb *soudain* ('suddenly') associated to the present tense: *quand soudain une voiture s'arrête* ('when suddenly a car stops'). We could have expected a *passé composé* here to continue marking the temporal displacement as well as punctual aspect (which would have corresponded to the function of now "extinct" *passé simple*). The series of events that follow are also in the present tense in a quick succession. When ANI reacts with a comment about being sober, she aligns with her friend and takes up the present tense, even though she is referring to the same past situation and to her friend's state during that episode. She is using the state verb 'to be' (*t'es sobre*/'you're sober') and if she had marked past tense, the form used would have been the *imparfait*: *tu étais sobre*. Narrative/historical present is thus used in the place of *passé composé* as well as *imparfait*. Aspectual differences are not overtly marked when using present tense.

This extract shows that in oral French, once displacement is expressed with the *imparfait*, present tense could then be used both for events presented as punctual (that could be considered as perfective) and for properties (that could be considered as imperfective). Aspect can only be derived from the semantic value of the verbs in context. The two speakers both eliminate all grammatical marking of time and aspect as they vividly engage in the depiction of the scene and their reactions to it.

At the beginning of the extract, there is a clear alternation with *imparfait* to mark imperfective features and *présent simple* for perfective features. But this distinction is not needed anymore as ANI gets as engaged as her friend in his depiction and reacts to it with the use of the *présent simple* to render a state, which could be categorized as imperfective. Our close analysis demonstrates that the use of the tense system in oral French is dynamic. Different microsystems form successively, as the interaction unfurls and speakers react to each other's shaping of events.

2.3.3 Alternation between *imparfait, présent simple,* and *passé composé*

The intricacies of the French tense system in oral interactions can be further observed in Extract (3.2.3): EMI and CAM are talking about CAM's trouble getting registered at the university.

Extract 3.2.3 CAM and EMI (time code 2:35 to 3:54)

*CAM: Il se trouve que euh j'**étais** pas à Paris pendant mon inscription à la fac, et euh et donc c'est ma mère qui m'**a inscrite**. Et trois mois après mon inscription, j'**avais** toujours pas **reçu** mes certificats de scolarité. Ca **faisait** deux mois que je **payais** ma carte navigo semaine par semaine et que ça **commençait** à coûter un petit peu cher [*laughs*]. Et j'**avais** pas non plus mon petit stickers pour ma carte d'étudiante.
(It so happens that I **was** not in Paris during my registration at the university and, well, it's my mother who **registered** me. And three months after my registration, I still **had**n't **received** my university certificates. It **was** two months that I **had been paying** my metro subscription week after week and that it **was starting** to be a little expensive [*laughs*] and I **did**n't have my little sticker on my student card either.)

*EMI: catastrophe! (damn!)

*CAMI: catastrophe [*laughs*]. (damn!)

*EMI: [*laughs*].

*CAM: Et euh donc je **vais** une fois au bureau je me **fais** littéralement rembarrer.
(and hum, so I **go** to the office and I **get** totally rebuffed.)

*EMI: [*laughs*].

*CAM: On me **dit** de revenir dans une semaine. Je **peux** pas revenir la semaine après, je **reviens** deux semaines après.
(I'**m told** to come back in a week. I **can**'t come back the following week, I **come back** two weeks later.)

*EMI: + <; 0 [*laughs*] aussi non <les xxx> [///] les horaires d'ouverture ne **correspondent** pas. (well, you also have to say that the opening hours don't **correspond**.)

*CAM: ah oui! (oh yeah!)

*EMI: +; < ah ça! le pire ! (Really, the worst!)

*CAM: +; < Enfin bon j'**y suis allée** trois fois avant mais bon, quand j'**ai réussi** à y aller [*laughs*]. (So well, I **went back** three times before, but well, when I **was able** to go.)

*EMI: [*laughs*].

*CAM: Et j' y **retourne** deux semaines après, et une fois de plus <ah ben non i(l) faut attendre comme tout le monde> [*reported speech*]. Oui sauf que tout le monde **a déjà reçu** tout. (And I **go** back two weeks later and once more: "oh no you have to wait like everyone else". Except that everyone **has** already **got** everything.)

*EMI: [*laughs*].

*CAM: Donc euh voilà. Et en fait finalement c'est pas vraiment moi qui l'**ai résolu** en fait le problème, c'est plus mon père. Parce que quand il **a vu** que les chèques d'inscription étaient retirés de son compte mais que mes certificats de scolarité étaient toujours pas là…
(So that's it. In fact finally, I'm not the one who **solved** the problem, my father **did**. Because when he saw that the checks for registration had been debited from his account and that my university certificates still were not ready…)
*EMI: Mais que toi tu pouvais toujours attendre.
(you could have waited indefinitely.)
*CAM: Il s'**est** pas **énervé** mais presque.
(He **did**n't exactly **get furious**, but well, almost.)

There are three separate moments in this extract that are clearly delimited by the main speaker's use of tenses: (1) *imparfait* used for background information; (2) use of the *présent simple* for a vivid depiction of the narrator's actions; (3) use of the *passé composé* with a focus on another main protagonist, the speaker's father, and to conclude the story.

At the beginning of her story about her registration, that took place in the past, CAM sets the scene in the *imparfait* in her first long turn to give all the necessary background, except for the main fact, a specific event viewed globally: her mother went to register her. That event is expressed with a *passé composé* using an achievement verb set in a cleft sentence for better focalization (*c'est ma mere qui m'a inscrite*/'it's my mother who registered me'). The two tenses form a coherent system. It is worth noting that even the telic verb *payer* ('to pay') is used in this passage in the *imparfait* (*ça faisait deux mois que je payais*/'I had been paying for two months') as all the verbal forms are harmonized and give the contextual information needed before the actual string of events can be told. This could be analyzed in terms of "deperfectivization" for both discursive purposes and to create continuity out of iteration, since paying the weekly subscription happens punctually at the beginning of each week.

Then, when CAM arrives at the key moments of her story, she changes her tense system and uses the *présent simple* to reenact the successive events that took place instead of using the *passé composé*, which could be considered as the more standard form to narrate a sequence of events in the past. Thus, once she has set the scene, and has expressed that the situation took place in the past by using clear past tense marking, she turns to a more vivid depiction and eliminates all past time marking and thus displacement. Interestingly enough, in this part of the story, the only character in the story present in the room, herself, is the main protagonist and agent. She can reenact the scene she has participated in. Her main tool for this reenactment is her use of the present tense. She is not embodying the scene with more emphatic gestures or postures or prosody than in the rest of her story but simply eliminating all marking of the temporal discrepancy between speech time and event

time. She also reenacts the speech addressed to her with direct discourse without using a quotative verb, which would have marked the discontinuity in the various voices, and says it directly, only using prosody to indicate the change of primary speaker: *il faut attendre comme tout le monde*/'you have to wait like everyone else'.

According to Silva-Corvalán (1983), the historical present is a tool that enables the speaker to make her or his narration more dramatic. In the Spanish narratives she studied, the historical present is used precisely in the most important moments of the narration. The central point of a narration is defined as being the moment when the tension is at its maximum and from which the story will then be targeted towards the resolution of the conflictual or dramatic situation (Labov and Waletzky 1967; Silva-Corvalán 1983).

In this second part, focused on the speaker's past actions, the narrator seems to be producing the present with the same effects as Spanish speakers. But she also alternates at the end between present tense and *passé composé*. The *passé composé* is used in two different cases: assessments and subjective comments. As far as assessments are concerned, the speaker recapitulates various events. In *j'y suis retournée trois fois*/'I went back there three times', the three times are synthesized in one utterance. In *tout le monde a tout reçu*/'everyone had already received everything' there are two scanning processes, which result in a totalization process marked by *tout le monde* ('everyone') and *tout* ('everything').

Subjective comments are also made in the *passé composé*. The two girls have discussed how difficult it is to go to the registration office both because of its impractical opening hours and because of the narrator's schedule, and CAM ironically takes that up by talking about "succeeding" in going there: *quand j'ai réussi à y aller* 'when I was able to go'.

In the third part of the story, the resolution is done in the *passé composé,* which alternates with the *imparfait*. The speaker turns back to a tense that enables her to mark chronological time and she is going to present the resolution of the conflictual situation thanks to another protagonist's intervention: her father. Resolution is actually expressed not only by the grammatical tense, but also in the lexical verb used (*résolu le problème*/'solved the problem'). The *imparfait* is used for stative verb forms (the state of the bank account/the non-existence of the certificates).

In each moment of the story, the speaker, who is a skillful user of French tenses, creates a microsystem in which verb tenses are quite effective to help her in her narrative performance. Dramatic effects are achieved thanks to the core functions of the tenses produced. *Imparfait* is used for state verbs, characteristics, and properties of the events and of the situation that are presented with their internal features; *passé composé* is used to make assessments and comments with an external, integral perspective; and *présent simple* – to make vivid depictions of successive events and eliminate displacement.

2.4 Concluding remarks

Speakers of oral French alternate between the uses of *imparfait, passé composé*, and, to a lesser degree, *présent simple* to refer to events that occurred in the past. Those forms have specific functions that can vary according to context. In our detailed analyses, we focused on the changing micro-systems in which the tenses work in opposition/alternation with each other.

Imparfait is mostly associated to state and activity verbs, to background information and to capture the internal texture of an event as it unfolds. It is thus described in the literature as imperfective, unbounded or non-delimited, and *in-accompli* (non-completed).

Passé composé is associated with the perfective aspect, as it is used for results and overall assessments (*accompli*/completed aspect). It has also taken on the punctual function of the *passé simple*, which is not used in oral conversations any longer, especially when describing a succession of past events. It is mostly used with verbs of achievement or accomplishment. *Passé composé* is therefore either used to present a past event as an integral whole or to refer to a specific punctual event in the past. Context and the semantics of the verb help the interlocutor distinguish between those two aspects.

When a narrative becomes vividly depicted, speakers stop marking the discontinuity between present and past time and use the *présent simple*, often for punctual events, but also for activities and properties or qualities of the event. When it alternates with the *imparfait*, which marks imperfective aspect and past tense, the present does not mark reference to the past, however it acts as the default tense to indicate perfective aspect, by contrast. But when it is used without alternating with other tenses, there is no specific opposition and the present is neutral in terms of time meaning as well as aspect.

We have therefore observed in our examples taken from oral interaction how French speakers can use the core features of the French system in a dynamic interactive way according to discursive, pragmatic, and semantic features and how they construe the event.

3. The German speakers' verbal expression of event construal (*Müller*)

Being a fairly complex language morphologically, German is well known for its rather elaborated system of expressing Aktionsart, e.g., lexical aspect that is part of word-formation principles. When it comes to aspect as a dimension of tense meaning, German might not be considered one of the typical examples for this grammatical phenomenon. What may come to mind first are the Romance languages,

and specifically French, with its highly prominent aspectual dimension of its past tenses (cf. Section 2, Chapter 3). However, the idea that German past tenses (e.g., *Präteritum* and *Perfekt*) also express an aspectual notion is common sense not only in descriptive grammars of German, but also in linguistic theories of the German past tenses.[26]

3.1 Introduction: Specifics of aspectual event construal in tense forms in spoken German

In an in-depth analysis of the temporal structure of the German *Perfekt*, Wolfgang Klein (2000) points out that basically all descriptive grammars of German assume an aspectual opposition on the level of (past and present) tense meaning, that involves a binary opposition characterizing the verb action as a complete whole or not, as perfective or imperfective, as conceived with or without reference to temporal boundaries. While *Perfekt* and *Plusquamperfekt* express achievement and completion, *Präteritum* and *Präsens* present an event as ongoing, as a process. With regard to time meaning, grammars of German characterize *Perfekt* as well as *Präterium* as having the same time-relational meaning: "they both mark that the situation referred to by the utterance precedes the time of utterance" (Klein 2000: 5]). They differ with relation to "style, dialect, 'aspect' (in whichever sense), or perhaps textual function" (ibid.). Referring to '*Grundzüge*' "the most comprehensive modern German grammar" (*Grundzüge* 1981: 508) Klein (2000: 5) quotes the following passages:[27] "*Präsens* and *Präteritum* characterize what happens or is the case – as designated by the verb – from a process point of view ('durative'), i.e., no temporal boundaries are indicated. … *Perfekt* and *Plusquamperfekt* characterize what happens – as indicated by the verb – as achieved, completed ('perfective')." Klein adds that a "distinction between 'process side' and 'completion side' is found in virtually all descriptive grammars of German" (Klein 2000: 5) (e.g., Eisenberg's 1986 grammar). This means that basically all descriptive grammars of German assume an aspectual opposition on the level of tense (*Perfekt* versus *Präteritum*).

In a critical stance towards these traditional analyses of the German tenses, and in a comparative perspective with the English tense system, Klein develops a

26. The German terms will be retained for reference to the German tense forms: *Präsens* (present), *Präteritum* (preterit), *Perfekt* (perfect), and *Plusquamperfekt* (pluperfect).

27. "Präsens und Präteritum charakterisieren das durch das Verb bezeichnete Geschehen oder Sein unter dem Aspekt des Verlaufs ('durativ'), d.h. eine zeitliche Begrenzung wird nicht angezeigt. … Perfekt und Plusquamperfekt charakterisieren das durch das Verb bezeichnete Geschehen als vollzogen abgeschlossen ('perfektiv')" (*Grundzüge* 1981: 508) (translation from Klein 2000: 5).

formal time-model for the explanation of the German tense meanings of *Perfekt* and *Präteritum*. In this model, tense as well as aspect are considered as specific "temporal relations between temporal intervals" (Klein 2000: 8). Against the background of a critical discussion of several Reichenbachian (based on Reichenbach 1947) analyses of German tenses, Klein distinguishes three different types of temporal intervals: time of utterance (TU), topic-time (TT), and time of situation (T-SIT). Topic time is the time span for which an assertion is made (e.g., some situation can precede the TU, i.e. belong to the past); time of situation is the time at which the situation described at the time of utterance occurs. He defines tense and aspect as a relation between TU, TT, and T-SIT: "Tense is a temporal relation between TU and TT. Aspect is a temporal relation between TT and T-SIT" (Klein 2000: 8). With regard to *Perfekt* and *Präteritum*, he proposes that the two tenses differ "in what is chosen as the time for which an assertion is made" (ibid.) While in the *Perfekt* the time interval of the designated event is over, in the *Präteritum* it overlaps with the situation in the past that is being described:

> But there is still a subtle difference between Perfekt and Präteritum. In both cases, the situation itself is in the past. Thus, a speaker who wants to talk about some situation in the past is free to choose either form. They differ, however, in what is chosen as the time for which an assertion is made. This can be a time at which an interval with the described properties is over (Perfekt), or it can be a time which overlaps such an interval in the past (Präteritum). Thus, the choice is more an issue of how the situation in the past is presented: *the Präteritum places the listener, as it were, in the midst of the situation in the past, as 'on-going, process-like'; whereas the Perfekt (under this reading) sees it from after the fact, as 'completed'*.
>
> (Klein 2000: 15, italics CM)

For an analysis of German aspect, this means that Klein considers the traditional notions of aspect in terms of the boundedness or unboundedness as metaphorical projections of the inherent time-meaning of the German *Perfekt* and *Präteritum*:

> Exactly this is what is expressed by the notional category of ASPECT. In the 'imperfective aspect', for example, TT is fully included in T-SIT. This naturally accounts for intuitions such as that 'the situation is presented from its interior, not as a whole, as being incomplete', as common metaphorical characterizations of the imperfective have it. If, by contrast, the time for which an assertion is made includes the time of the situation, then this situation is, *metaphorically speaking, 'shown with its boundaries, as completed, in its entirety, from the outside*', etc.
>
> (Klein 2000: 8, italics CM)

Although, the relation between tense and aspect for the German past tenses (*Perfekt* and *Präteritum*) appears to be a matter of debate in contemporary discussions, what we nevertheless find recurrently are characterizations that assume an aspectual

function of these two past tenses and that describe them as an opposition between showing a situation "with its boundaries" or as "being incomplete", presenting it "from its interior" (Klein 2000: 8). Looking at spoken German, the situation is even more in debate, since it is commonly assumed that the *Präteritum* is disappearing from spoken German, and with it, the partner in an aspectual opposition between perfectivity and imperfectivity. In the next section we take a closer look at how these tenses are used in spoken German.

3.2 Quantitative analyses: Use of *Präteritum* and *Perfekt* in spoken German as compared to French use of *imparfait* and *passé composé*

In our study we annotated all the verbs used with a past time meaning, i.e., verbs in *Präteritum, Perfekt,* and *Historisches Präsens* tenses. The imperfective and perfective forms (*Präteritum* and *Perfekt*) constitute 93% of the total amount of the verbs denoting past events (cf. the total of 87% for *passé compose* and *imparfait)*. The historical present forms (*Historisches Präsens*) were used in 7% of the verbs with a past tense meaning (cf. 13% in French) (see Table 3.2).

Table 3.2 Number and percentage of verb forms used with past time meaning (German)

Präteritum	*Perfekt*	*Historisches Präsens*	**Total**
655	597	99	1361
49%	44%	7%	100%

When comparing the distribution of imperfective and perfective tenses in French and in German, we found that the use of the perfect and imperfect tenses forms in French and German were relatively comparable across the two languages. While in the French narratives 443 verbs were used in the *passé compose* and 457 verbs were used in the *imparfait (*a 49/51 ratio), for the German data 597 verbs were used with a *Perfekt* marking, and 665 – with a *Präteritum* marking (a 47/53 ratio).

When considering the ratio between the use of the past tenses with a perfective or an imperfective aspectual form, we find that the difference between the *passé composé* and the *imparfait* (French) and *Perfekt* and *Präteritum* (German) is, in fact, quite similar. Thus, both the Germans and French in our data sets use slightly more verbs in the past with an imperfective aspectual function than with a perfective one. Interestingly, our corpus does not show the *Präteritum* to be a tense that is dying out in spoken German, as both tenses co-exist. We take a qualitative look at this co-existence of the *Perfekt* and *Präteritum* in the next section.

3.3 Qualitative analyses: The use of *Präteritum* and *Perfekt* in spoken German

A closer look at one of the dyadic conversations (GeCorpus 5) showed that the fairly widespread use of *Präteritum* in the German data appears to correlate with a relatively small group of high frequency verbs. The speakers mainly used auxiliary verbs (*haben, sein*; e.g., 'have', 'be') in the *Präteritum* tense or verbs that are semantically bleached or that have a relatively abstract meaning. This second group involved modal verbs (e.g., *wollen, sollen, müssen, können*; 'want', 'should', 'must', 'can'), epistemic verbs (e.g., *meinen, wissen, finden*; 'mean', 'know', 'find') and a few motion verbs: e.g., *kommen, fahren, gehen*; 'come', 'drive', 'go'). Moreover, copula and modal verbs are also morphologically simple. Only a small number of verbs used with *Präteritum* are semantically richer and morphologically complex: examples are *entwickeln* ('develop'), *herausstellen* ('turn out'), *bestellen* ('order'). Verbs in the *Perfekt* are for the most part semantically richer, often denoting concrete actions, and they tend to be morphologically complex (mostly prefixed verbs). Examples are: *gewinnen, bekommen, weiterfahren, überfahren, weiterlaufen, hin- und herwälzen, einschlafen*, ('win', 'receive', 'continue driving', 'drive over', 'continue running', 'toss- and turn', 'fall asleep').

These observations indicate that the two past tenses might fulfill different semantic functions that interact with the aspectual meaning. Notably, verbs mainly used with the *Präteritum* tend to denote states or stances, both coming with an idea of duration or extension. German modal verbs qualify the verb semantics in terms of epistemic stance (e.g., possibility or necessity) and thus express static, enduring position: "*Ich mußte stoppen*" ('I had to stop'). Copula verbs in the *Präteritum* also tend to denote states of affairs ("*Ich war froh, dass ich nicht bestellt hab*", 'I was happy that I did not order'). Thus, it might be the case that verb semantics plays a significant role in attracting either the *Präteritum* or the *Perfekt* tense in German discourse. We return to these examples in Section 3, Chapter 4, when looking at the interaction of verbal and gestural modes of expressing aspectuality.

3.4 Discussion

Reconsidering the specifics of aspectual event construal as they appear in spoken German two findings from the quantitative analyses appear to be particularly noteworthy: *Präteritum* is in ample use in spoken German and the relative distribution of the two past tenses we are interested in (*passé composé*/*Perfekt* and *imparfait*/*Präteritum*) is similar in the German and in the French data.

Furthermore, in the qualitative analysis there appear to be parallels when it comes to the relation of tense marking and verb semantics. Both French and German

speakers appear to use the imperfect(ive) more with verbs that denote states and stances. The German *Präteritum* is mostly used with the copula and modal, epistemic and semantically bleached verbs. Modal verbs are often unstressed (as are copulas), and like copulas, they are not as semantically rich as "content" verbs. Gestures, on the other hand, tend to be attracted more by semantically rich expressions, since one of their functions is to foreground relevant information (McNeill 1992; Müller 2008; Müller and Tag 2010). Wu (in preparation) has found that gestures with the copula in English tend to represent the object referred to by a verb phrase: "It was a domestic cat" goes with a gesture of someone as-if holding the side edges of a space, showing the size of such a cat. Moreover, since copula and modal verbs are morphologically simpler and shorter than semantically richer verbs, they have less chances to attract a gesture. One could thus predict that for the German *Präteritum* the patterns of co-occurrence of verbs and gestures might be influenced by this specific feature.

4. The Russian speakers' verbal expression of event construal (*Denisova*, *Iriskhanova*)

4.1 Introducing general specifics of tense and aspect use in spoken Russian narratives

With a view on the complexity of the aspectual system in Russian as presented in Section 1.2.3, Chapter 1, the analysis of the distribution of verb forms in the Russian dataset involved several dimensions. Following the works by many Russian linguists, we proceed from the assumption that aspect in Russian is a complicated phenomenon that goes far beyond the binary grammatical opposition of the perfective and the imperfective.

Thus, in our qualitative and quantitative analyses we looked at several characteristics of aspectuality, including the interrelation between aspect and tense, the semantics of the verb stems, and the structural characteristics of the verbs (especially prefixes and compound forms). Special emphasis was placed on the specific features of the spoken narratives as described in Section 1.1, Chapter 3. As we show further in Section 4, Chapter 4, the semantic and contextual factors influence the co-occurrence of verbs and gestures in Russian storytelling.

The category of aspect in Russian is present in all tense forms of the verbs and spreads into infinitives, participles, and mood, including the imperative and the subjunctive mood. The basic distinction in terms of aspect is between perfective and imperfective verbs, however, there are also bi-aspectual verbs that can be considered perfective or imperfective depending on the context, e.g., *organizovat'* 'to organize',

obeščat' 'to promise'. While imperfective verbs can be used in all tenses, perfective forms are used only in the past and future tenses. Thus, in the present tense only imperfective verbs can be found.

Despite the elaborated system for expressing the aspectual opposition in Russian, in spoken narratives the usage of some of the verb forms is limited. For example, in our data the speakers used verbs in the imperative and subjunctive mood quite rarely, which can be explained by the nature of the narrative tasks. The verbs in the imperative mood were present mostly in quotes, and the subjunctive mood referred mainly to psychological or mental states of the participants of the events. Another constraint imposed by the context concerns participles of the manner of action (*deepričastija)* ending in – *aja/ja* or *-av/-uv* (*prygaja*^{Imperf} – *prygnuv*^{Perf} 'jumping – having jumped'), that also form the perfective/imperfective opposition in Russian. However, we did not include them in our study because they are not commonly used in spontaneous spoken narratives. A rare exception in our dataset was the discourse marker *sobstvenno govorja* ('strictly speaking').

Another feature of the verbal distribution, described by many Slavists is the use of the conversational historical present tense to describe past events. In our data this verb form was used much less often than the past tense forms (3% vs. 97% of all the verb forms in the past, respectively). Besides, some scholars argue that with the historical present tense the aspectual opposition can be revised, or even neutralized (Bondarko 1971; Maslov 2004). However, we counted the forms in the historical present tense in our general statistics for verbs, and analyzed the instances of their use to show how they provide the speakers with a means of expressing a more detailed account of an event from an internal perspective.

Thus, to get a complete picture of the use of the aspectual forms at the initial stage of the data analysis, we analyzed the verb forms in all tenses and moods. However, our main focus was on the past tense verbs, mostly in the indicative mood, because the analysis confirmed that, similar to in written narratives, they serve as the key element in making reference to past events in spoken storytelling.

The overall qualitative analysis of the verb forms at this stage of the research provided a general picture of the distribution of tense and aspect characteristics of the verbs in the Russian dataset of spoken narratives, allowing for more focused quantitative and qualitative analyses of the past tense forms further on. In the following section we present the results of the quantitative analysis of the characteristics of all the verb forms used in the narratives. The analysis was carried out on the basis of ten video recordings with 20 participants (10 pairs).

4.2 Quantitative analysis: General results for Russian verbs

Concerning the overall proportion of tenses in the Russian dataset, the results show that over 52% of verb forms in the Russian narratives were used in the past tense, 27% of the verb forms referred to present time, and only about 2% of verbs were used in the future tense. There is also a group of infinitives (16%) and verbs in the imperative and the subjunctive mood (about 3%) that are neutral to tense but still show the aspectual distinction. The data on the perfective and imperfective forms across different groups of verbs demonstrate that past tense verbs and infinitives are the most frequently used means of aspectual distinction in the Russian narratives, although it should be noted that infinitives are often used with an auxiliary and/or some other types of verbs. It also shows that the imperfective forms prevail over the perfective.

Similar to the French and German analyses, our study of the verbs was focused on the past perfective and past imperfective forms, which we consider as the key verb forms for construing past time events. The results show that 97% of the verb forms with past time meaning in the Russian narratives were used in the past tense, and only 3% of the verbs were used in the historical present (Table 3.3):

Table 3.3 Number and percentage of verb forms used with past time meaning (Russian)

Past Imperfective	Past Perfective	Historical Present	Total
554	436	27	1017
54%	43%	3%	100%

The distribution of imperfective and perfective forms in French, German, and Russian is similar in that the perfect(ive) forms constitute 43–44% of the total amount of the verbs used to denote past events in the three languages.

In the following sections we elaborate on the use of the Russian aspectual verb forms, mainly with the past meanings, zooming in on their grammatical (tense and mood), lexical semantic, and structural characteristics, and revealing that their distribution is sensitive to the specifics of the spoken narratives. This context-oriented approach results from the nature of Russian aspect, which is a multi-faceted phenomenon that shows a variety of behaviors in different communicative situations (cf. Section 1.2.3, Chapter 1).

4.3 Qualitative analyses of Russian verbs

4.3.1 *Some preliminary remarks on the specifics of Russian spoken narratives*

As it was highlighted in Section 4.1 of this chapter, we consider the aspectual characteristics of the verbs to be dependent on the basic features of spoken narratives, i.e., on its temporal sequencing, situatedness in the communicative context, intersubjectivity, and spontaneity.

Although the present study is based on elicited narratives presenting a number of events in the past, they still manifest the characteristics of spontaneous interaction. As there were two participants in each recording who took turns telling stories to each other, speakers tended to ask clarifying questions and make suggestions, adding elements of dialogues to the narratives, thereby shifting them in a certain direction. For example, one of the participants spoke about the difficulties of ordering food at a restaurant abroad, and the listener asked *A kak vy v itoge objasnili, čto vy khotite?* ('And how did you finally explain what you want[ed]?'). Such questions prompted the speaker to describe the event in more detail.

Repetitions of the interlocutor's remarks is another typical feature of spontaneous interaction, as demonstrated in Extract (3.4.1):

Extract 3.4.1 Russian session 5. Time code 1.40–11.44
- *Ty* ***smotrela***$^{Past\ Imperf}$*, da?* / You've watched it, haven't you?
- *Net, ja ne* ***smotrela***$^{Past\ Imperf.}$ / No, I haven't watched it.
- *Ja tože ne* ***smotrela***$^{Past\ Imperf.}$ / I haven't watched it either.
- *Mne vse govorili "****Posmotri! Posmotri!***$^{Perf\ Imper}$*"*/ Everyone told me "Watch it! Watch it!"
- *Ja special'no ne* ***smotrela***$^{Past\ Imperf}$*…*/ I didn't watch it on purpose…

This episode is noteworthy because it shows that in oral narratives, Russian speakers, when confronted with the "aspectual competition" (Mathesius 1938), can choose imperfective forms to construe an event from the internal point of view, making the communication more listener-oriented, or intersubjective. Another interesting point, connected with the intersubjective nature of the oral narratives, is the shift to the perfective imperative (***Posmotri!)*** used for quoting.

In general, the Russian data is rich in various features that occur in spontaneous speech. Speakers use filler-words, such as *tipa* 'like', *nu* 'well', and often make hesitation pauses and self-interruptions (e.g., *Prežde vsego, mne ponravilas'…voobšče, ja otdykhala v sanatorii…* 'Most of all I liked…actually, I stayed at a health centre'). They sometimes make grammar mistakes; for example, in the sentence *ne budet znat', kuda* ***sidet'***$^{Imperf\ Infinitive}$ 'won't know where to sit' the choice of the aspectual form of the infinitive breaks the norm, because it should be in the perfective aspect (*sest'*). What we probably observe here is the contamination, or interference, of different aspectual properties in spontaneous speech.

In some cases participants could not recall a word and used a representational gesture instead. For instance, in one of the narratives about a car accident the participant said *"Oni priezžajut i…"* 'They come and…', Then instead of using a verb he makes an "away from body" gesture and goes on saying *"Tak kak policejskie u nas ne stojat, oni očen'…"* 'As there are practically no policemen, they very…' and repeats the same gesture. Finally, the speaker says *"I gonjajut tuda-sjuda"* 'and drive fast back and forth' using the same gesture for the third time, making its meaning clear.

The overview of the oral speech peculiarities that occurred in the narratives indicates that, despite the quasi-experimental setting, the participants demonstrated situatedness, intersubjectivity, and spontaneity in their discourse. As we show in the following sections, these features have implications for the use of verbs, namely, their tense and aspect characteristics, and their semantic and structural properties.

4.3.2 *Tense and aspect as related to the specifics of spoken narratives*

The quantitative analysis of the tense forms of the verbs in the Russian data confirmed that the past tense was the most frequently used tense, if compared to the present and future tenses.

The use of the tenses other than the past tense is explained by the fact that narrative discourse was often introduced, concluded, or interrupted by other types of discourse – explanatory, argumentative, dialogical, etc. In the narrative parts, the future tense, similar to the imperative mood, was mostly used metadiscursively, i.e., for introducing the story. However, the most frequent verbs in the future tense were *rasskazat'* 'to tell' and *vybrat'* 'to choose', used at the preparatory stage of the narratives and aimed at explaining the intentions of the speaker: e.g., *Ja* ***rasskažu***$^{Fut\ Perf}$ *o…* 'I'll speak about', *ja* ***vyberu*** $^{Fut\ Perf}$ 'I'll choose'. The present tense forms were used to express the opinion of a speaker about an event (*sčitat'* 'to reckon', *dumat'* 'to think', *nravitsja* 'to like', *ljubit'* 'to love'), or to provide the listener with a generic argument, or fact (*Posle avarii vse dolgo* ***otkhodjat***$^{Pres\ Imperf}$ 'It takes a lot of time to recover after an accident'; *On* ***nakhoditsja***$^{Pres\ Imperf}$ *prjamo na poberežje* 'It is situated right on the seashore').

Nevertheless, the past tenses not only constituted the majority of the verb forms used in the data, but formed the core elements of sequencing and construing events.

Extract (3.4.2) illustrates this point, showing how the speaker describes the chain of events, foregrounding one of them and backgrounding the others:

Extract 3.4.2 Russian session 9. Time code 9:32 to 9:42.

– *Nu vot gde my s Mažorom* ***byli***$^{Past\ Imperf}$*, po ètoj že doroge kak raz* ***jekhala***$^{Past\ Imperf}$*,* *mašina i,* ***ne znaju*** $^{Pres\ Imperf}$*…*[Well, where Major [dog's name] and I **were** on this road a car **was driving** and, I don't **know**…]
– ***Stolknulis'***$^{Past\ Perf}$ [**Crashed**]
– *…to li obe* ***byli***$^{Past\ Imperf}$ *na, nu, bolšoj skorosti, to jest' oni* ***stolknulis'***$^{Past\ Perf}$ *nu očen' silno*. […either they **were** both at, well, high speed, that is they **crashed** very hard].

In this episode the imperfective and perfective verbs alternate, playing different roles in the unfolding events. At first, the speaker sets the scene using the imperfective verb of state *byli* ('were'), which is followed by the activity verb *jekhala* ('was driving') in past imperfective that refers to another event in progress. The latter serves as the background, against which a punctual sudden event of achievement (in Vendler's sense) is introduced (*stolknulis'* 'crashed'). Note, that in this short episode the verbs *byli* and *stolknulis'* co-occur twice. Thus the dramatic effect of the spoken narrative is created and repeated through the interplay of the imperfective and perfective verb forms, which contribute to the contrast between the unbounded and bounded events.

There is another feature of the tense and aspect use that is worth mentioning – the historical present tense. As we indicated earlier in Section 4.1 of this chapter, we did not include this tense in our main analysis because of the controversial status of its aspectual properties (Maslov 2004). However, we found 27 verbs in historical present, which makes 3% of the whole amount of verbs used in the past meaning. Interestingly, they often alternate with past perfective forms to add to the contrast between the external viewpoint (i.e., construing events as bounded) and the internal viewpoint (i.e., construing events as unbounded, with a complex internal structure) (cf. similar cases analyzed in Section 2.3 of this chapter). Some of the verbs in the historical present tense appear in clusters which enhances the effect of zooming in on the event, as shown in Extract (3.4.3):

Extract 3.4.3 Russian session 1. Time code 4:07 to 4:30.
My ***podnjalis'***$^{Past\ Perf}$ *v podjezde vot na jejo tretij ètaž. Ja* ***zvonju***$^{Hist\ Pres}$ *v dver' i* ***vykhožu***$^{Hist\ Pres}$ *snačala iz lifta odna. Nu ona* ***posmotrela***$^{Past\ Perf}$ *v glazok, menja kak by* ***vpustila***$^{Past\ Perf}$*. Ja* ***govorju***$^{Hist\ Pres}$ *"Olečka, s dnjom roždenija!". I tak* ***otkhožu***$^{Hist\ Pres}$ *v storonu, […], i ottuda* ***vykhodit***$^{Hist\ Pres}$ *Šura s buketom cvetov!. Ona* ***plakat'***$^{Imperf\ Infin}$ ***stala***$^{Past\ Perf}$***!***
['We **got** to her third floor. I **ring**$^{Hist\ Pres}$ the doorbell and **go** first **out**$^{Hist\ Pres}$ of the elevator alone. Well she **looked** through the peephole, let me in. I **say**$^{Hist\ Pres}$ "Olečka, happy birthday!" And I **move aside**$^{Hist\ Pres}$ […], out of there Šura **comes**$^{Hist\ Pres}$ **out** with a bouquet of flowers! She **started crying**!'].

This extract demonstrates that the alteration of foregrounding and backgrounding, achieved by the contrast between perfective and non-perfective verb forms, contributes to the spontaneity, situatedness, and intersubjectivity of the narrative performance of the speakers. Using the imperfective forms, especially in the present tense, the speaker construes the event from the internal perspective, thus intersubjectively blending his viewpoint with the viewpoint of the hearer.

4.3.3 *Semantic features of verbs as related to the specifics of spoken narratives*

The qualitative data analysis confirms that the semantic properties of the verbs in perfective and imperfective are influenced by the features of the spoken narratives. Thus, situatedness of spontaneous spoken storytelling results not only in the abundance of deictic and elliptical constructions, but also in the semantics of verbs that are often indeterminate, or denote everyday events – actions, movements, emotional, physical, and mental states.

Similar to the observations about the German data in Section 3.3 of this chapter, the semantic features of the verbs in the Russian spoken narratives seem to be linked to the tasks provided during the empirical studies, as well as to the constraints of everyday spoken communication.

In the analysis, we rely on the semantic classification, offered by Rozental' and Telenkova (1976), who singled out basic groups of verbs in Russian, depending on the meaning of a verb stem:

- verbs of concrete physical actions and states (*delat'/sdelat'* 'do', *stojat'* 'stand', *sidet'* 'sit'),
- state of mind and feeling ((*ob)radovat'sja* 'be happy'),
- mental operations (*dumat'* 'think', *ponimat'/ponjat'* 'understand'),
- existence (*žit'* 'live', *nahoditsja* 'be situated'),
- relations (*otnosit'sja* 'treat'),
- possession (*imet'* 'have, *vladet'* 'possess'),
- speech (*rasskazat'* 'tell', *skazat'* 'say', *govorit'* 'speak'),
- motion verbs (*jekhat'/pojekhat'/priekhat'/jezdit'/sjezdit'* 'go/come by car or by public transport', *khodit'/ pojti* 'go', *guljat'* 'walk'),
- modal verbs (*moč* 'can', *pontravit'sja/nravit'sja* 'like', *pytat'sja* 'try', *khotet'* 'want', *stoit'* 'be worth doing'), etc.

The categories and verbs illustrated in this list were all present in our data, however, the most verbs belonged to motion events, physical actions, mental operations, verbs of speech, phase verbs, modal verbs, and verbs of existence. The most frequent verbs were *jekhat'* 'go', *bežat'* 'run', *guljat'* 'walk' (motion verbs), *delat'/sdelat'* 'do', *sdavat'* 'hand in', *pomogat'* 'help' and *rabotat'* 'work' (physical actions), *znat'* 'know', *dumat'* 'think' (mental operations), *byt'* (verb of existence, copula verb). In general, the speakers mainly used words either with concrete physical meanings, or with more abstract and less determinate semantics, such as the verbs of mental states and activities, modal verbs, and copulas.

The distribution of these classes within a narrative depends on the topic, and to a great extent follows the structure of the spoken narrative as presented in (Labov 1972; Labov and Waletzky 1967). For example, the verbs of physical actions tend to

occur in the introductory part (Abstract, to use Labov and Waletzky's term) or the "Complicating action" part of the narratives, as they are used to describe actions of the main event in detail.

Verbs of existence are generally observed in the Orientation part as they locate the participants of an event: "*Nedavno ja* ***byla*** *v Sankt Peterburge*" 'Recently, I was in Saint Petersburg'. However, the high frequency of the verb *byt'* ('be'), observed throughout the data, is related not only to its function as a notion verb, denoting the existence in the past, but as a copula that is used to form resultative passive constructions "copula + the short form of a passive past participle": e.g., *bylo oformleno* ('was registered'), *byl dostignut* ('was achieved'), *bylo napisano* ('was written'). It means that, though the copula is neutral in terms of grammatical (im)perfectivity, it takes part in construing events as having a result (boundary), and is mainly used in the end of a story (or in the Resolution part of the narrative, in Labov and Waletzky's terms).

4.3.4 *Structural features of verbs as related to the specifics of spoken narratives*

Another verbal feature linked to the specifics of the spoken narratives is the structural properties of verbs. As it was shown in Section 1.2.3, Chapter 1, Russian aspect is known for its structural complexity that manifests itself, first, in the morphological structure of verbs, and, second, in the ability to form compound constructions with auxiliary verbs, such as copulas, modal verbs or markers, and phase verbs, followed by infinitives.

Morphologically, affixes (prefixes and suffixes) used to form imperfective and perfective verbs contribute to the aspectual opposition in Russian in different ways, either preserving the lexical meaning of the verb stem (*delat'*$^{Imperf\ Infin}$ – ***s****delat'*$^{Perf\ Infin}$ 'do – complete doing', *prygat'*$^{Imperf\ Infin}$ – *prygnu****t***$'^{Perf\ Infin}$ 'jump – make a jump'), or importing some additional lexical meanings (*pisat'*$^{Imperf\ Infin}$ – ***vy****pisat'*$^{Perf\ Infin}$ 'write – order delivery') (Krongauz 1998).

The morphological complexity was preserved in the spoken narratives. For instance, over 30% of the past verbs contained prefixes, and most of these verbs are perfective. The most frequent prefixes used were *u-*, *pri-*, and *po-*. *U-* usually adds the meaning of moving away (***u****jekhat'* 'drive away') or change of state (***u****proščat'* 'make simpler'). In some cases it also adds the idea of the end-boundary (***u****snut'* 'fall asleep'). The prefix *pri-* has the opposite meaning, of approaching (***pri****jti'* 'come'). In some words it brings in the meaning of getting two things together (***pri****kleit'* 'glue'), of adding something (***pri****pisat'* 'ascribe'), or of an incomplete action (***pri****bolet'* 'be a bit sick'). The prefix *po-* usually conveys the meaning of the beginning of an action (***po****ekhat'* 'set off'), and in some verbs it imports the idea of doing something for a short period of time (***po****guljat'* 'walk for some time'). Some of the prefixed verbs also contained imperfectivizing suffixes *-iva-* (*zakančі****vat'*** 'finish'), *-yva-* (*zakaz****yvat'*** 'order'), *-ova-* (*otreagi****rovat'*** 'react'), or the perfectivizing suffix *-nu-* (*zaver****nut'*** 'wrap

up'). These findings show that, although the morphological structure of the verbs follows the conventions of general language use, the participants of the spoken narratives resorted to limited morphological resources in terms of prefixes. However, the latter can develop various contextual meanings.

The compound forms of verbs also displayed some interesting features. Typical of spoken narratives, these constructions were mainly formed with modal verbs (or markers) and phase verbs (*moč* 'can', *možno* 'allowed', *nado/nužno* 'have to', *dolžen* 'ought to', *prodolžat'* 'continue', *načat'* 'start', etc.). Most of these forms (59.7%) contained perfective infinitives, which goes in line with the results obtained by Janda and Lyashevskaya (2011).

The constructions can be of mixed character from the point of view of their aspectual characteristics and, consequently, they can construe the internal structure of events in different ways: e.g., *mog*$^{Imperf\ Aux}$ *risovat'*$^{Imperf\ Infin}$ – *smog*$^{Perf\ Aux}$ *risovat'*$^{Imperf\ Infin}$ – *mogu*$^{Imperf\ Aux}$ *narisovat'*$^{Perf\ Infin}$ – *smogu*$^{Perf\ Aux}$ *narisovat'*$^{Perf\ Infin}$ '[I] can draw [a picture]'.

Table 3.4 presents the types of compound constructions "finite verb + infinitive" used in the Russian narratives.

Table 3.4 Types of compound constructions "finite verb + infinitive" in the Russian data

Type of construction	Number of instances	Example	Translation
Imperf verb + Inf Perf	57	*Ne mog usnut'*	(I) couldn't fall asleep
Imperf verb+ Inf Imperf	33	*Ne khotel ujezžat'*	(I) didn't want to leave
Perf verb+ Inf Imperf	15	*Ja stal ponimat'*	I started to understand
Perf verb + Inf Perf	14	*Ja rešil postavit' sebe složnuju zadaču*	I decided to set a challenge for myself

In the phrase *i načal jego kak-to trjasti* 'and started to somehow shake him' the phase verb *načal* ('started') is perfective, but the infinitive *trjasti* ('to shake') is imperfective. In this case the aspectual characteristics and the semantics of the verb *načal* impose an initial boundary on the process denoted by the verb *trjasti* 'to shake', and, consequently, construe the whole event as bounded.

At the same time, mixed constructions can present a difficult case for analysis, because it might not be clear from the context which component prevails in the construal of events, e.g., the unbounded state of "being incapable of doing something" (*ne mog* '[I] couldn't'), or the event *usnut'* ('fall asleep'). The latter is referred to by a perfective infinitive, and represents the bounded event resultant from the state expressed in the imperfective modal verb. For such instances, the gesture co-occurring with the verb can indicate the type of the event construal – as unbounded, or as bounded.

4.4 Concluding remarks

To conclude, the quantitative and qualitative analyses confirm that Russian speakers resort to past tense forms of the verbs to construe events in the narratives, although other tenses, as well as the imperative and subjunctive mood, contribute to the construal of events at various stages of the narration.

The data show the slight prevalence of imperfective past forms over the perfective, which can be explained by the specifics of the use of the aspectual forms in the spoken narratives. In general, the distribution of the imperfective and perfective verbs correlates with such features of spoken narratives as temporal sequencing of events, situatedness in the communicative context, intersubjectivity, and spontaneity. These features account for the alteration of perfective and imperfective verb forms that contributes to the contrast between the foregrounded and the backgrounded events by setting up or blurring their boundaries, or by creating the effect of zooming-in or zooming-out of an event. The specifics of the spoken narratives also influence the distribution of past tense verbs with different semantics. The verbs used to construe past events in the Russian dataset are the verbs of motion events, physical actions, mental operations, as well as phase and modal verbs, and the verb of existence *byt'*. Most of the verbs either have concrete meanings of physical actions or states, or belong to the category of semantically indeterminate, abstract words.

Another interesting feature is that the speakers resort to morphologically complex forms with perfectivizing and imperfectivizing affixes, and they also make abundant use of analytical compound forms "finite verb + infinitive", which sometimes include both perfective and imperfective components. At the same time, the variety of affixes used in the Russian dataset seems to be limited to a number of polysemic prefixes that add to the concrete meanings of the verbs.

In sum, the tendencies revealed in the analyses indicate that the overall distribution of the aspectual properties of verbs is interrelated with the systemic (grammatical, lexical semantic, structural) properties of verbs, on the one hand, and with the basic features of the spoken narratives, on the other hand.

5. Summary (*Iriskhanova*)

The data on the verbal construal of events in spoken narratives in French, German, and Russian allow us to draw parallels between the languages and provide the bases for comparisons and contrasts in terms of the use of the aspectual verb forms.

The results for the three datasets confirmed that the choice of verbs and their aspectual features is to a great extent based on the specific features of the spoken

narratives that were elicited in a series of storytelling tasks about past events, experienced by the participants. Being narratives, the stories were organized as sequences of events in the past. Being stretches of spoken speech shared by the speakers with each other, the narratives displayed a number of features that are typical of unprepared interaction, such as situatedness in the context of communication, intersubjectivity, and spontaneity. The results demonstrate that these features of spoken narratives have implications for the use of verbs.

Generally, in French, German, and Russian the systems of past tenses show considerable differences: cf. French *passé simple, passé composé, imparfait, plus-que-parfait, passé antérieur;* German *Perfekt, Präterium, Plusquamperfekt;* Russian *past tense* with a regular perfective/imperfective distinction. Not all of the past tenses are common for spoken communication (e.g., *passé antérieur*). All the three languages are similar in that the tenses with past meanings constitute the basis for the temporal frame of storytelling.

Another common feature worth mentioning is that although the speakers in our data resorted to the historical present tense, it was used much less frequently in comparison with other past-meaning forms, especially in the Russian narratives. These tense forms were used as an occasional means for achieving the dramatic effect of reenacting past events, zooming in on them, or presenting them as unexpected happenings. In this way, the historical present provides extra evidence of the situated and intersubjective character of the spoken narratives obtained in the research.

In terms of the aspectual properties of the past tense forms, the languages show both similarities and differences. They follow the opposition of perfectivity vs. imperfectivity, which is used to construe events as either complete, non-segmented entities with boundaries, or as structured entities that unfold in time, with the event's conceptual boundaries being backgrounded. The two types of entities form the figure-ground relation in discourse, which allows the speakers to shift the viewpoint from the external to the internal one. Imperfect past forms slightly prevail over the perfect ones.

The comparison of the aspectual forms in the spoken narratives reveals some interesting differences. The data show that the distribution of the aspectual characteristics of the verbs expressing events in the past could be a factor not only of the situatedness, intersubjectivity, and spontaneity of the spoken narratives, but also of some specific features of the temporal systems, as well as structural and semantic qualities of the verbs.

As the French analyses revealed, the speakers of this language alternate between *imparfait, passé composé*, and, much more rarely, *présent simple* to construe events as non-completed or completed, as an integral whole or punctual. The aspectual meaning of the temporal verb forms often depends on the way they are set against

each other in a particular context (cf. *présent simple* used with the *imparfait* or without alternating with other tenses).

For the German data, an interesting finding concerning the temporal system is that *Präteritum* is still used quite actively in spoken narrative discourse. The two tenses differ semantically, which has implications for their aspectual meaning. It is shown that verbs used with the *Präteritum* (i.e. modal and copula verbs) mainly denote epistemic stances (possibility, necessity) and states of affairs.

The Russian dataset points to the abundant use of semantically bleached verbs (copula and modal verbs), as well as verbs of concrete physical actions and motion. Although most of the semantically rich verbs were morphologically complex, the speakers use a limited variety of polysemic prefixes.

In sum, the similarities that we found in the datasets in French, German, and Russian could be explained by the universal character of the opposition of perfectivity and imperfectivity in the construal of events, and by the features of the spoken narratives elicited from the speakers in similar contexts. The differences in the distribution of the temporal, aspectual, structural, and semantic properties of the past verbs appear to be related to the different status of aspect in these languages. Aspect in French is a grammatical category realized through tenses. In German, though traditionally viewed as a lexical category expressing the manner of an action (Aktionsart), aspect is also linked to the distinction between *Perfekt* and *Präteritum*. In Russian *vid* (aspect) is a lexico-morphological category that manifests itself both at the grammatical and lexical-semantic levels. The following chapter considers the distribution of bounded and unbounded gestures used with perfective and imperfective verb forms in light of the differences in aspect across these three languages, discussed above.

CHAPTER 4

Speakers' gestural expression of event construal

Quantitative and qualitative analyses

1. Introduction (*Boutet*, *Morgenstern*, *Cienki*)

Section 4 in Chapter 2 introduced the principles behind the gesture coding categories and considered how these were operationalized for our study. The following sections outline the details of how the gesture-coding scheme was implemented, what methodological challenges were confronted, and how these were handled with respect to the reliability of our coding. Furthermore, we consider some particularities that the coding revealed before we delve into the results per language in the rest of Chapter 4.

1.1 Choice of the coding protocol for gesture analysis

The coding protocol was decisive for the creation of the template used in ELAN, the ordering of steps in the coding process, and the distribution of the coding to at least two coders per language. We now tackle the main difficulties we encountered in our coding.

The template in ELAN was constructed collectively by the members of the research group. The most important choices were the labels for the gestures and the controlled vocabulary of the tenses. We wanted to associate gestures, co-occurring with verbs, with the aspectual analysis of those verbs. As a result, the temporal locating of the verb forms in the past tense(s) relevant to our study of aspect and the alignment of their annotation with the audio track of the video-recorded data were very quickly deemed necessary. The overlap in time between a gesture (including preparation, stroke, retraction, or hold phases) and the production of the verb in the past was chosen as a fundamental coding criterion. Choosing a mandatory overlap restricts the number of gestures coded but reinforces the relation of the coded gesture to the verb.

As far as the coding is concerned, we separated the phase of coding the verb forms spoken from the phase of gesture coding. The first phase included the transcription of the speech, the location in the speech of verbs, temporal alignment of the verb annotation in ELAN with the audio of the verbs being spoken, and labeling

of verb tenses. On top of this phase of coding just what was spoken, with each video, the same native-speaker coder located the gestures that were not self-adaptors (we excluded self-touching movements, such as scratching, fixing one's hair, adjusting one's eyeglasses, etc.) and which overlapped partially or fully in time with the verbs. Gestures were annotated on the *Hand Gesture* tiers for each speaker, left and right on the screen. Using the video recording (without sound), a second person coded the boundary type for each gesture based on the criterion of pulse of effort; this was done to prevent influence from knowing about the speaker's choice of verb form in each case. Temporal alignment of gesture annotation was refined during a second phase.

The coding of gesture boundaries was the result of several collective training sessions. Based on our work during those sessions, we agreed on kinematic criteria for acceleration, jerks, and stops as markers of bounded gestures. The exact moment when those markers were produced during a gesture was taken into account in order to subdivide the coding into *onset, offset, punctual, double*, and *multiple bounded*. A more general notion was finally drawn from those training sessions and enabled us to define the pulse of effort. It is marked by a tension in the gesture, through a kinematic form, through accelerations, jerks or stops, or very controlled tension of the muscles opposing the movement, which can be seen thanks to subtle changes in the movement. In all those cases there is marked tension and gestures are bounded. In the other cases, the gestures are unbounded. We subdivided the latter into gestures which were simply unbounded versus iterative, in which an unbounded movement is repeated.

In light of our research questions, what we ultimately counted in our quantitative analyses were the categories of unbounded and bounded; the subcategories noted above served as a means to hone our attention to gesture movement qualities. Indeed, when the number of segments involved in the gestures was low and they were located far from the trunk, such as on the hand or both the hand and the fingers, the gestures were extremely brief, with small visual amplitude. It was then difficult to evaluate the specific moment when the acceleration took place (*onset* for the beginning, *offset* for the end, *punctual* for the middle). Conversely, gestures that were spread on the arm, the forearm, and the hand or even the fingers, offered greater amplitude for our evaluation of a change in speed (acceleration). Thus the greater amplitude of the French speakers' gestures that spread onto several bodily segments made it easier to evaluate these speakers' gesture boundary types than those of the German speakers, whose gestures were less ample and were mostly executed only with one hand. The gesturers' cultural "style" was thus an important factor for us to pay attention to in our coding of the boundary schemas.

As a case in point, we compared the German and French data and found that the differences between German and French speakers are not only linked to the

amplitude of their gestures: German speakers' gestures often include longer gesture holds than French speakers' gestures.

Table 4.1 Main results of the average boundary schemas of French and German speakers

Gestures	Bounded			Unbounded		
	Number	Mean Duration	Standard Deviation	Number	Mean Duration	Standard Deviation
French	270	707.84ms	346	267	801.11ms	559
German	417	919.31ms	476	217	944.58ms	421

Moreover, Table 4.1 indicates that the average duration of German speakers' gestures is longer that of the French speakers' gestures for all types of boundary schemas. In contrast, the difference in average length between bounded and unbounded gestures is almost 4 times as great: 25 ms for German speakers and 93 ms for French speakers.

We have just noted that gestural boundedness, as we have defined it and as we can perceive it visually, involves some training for good recognition. The team members involved in the gesture coding experienced the fact that using gestural embodiment, by reenacting what we viewed in the videos, was quite useful and served as a complement to repeated viewing of the gestures in the videos. On top of vision, proprioception plays an important role in our appreciation of gesture boundaries thanks to our own sensations. Our proprioception helps us refine what we can see performed by the speakers whose gestures we are analyzing.

1.2 Inter-coder reliability

The more difficult part of the coding being that for the gesture boundary schemas, we decided to organize inter-coder reliability tests for this category. The coders of the Russian, German and French speakers' gestures exchanged 20% of the data (two recordings out of ten) in each language. Each language was thus double coded as indicated in Table 4.2, which means 40% of all the recordings were double coded.

Table 4.2 Scheme for cross-language double coding

German Corpus	$Cod1_{GE}$ & $Cod1_{Ru}$
	$Cod1_{GE}$ & $Cod1_{Fr}$
Russian Corpus	$Cod1_{Ru}$ & $Cod1_{GE}$
	$Cod1_{Ru}$ & $Cod1_{Fr}$
French Corpus	$Cod1_{Fr}$ & $Cod1_{GE}$
	$Cod1_{Fr}$ & $Cod1_{Ru}$

The first results of the tests were quite below what we could have expected, with Kappas ranging from 0.19 to 0.44. Several tries did not help us improve the coefficient significantly. It would have been an illusion to think that double individual coding increases the Kappa coefficient as we used 40% of the recordings in that first phase. We thus chose to share our double coding and take up the coding performed. For all conflicts we discussed the coding in order to reach agreement. The French coder also worked on the Russian corpus, and the Russian coder served as second coder for the German and French corpora. This strategy seemed to be the best to improve reliability. The discussion, the comparison with other gestures, viewing the gestures multiple times and using how we perceived and reenacted the gestures finally lead us to agreements. This sharing of the coding enables each coder to see two or three times more gestures than initially planned. As our common coding was progressing, we noticed that quicker and more stable agreements were made. We found that expertise was reached after the coding of over 600 gestures, at which point we could check the coding we had done beforehand. Our procedure bears many of the characteristics recommended by Stelma and Cameron (2007) in their proposal for developing transcription skills for another feature of spoken-language data, namely intonation units.

1.3 Category-specific particularities

Before presenting the language-specific findings from our analyses in relation to our research questions, the following presents some general characteristics of the gesture data.

The ratio of bounded to unbounded gestures was increasingly greater as we look across French speakers (52%), Russian speakers (57%), and German speakers (69%), as shown in Figure 4.1. Several factors can explain this increase. There seems to be a difference in "gesture style" across the speakers of the three languages in our pool of participants. Let us examine some of the factors.

The difference in the duration of bounded and unbounded gestures also seems to be a criterion that differentiates the three sets of speakers. We noted that bounded gestures were shorter temporally than unbounded gestures for both German and French speakers (sometimes four times shorter for the French speakers). This tendency for bounded gestures to be shorter is confirmed in the Russian speakers' data. However, here, the difference between bounded and unbounded gesture length is much greater for the Russian speakers: the mean difference among the Russian speakers (237 ms) is ten times greater than that among the German speakers (25 ms), with the mean difference for the French speakers (93 ms) being between those two extremes. The length of the gestures is thus a more relevant factor to

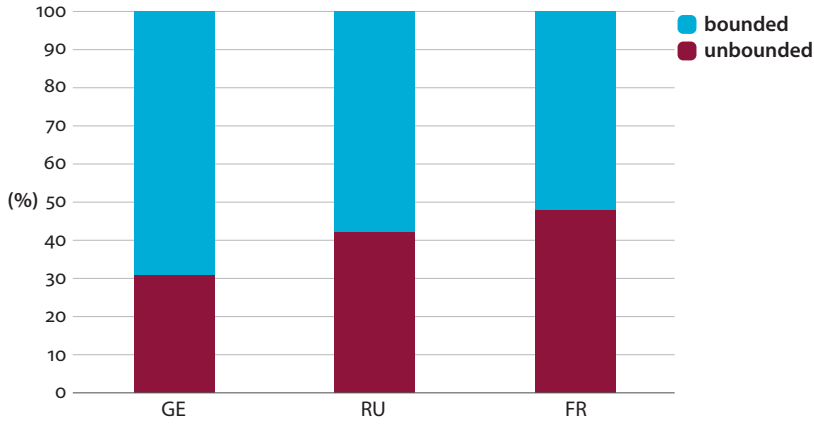

Figure 4.1 Proportional distribution of bounded and unbounded gestures according to the languages (total N for each language: German = 436, Russian = 415, French = 309)

differentiate boundary schemas for Russian speakers. The reasons for this difference found across the languages between unbounded and bounded gestures can be numerous; here are a few possibilities:

1. The unbounded gestures are lengthier because the speed is highly reduced compared to bounded gestures. This presupposes that the distances in play are similar and that the quality of the movement is involved in the distinction (kinematic hypothesis, considering the movements independent of their cause).
2. The unbounded gestures are lengthier because they are held and do not involve much movement. This presupposes that the gestural expression of the perfective is linked to motion and that of the imperfective to stasis (movement hypothesis).
3. The unbounded gestures are lengthier because they involve more segments with more important inertia (arm and forearm) compared to the bounded gestures (hands and fingers). That presupposes that the gestural expression of aspect has a strong bodily anchoring (kinesiologic hypothesis, considering the movements in terms of the biomechanics of their production).

The visual modality we use to code the gestures does not allow us to test the hypotheses against each other. However, in Chapter 5 we explore one hypothesis in further detail in relation to the French data, as a means of looking ahead to potential future research.

Other particularities we found after sharing our coding and impressions, were that the German speakers' gestures were shorter, jerky and involved a low number of body segments, that were either distal (hands and fingers) or intermediary (sole

movement of the elbow). The Russian speakers' gestures were supple and gave the impression (confirmed above) of being quite long. They involve a great variety of segments. The French speakers' gestures were fluid, they had a tendency to involve a greater number of segments. The amplitude of those gestures seemed greater than for the gestures by speakers from the other cultures. This synthesis is of course based on general impressions, and more specific tools would be needed to go further in our investigation. Motion capture is promising, as Goldin-Meadow and Brentari (2017) indicate. However, it would be important not to limit ourselves to the capture of hand movements only, but to take into account the amplitude of the degrees of freedom of all the segments and the laws of motion (see Section 1, Chapter 5).

The second type of factor that might have influenced the coding of boundaries is linked to the technology we used (video) and the visual modality. We saw that the distance covered by a segment influenced the perception of the difference between acceleration and stable speed, in particular for distal segments (body parts further from the torso, such as fingers), whose amplitude is visually reduced. Visual discrimination is greater for a gesture of the forearm than for a gesture of the hand. The other element is linked to the frequency of the images in the video. With the video recorders we used, each image was taken every 40 ms. It is composed of two frames for each take, at an interval of 18 ms. between them. Those two frames (even and odd lines) are assembled in one image. When a segment is performed at high speed, the image of the segment appears to be blurred because between the capture of odd and even lines (18 ms) the segment has been moved. The effect of the motion on the image depends on the segment that is moved. There is an increased effect on speed of the hand when both the arm and forearm are in motion. Although speed is constant between several images, this effect can lead to an image of the hand that is more blurred than if just the hand were moving on its own. Re-enactment of certain gestures can help us disambiguate our visual impressions. However, this ambiguity can be masked, especially when the plane of impact of the movement is perpendicular to the shooting plane of the camera. In that case, we have no visual clue to judge if the movement is linked to constant speed (unbounded) or acceleration (bounded).

1.4 Summing up

The use of ELAN enabled us to build an annotation scheme that was both different for the verbal part of each language and shared for the gestures, separating the coding into two distinct phases. The latter one involved gesture coding in each language, followed by distinct pairs of coders working across the languages to go over the coding of gestures according to boundary schema types. The template we

designed can be used for other datasets and for other languages as far as the gestural aspects are concerned. Our great precautions used during the coding did not permit us to eliminate all ambiguities in the choice of the gesture boundary schemas. However, after the coding of over 600 gestures, each coder became quite an expert. Some gestural invariants are noted, especially the brevity of bounded gestures. We also note that the number of bounded gestures is higher than unbounded gestures in German and Russian. While cultural variations in the gestures used may have been involved in our coding for the boundary schemas, the use of a common double coding procedure helped us reduce the effects of those variations. A technological factor (video) might have introduced some biases, but all the coders of the three languages shared those same biases, meaning they would not skew the results from one particular set of data. Despite those differentiating factors, we can consider that all precautions were taken, enabling us to neutralize as much as possible the unavoidable shortcomings of coding phenomena as complex as gestures.

2. The French speakers' gestural expression of event construal (*Boutet, Morgenstern*)

2.1 Introduction: Hypothesis for French

We have seen in Section 1.2 in Chapter 1 and Section 2 in Chapter 3 that a variety of approaches have been advocated since the nineteenth century to explain the aspectual differences between the forms used to refer to the past in French. In this section, as in the sections on Russian and German, we introduce a new dimension that has never been applied to French before, by using video data and integrating the information provided by the gestures French speakers make when they use verbs in the past tense in our analyses. We focus on the expression of aspect in spoken French and the co-verbal gestures produced with verb forms in the semi-guided oral interactions collected for this project. Our aim is to assess the degree to which and how speakers' construal of aspectual differences, grammaticalized in French with the use of different past tenses, is enacted and visible in gesture.

The differences between the specific qualities of gestures used with the various verb forms could help us characterize the differences between the speakers' mental representations of the past events they refer to and their rendering in speech. In turn, this approach could lead to a reanalysis of the spoken forms used to render aspectual differences in French.

As shown in Section 2, Chapter 3, one can alternate in spoken French between the use of *imparfait, passé composé,* and *présent simple* to refer to the same events in the past. Those forms have specific functions that can vary according to the context.

In our detailed analyses of specific extracts of the data in Section 2, Chapter 3, we focused on the changing micro-systems in which the tenses work in opposition to each other. *Imparfait* was clearly associated with unbounded events and was either used to present properties of an event, its framework, its background, or to capture activities as they unfold. *Passé composé* was used to describe an event as a whole, to make assessments, or to present a succession of punctual events and was associated with boundedness, where boundaries could be either separated by an interval (resultative) or merged (punctual).

We use our multimodal approach to study how French speakers express past events to try to shed light on the imagistic nature of their construal of event structure and how it correlates with the three types of verb forms used: *imparfait, passé composé* and to a lesser degree *présent simple*. Our hypothesis is that unbounded movements embody imperfectivity and are going to be used more with the *imparfait* and bounded movements embody perfectivity and are going to be used more with the *passé composé*.

2.2 Boundary schemas in French gestures

2.2.1 *Quantitative results*

In Table 4.3 we present the number of forms used in the four main past tenses with and without gestures.

Table 4.3 Number of forms with and without gestures and % gestures with speech per tense

	with gestures	without gestures	Total	% with gesture
imparfait	157	300	457	34%
passé composé	150	293	443	34%
présent	63	67	130	48%
plus-que-parfait	37	33	70	53%

The speakers used more *imparfait* and *passé composé* than other tenses to refer to past events in the data, but interestingly enough, narrative present and *plus-que-parfait* were the tense forms more often produced with gestures, relative to their use overall. For the purpose of this study, we nevertheless focus on the two main tenses for which we know there is a clear aspectual contrast in French. They were used in equal proportion and were co-produced with gestures in equal proportion as well (34% of the time), which makes them quite comparable for our study.

We then coded the boundary schemas in all the gestures overlapping with the production of the verb forms in the ten French sessions, according to the

methodology described in Section 5.1. We took into consideration the character of the gestural movement and distinguished movement with pulse of effort vs. movement with controlled exertion of effort, independent from the traditional classifications of gesture types, categories, or functions. Figure 4.2 gives the results of the coding of the boundary schemas.

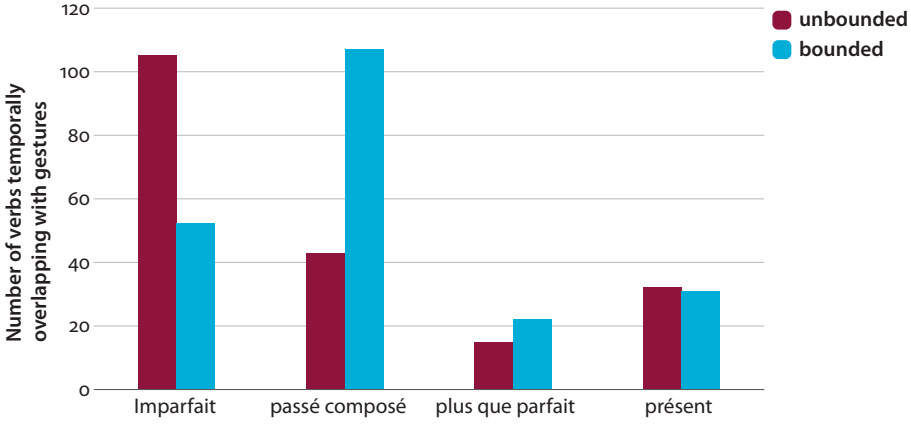

Figure 4.2 Distribution of boundary schemas for the co-verbal gestures produced with past tense forms in French

Plus-que-parfait and *présent* do not have marked aspectual differences in oral French as they are sometimes used to present perfective and sometimes imperfective types of events, which could explain why there is no significant difference in their co-occurrence with the two types of gestural categories in the data, namely, bounded and unbounded (plus que parfait: 22 bounded vs. 15 unbounded; present: 31 bounded vs. 32 unbounded).

However, the difference is significant for each of the *imparfait* and *passé composé*. For the *imparfait*, 67% of the gestures ($N = 105$) coded are unbounded and 33% ($N = 52$) are bounded, ($X^2 = 17.89$, $df = 1$, $p < 0.01$, $phi = 0.3$). For the *passé composé*, 29% of the gestures ($N = 43$) coded are unbounded and 71% ($N = 107$) are bounded ($X^2 = 27.31$, $df = 1$, $p < 0.01$, $phi = 0.4$). Our hypothesis is therefore supported as far as the French data are concerned.

In terms of individual differences, the results for the distribution of bounded versus unbounded gestures did vary somewhat but not strongly from video to video in the French data. The total number of target gestures produced per video varies from 7 to 51. In almost all French videos we analyzed, verbs in the *passé composé* correlated with bounded gestures and verbs in the *imparfait* correlated with unbounded ones. There was only one session (video #7) for which one of

the results deviated from this, namely in terms of the type of gestures associated with the *passé composé*. There were in total two pairs of speakers for whom the total number of gestures produced was very small. In one video (#12), there were only 7 target verb forms produced with gestures, and only 2 verbs produced with gestures in the *passé composé,* 1 with a bounded and 1 with an unbounded gesture, and with the imparfait – 3 with unbounded gestures and 1 with a bounded gesture. In video #7, there were only 12 verbs in the *passé composé* and *imparfait* produced with gestures and here the correlation with the main findings was the lowest (3/5 *imparfait* with unbounded gestures and 4/7 *passé composé* with bounded gestures). The mean of the differences over the whole data is 5.2 ($M_{ubd\text{-}bd}$) for the *imparfait* and 7.5 ($M_{bd\text{-}ubd}$) for the *passé composé*.

2.2.2 *Qualitative analyses*

We begin by giving two examples in which the use of the gestures with the production of verb forms match our hypothesis. The first example is already analyzed in Section 2.3 of Chapter 3 as far as the values of *passé composé* and *imparfait* are concerned, but now we focus on the gesture produced with the first *imparfait*. Bold type here and below indicates the relevant tense forms that co-occurred with a gesture.

Example 4.2.1 CLA and LAU[28]

*CLA: Elle **est tombée**, et en fait elle a dû dévaler les [/] les marches et personne n'**est allé** la voir.
('She **fell** and in fact she must have tumbled down the stairs, and no one **went** to check on her.')

*LAU: *puzzled expression.*

*CLA: Donc euh tout le monde **passait** à côté.
('So, um, everyone **was walking** past her.')

*CLA: Et i(l)s en **avaient** rien à faire.
('And they **could**n't care less.')

An unbounded gesture is co-produced with the verbal form in the *imparfait* "*tout le monde **passait** à côté*" ('everyone was walking past her'). We have shown how this use of *imparfait* enables the speaker to create continuity out of multiple events with the totalization process marked by the use of "*tout le monde*" ('all the people' actually passing past her). CLA's gesture complements the use of the grammatical markers by enacting the event with continuous flow and speed in a supple movement of the arm and the hand as illustrated in the screen shots in Figure 4.3.

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28. Translation in English of the extracts are made so as to provide as many cues as possible to understand the tenses, verbs and syntax used when necessary for the analysis. The translations are thus sometimes more literal rather than stylistically felicitous.

Figure 4.3 "*Tout le monde **passait** à côté*" ('everyone **was walking** past them'). The photos of the video are taken every two images. This co-occurred with "was walking past".

Example 4.2.2 illustrates the correlation between the bounded gesture and the use of *passé composé*.

Example 4.2.2 CAM and EMI. They are talking about their problems with registering at university.

*CAM: (en)fin bon j' **y suis allée** trois fois avant mais bon.
('oh well, anyway, I **went there** three times before that.')
quand j' ai réussi à y aller (laughs).
('When I was able to go there.')
*EMI: (laughs)
*CAM: et j' y retourne deux semaines après.
('and I go back three weeks later.')

The bounded gesture is coproduced with the *passé composé*. In Figure 4.4, the strong acceleration between images 4 and 5 marks a clear frontier. The other key images (7 to 11) are taken when CAM says "trois fois" (three times). The gestures are also abrupt, especially in photo 7, which shows the first occurrence, but also in 8 and 9 which show a flexion of the little finger and of the ring finger. There is also a lowering of the hand on the second occurrence, and a flexion of the ring finger in photos 10 and 11.

Figure 4.4 "*J'y **suis allée** trois fois.*" ('I **went there** three times'). These movements co-occur with "went there three times". The 5 first photos are taken every four images. The following ones every 2 images. There is a strong acceleration between the 4th and 5th photo corresponding to the past participle *"allée"*.

Example 4.2.3 SYL and ANI

*SYL: et j' ai eu des russes aussi. où j' **étais** pas là. Et un jour des [/] des collègues font ouais <j(e) sais pas y a eu des portugais ou des polonais qui sont venus> [Reported speech].
('and I had Russian people too. When I **was**n't there. And one day colleagues told me: "I don't know we had Portuguese and Polish people."')

*ANI: 0 [laughs].

*SYL: et quand <j' ai> [//] i(ls) **sont revenus** l(e) lendemain c'était écrit Moscou sur leur vêtement.
('and when I, when they **came back** the next day, they had "Moscow" written on their clothes.')

*ANI: 0 [laughs].

*SYL: donc j' ai dit ah bon des [/] des portugais.
('so I said "oh really, Portuguese people".')

*SYL: 0 [laughs] pourquoi pas? donc voilà euh moi mon histoire de restaurant.
('why not? So there we go with my restaurant story.')

Figure 4.5 "*où j'**étais** pas là.*" ('When I **was**n't there'). These movements co-occur with 'I wasn't there'. A photo was taken for every image in the video sequence. The presentation gesture is stable (extended over eleven images) and unbounded.

As shown in Figure 4.5 from Example 4.2.3, when SYL produces the *imparfait* form *où j'étais pas là* ('when I wasn't there'), he uses an unbounded presentation gesture with his right arm extended, hand palm up. The movement towards a location in the space in front of him is smooth and regular and held for half a second. The quality of the gesture thus corresponds to our hypothesis for co-verbal gestures expressed with the *imparfait*.

After ANI's laughter, SYL continues his story about the Russian people whom his colleagues confused with Portuguese tourists. He talks about their coming back to the restaurant on the next day and uses the *passé compose – ils sont revenus* – with a similar presentation gesture, located in the same space but punctual this time and with a change of speed that in our coding is an expression of the bounded quality (punctual) of the gesture.

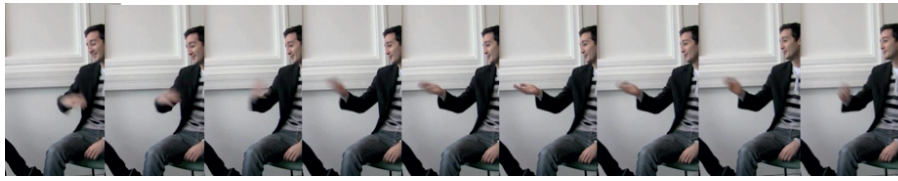

Figure 4.6 "*i(ls) **sont revenus***." ('They **came back**'). A photo was taken for each image. The presentation gesture is punctual here and bounded. The sixth image is the only one with a stable image of the right hand, indicating a very brief static position, in contrast to the (blurry) movement before and after.

The results for the two main French tenses used to refer to past events match our hypothesis. *Passé composé,* which corresponds to perfective/delimited aspect, highly correlates with bounded gestures, and *imparfait*, which corresponds to imperfective/undelimited, highly correlates with unbounded gestures.

This seems to indicate that the linguistic and cognitive differences in the construal of the event between *imparfait* and *passé composé* could be co-expressed in a majority of the gestures produced with the spoken forms. However, there are 33% bounded gestures that overlap with the use of *imparfait* and 29% gestures coded with the *passé composé* that are unbounded. In the next section, we analyze some counterexamples in order to propose some explanations for those cases.

2.2.3 *Counterexamples: The role of lexical aspect and the multi-functionality of gestures*

Example 4.2.4 FAN and CARM

*CARM: il était quatre heures du mat(in); j'étais dans ma voiture et devant y a un un mec et une fille derrière +… et i(ls) s(e) vautrent euh juste devant moi mais +//. (en)fin non <j' ai pas> [//] pas sous ma voiture mais juste devant moi et. en fait i(l)s étaient complètement bourrés tous les deux et +… et euh et la fille elle pleurait à mort. elle était là +//. on aurait dit qu(e) sa jambe elle **était** arrachée. bon <j(e) pense> [/]
j(e) pense qu' elle avait vraiment mal.
('it was four in the morning, I was in the car and in front of me there is a scooter with a guy and a girl behind him… and they fall right in front of me but… well no, I did not, not under my car but right in front of me and, well in fact they were both completely drunk and… well the girl was crying her eyes out. She was there, as if her leg **were** torn away, well I think, I think it really hurt her.')

In Example 4.2.4, the *imparfait* is used in *sa jambe elle était arrachée* ('as if her leg were torn away', although the verb forms are similar to a *plus que parfait*, "était" is an *imparfait* and "arrachée" has an adjectival value here). It co-occurs with a very

abrupt (bounded) movement of the arm, which seems to be coherent with the lexical aspect of the participle *arraché* ('torn') rather than the grammatical aspect, the *imparfait* marked on the auxiliary *était*. Example 4.2.4 thus shows how the gesture could be viewed as construing other main features of the verbal production than the aspectual nature of the verb.

Example 4.2.5 FAN and CARM

*CARM: mais <quatre heures> [/] c'était quatre heures du mat(in) et c'**était** dans la banlieue donc y avait vraiment pas beaucoup d(e) monde.
('but it was four, it was four in the morning and it **was** in the surburbs, so there were very few people.')

We chose to code the quality of the movements of gestures overlapping with verbs; while some gestures are tightly linked to the verbs, others could be expressing features of other elements of the utterance. In Example 4.2.5 we find a gesture we coded as *multiple bounded* co-occurring with an *imparfait* (*était*), when, according to our hypothesis, we should have an unbounded gesture rather than bounded gesture with the use of the *imparfait*. However, the multiple boundaries could be considered as encompassing all potential places involved in the location rather than the aspect of the verb: the speaker is expressing how the event could have taken place anywhere in the surburbs (considered as not as prestigious as being in Paris), whatever the specific location was. The multiple bounded gesture could be paraphrased as adding a semantic complexity to the noun "banlieue", as in "it could have been one of many possible places in the *banlieue*", as "*banlieue*" refers to locations that are near Paris but not part of the city proper.

In Example 4.2.6, the *passé composé* was produced with an unbounded gesture.

Example 4.2.6 LAU and CLA

*LAU: elles ont commencé à se battre tout ça pour euh parce qu'elle voulait absolument rentrer dans l(e) bus.
('they started fighting just because they absolutely wanted to get in the bus')

*CLA: +< xxx.

*LAU: alors qu(e) les bus y en a toutes les cinq minutes. ok i(l) faisait froid mais bon de là +// et puis elles **continuaient** en plus hein, dix minutes après elles **ont continué** à s'engueuler
('when there are buses every five minutes anyway. OK it was cold out but really… and the- they **continued** you see, ten minutes later they still **continued** to yell at each other.')

Before using the *passé composé* produced with an unbounded gesture, the speaker has used an *imparfait* with the same verb. The target form *elles ont continué à s'engueuler* ('they continued to yell at each other') is the result of a self-repair, which shows that her construal is not stabilized and she is still working on how she is

presenting the event. She combines the verb *s'engueuler* ('to yell at each other') with the form *continuer* ('to continue'). The speaker traces two repeated circles with her left hand, and the movement quality has been coded as unbounded.

Example 4.2.7 JUL and AME

*AME: tu l' as ridiculisé et t(u) es fière de toi.
('you made a fool of him and you are proud of yourself?')
*JUL: ouais, c' était marrant, mais j(e) crois qu' i(l) s' en souvient pas.
('Yeah, it's funny, but I think he doesn't remember.')
*AME: le pauvre. ('poor thing.')
*CAP: non moi j' aime bien. ('no, I like that.')
*AME: <i(l) va> [/]i(l) va gâcher sa vie à cause de toi.
('he is going to get his life ruined because of you.')
*JUL: +< 0 [=! laughs]. j(e) pense pas qu' i(l) s' en souvienne de toutes façons.
('I don't think he remembers anyway.')
*AME: et euh à [/] à part moi qui t'**ai fait des éloges** parce que t(u) avais réussi à faire mon planning du premier semestre.
('and um, besides me who **praised** you because you succeeded in planning my agenda for the first semester for me.')
*JUL: 0 [=! laughs].
*AME: est ce que y a beaucoup d(e) gens qui te vénèrent pour des aides que tu leur as rendues?
('are there a lot of people who venerate you for help you've given them?')

The passé composé used in Example 4.2.7, *qui t'ai fait des éloges* ('who praised you') is accompanied by an unbounded gesture with iteration of the same movement representing the action of worshipping, arms held on the side with an up and down movement, palm down, as if LAU were mimicking a worshipper in front of a deity. In terms of pairing the use of grammatical aspect and gesture, the quality of the gesture (unbounded) does not conform to our hypothesis. But the semantics of the verb, the use of the plural *faire des éloges* ('to praise' ['make praises', with a plural indefinite]) and the illustrative quality of the gesture that calls upon a repetitive physical action seem congruent with the quality of the co-verbal gesture used by the speaker.

Example 4.2.8 ANA and FLO

*ANA: et puis comme i(l) pleuvait elle a ripé, et euh j(e) sais pas pourquoi <elle était en tongs et en jupe> [she laughs], du coup elle s' **est** <un peu> [/] un peu **fait mal**, et voilà.
('and then since it was raining, she slipped, and um, I don't know why, she was wearing flip flops and a skirt [she laughs], so she, well, slightly, slightly **hurt** herself, that's it.')

In Example 4.2.8, despite the use of the *passé composé*, we find an unbounded gesture that seems to go along with the pragmatic and discursive value of ANA's verbal production: the adverb *un peu* (slightly) is repeated twice exactly when she produces the gesture marking hesitation. ANA has also expressed her epistemic stance on the event (*je sais pas pourquoi* 'I don't know why') and hesitates in her choice of the right terms to explain the event. The unboundedness of the gesture therefore does not match the perfective aspect of the *passé composé*, but it could correspond to the rendering of the speaker's hesitation and search for the best formulation to express the mental images as well as her recollection of the event.

Through a variety of examples, we have therefore observed that when the pairing of grammatical aspect and gesture quality does not match our hypothesis, the quality of the gestures can be linked to other dimensions such as the semantic aspectuality of the verb, or the pragmatic and discursive value of the utterance.

2.3 Conclusion

We have shown in Section 2.2 of this chapter that in French, significantly more bounded gestures were used with the *passé composé* (perfective, 71%) and more unbounded with the *imparfait* (imperfective, 67%), which matched our hypothesis. The quality of the gestures produced with verbs is predominantly congruent with the aspectual value expressed by the tense used. Co-verbal gestures associated to the *passé composé* and the *imparfait* could thus be seen as enactments of perfectivity and imperfectivity.

However, if gestures do embody features of mentally simulated actions (Hostetter and Alibali 2008), our analyses of some counterexamples indicate that gestures produced with verbs are not only correlated to aspect. Gesture is characterized by its multidimensional quality and one gestural form can express several functions at once. Our multimodal approach to studying how French speakers express past events sheds light not only on the imagistic nature of the construal of event structures, which we might interpret in terms of the mental simulation of actions, but also on the capacity gestures have to express other properties of language and its use, including the thinking-for-speaking and language production processes themselves.

3. German (*Müller*)

In this segment of our comparative study, German gestures accompanying past tense verbs were analyzed with regard to their movement qualities. Earlier work on the gestural expression of motion events in German and Spanish (cf. Müller 1998c, 2015; see also Section 1.2.2 in Chapter 1) indicated that the movement qualities of gestures could be used to express boundedness or unboundedness of events more generally. Against this background, the following hypothesis was formulated for German.

3.1 Introduction: Hypothesis for German

We expected bounded gestures to be used with verb forms in the *Perfekt* tense significantly more often than with those in the *Präteritum* tense. Unbounded gestures, on the other hand, were expected to be used with the *Präteritum* tense more often than with the *Perfekt*.

3.2 Results of boundary schema analysis for German

The results for the German data align with the French results with regard to the perfect tenses in each language: with each, significantly more bounded than unbounded gestures were used. But whereas for French, significantly more unbounded gestures occurred with the imperfect tense (*imparfait*) (see Section 2 of this chapter), for German, the opposite was true: significantly more bounded gestures were used. The results are considered below in more detail from both quantitative and qualitative perspectives.

3.2.1 *Quantitative results*

For the quantitative analysis of German, we followed the same procedure as for the French data. We looked at how many gestures were used with the perfect and imperfect tenses. Since both, French and German have morphologically complex composite perfect tenses (compounds of auxiliary plus participle), we decided to look only at how many gestures co-occurred with the main verb (e.g., the participle in the case of German *Perfekt*). The idea was here that the participle is more important semantically for the meaning of the verb than the auxiliary.

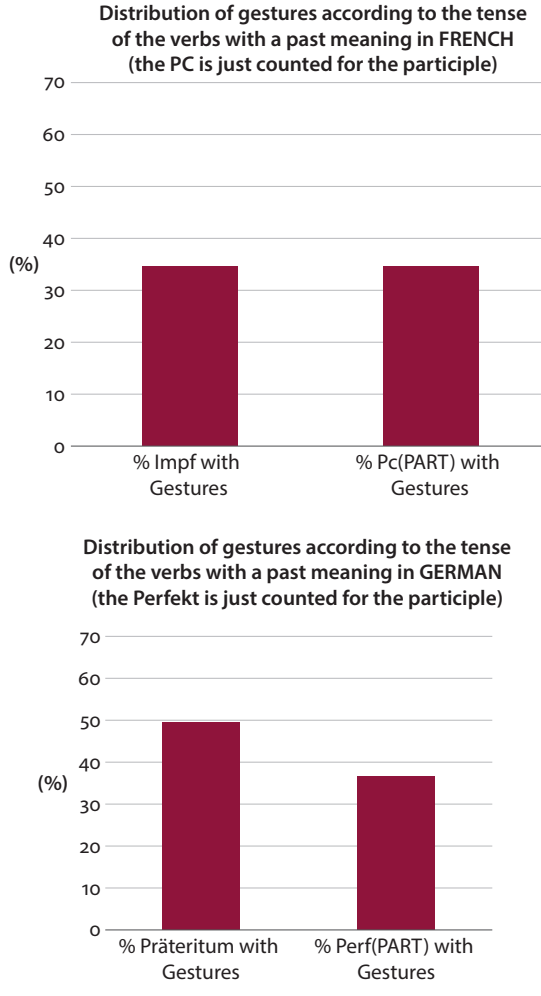

Figure 4.7 Amount of gestures used with imperfect and perfect verb tenses in French and German

When looking at the amount of gestures used with *Präteritum* and those used with the *Perfekt* participle, we found that half of the times (50%) when a verb was used in the *Präteritum* it was accompanied by a gesture (yielding 218 tokens), whereas for the *Perfekt* participle, the percentage was lower (36% of the total = 219 tokens). For French, the amount of gestures used with the two tenses was proportionally the same: 35% of the total (yielding 160 tokens) for the *imparfait* and 35% of the total (yielding 150) for the *passé composé*. The distribution of gestures for both German and French was thus different across tenses (see Figure 4.7).

For German the same pattern was also found across individuals (here with regard to the overall usages of past tense forms). Even when speakers used very few gestures, they still employed more bounded than unbounded gestures when talking about an event in the past (e.g., when the gesture was used in conjunction with a verb in *Perfekt* or *Präteritum*). The amount of gesturing varied from 1 to 74 per speaker, but for the most part, the German-speaking participants used between 30 and 55 gestures per conversation.

Turning now to the distribution of bounded versus unbounded gestures across the aspectually marked verbs in the past, recall that we found a pattern for the French data set which supported our hypothesis: bounded gestures were more frequently used with the *passé composé* while unbounded gestures were used more often with the *imparfait*. For the German data, however, it turns out that the situation did not differ per tense, as shown in Figure 4.8. There were significantly more bounded ($N = 170$) than unbounded ($N = 49$) gestures (a 78%/22% ratio; $X^2 = 66.85$, $df = 1$, $p < 0.001$, $phi = 0.6$) not only with the participles in the *Perfekt* tense, but also with the imperfect tense, the *Präteritum* (bounded = 133, unbounded = 90, a 60%/40% ratio, $X^2 = 8.29$, $df = 1$, $p < 0.005$, $phi = 0.2$), although the effect size (*phi* values) was greater for the results with the perfect tense than with the imperfect tense. The same general pattern (greater use of bounded gestures) was found per individual speaker, with the exception of one person who had a more unbounded gesture style overall.

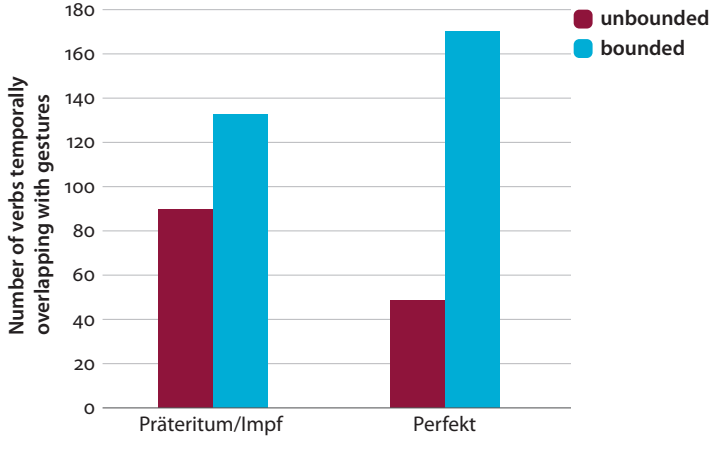

Figure 4.8 Co-occurrence of verb tense forms with gesture types in German

In a next step we wanted to see whether gestures made along with the auxiliaries follow the same profile with regard to boundary marking as those made during the respective participles. This was important in order to validate whether the boundary effects might be connected with the auxiliary as much as with the main verb, even

when both are separated from each other. The results (Figure 4.9) show that the participle of a verb in *passé composé* in French or in *Perfekt* in German is about as likely to correlate with a bounded gesture as the auxiliary of the verb (French $N = 214$ bounded gestures, 36% with auxiliary, 36% with participle; German $N = 158$ bounded gestures, 38% with auxiliary, 39% with participle). It is quite striking that this even holds for German for which the gestures have more chances to be different between the auxiliary and the participle of the same verb, because of their potential distance from each other in terms of time of utterance.

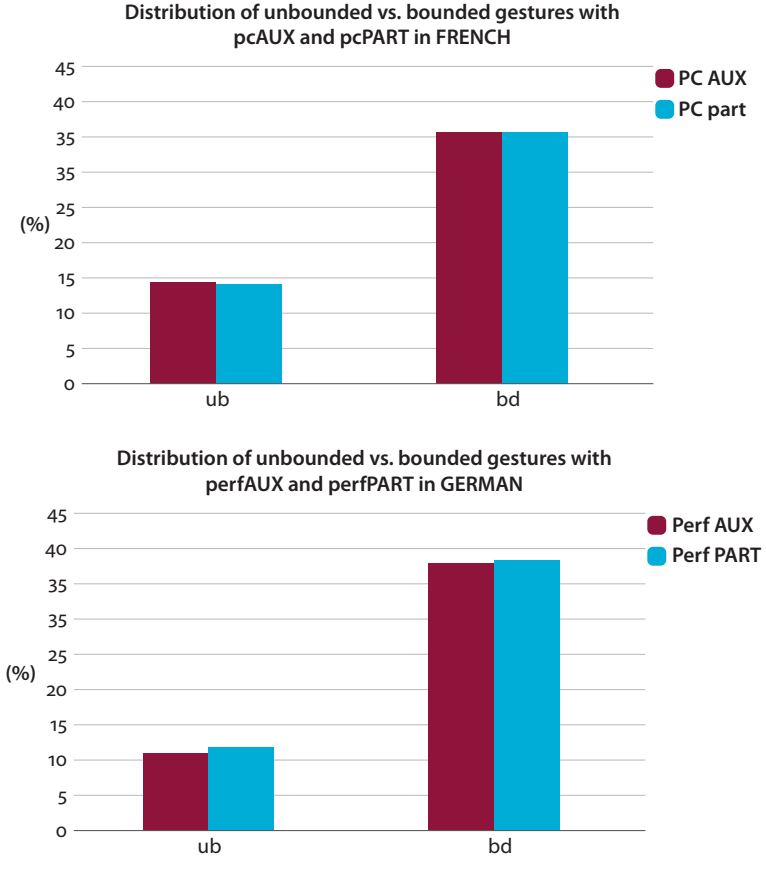

Figure 4.9 Correlation of the boundaries expressed by gestures on the two parts of the perfect tense verbs in French and in German

Summing up, the German results from the quantitative analysis show a greater use of bounded gestures with both the perfect and imperfect verb tenses *Perfekt* and *Präteritum*. There are several possibilities to explain the difference between French and German distribution of unbounded and bounded gestures with regard to the

imperfect past tense: the aspectual meaning of the *Präteritum* could be too weak or bleached out to motivate an unbounded movement; or other meaning dimensions/functions/aspects of the gestures or specific prosodic/intonational contours, in which the *Präteritum* verbs are embedded, could override the movement quality of the co-occurring gestures. The following section takes a closer qualitative look at the contexts of use of bounded and unbounded gestures and presents some possible explanations for the specifics of the German distribution of bounded and unbounded gestures with regard to the *Perfekt* and the *Präteritum*.

3.2.2 *Qualitative analyses*

In this section we present four short examples that illustrate some of the complex semantic connections found between gestures and verbs used in the past tenses. The first two examples show prototypical cases of a semantic overlap between verbal and gestural expressions of perfective and imperfective aspectuality. Examples three and four suggest some explanations for the distribution of bounded and unbounded gestures with the *Präteritum* in spoken German.

3.2.2.1 *Use of bounded gestures with Perfekt and unbounded gestures with Präteritum (German Examples 1 and 2)*

When the German speakers in our data employ the *Perfekt* tense, they often use gestures that have a marked onset or offset, or ones that mark multiple boundaries. The latter happens in the first example (Figure 4.10). The young man describes that he sleeps so deeply that he can even fall asleep on a sofa with a full party going on around him. He says: 'I have slept on sofas where people have **danced** right next to me' (*ich hab schon auf Sofas geschlafen, wo Leute um mich herum **getanzt** haben*; bold type here and below indicates the relevant tense form that co-occurred with a gesture). While saying this, he performs an alternating smooth movement with both hands that includes multiple gentle peaks and an accentuated offset, synchronizing with the perfect participle ***getanzt***.

Figure 4.10 *Perfekt* with bounded gestures*:* "*wo Leute um mich herum **getanzt** haben*"

The second example (Figure 4.11) shows unbounded gestures synchronizing with *Präteritum*: Describing a family journey to Italy, a young woman talks about the best pizza place they found on that trip. While saying: 'they **had** the best Pizza' (*die **hatten** die beste Pizza)* both hands (palms facing each other) move up in a wavy contralateral manner, with the downward motion being controlled and maintaining the same smoothness and tempo. The gestural movement co-occurring with the *Präteritum* auxiliary ***hatten*** thus enacts an ongoing, uninterrupted, unbounded movement.

Figure 4.11 Example for Präteritum with unbounded gestures: "*die **hatten** die beste Pizza*"

What we see in both examples is that the gestures are embedded in larger movement sequences, that they synchronize with prosodic contours, and that at the same time they can be very tightly coordinated with the verbs used. A deeper look at the data revealed some possible explanations for why bounded gestures predominated even with the German *Präteritum*.

3.2.2.2 *Some reasons for the distribution of bounded and unbounded gestures with the Präteritum (German Examples 3 and 4)*

To begin with, it is important to bear in mind that the use of *Präteritum* tense as a past tense in German is restricted to a relatively small group of verbs, which, moreover, are semantically weak and morphologically simple (see Section 3.3). As a consequence, gestures have less time and chance to coordinate with such short verbs; moreover, these verbs tend to be unstressed, meaning that they are prosodically unmarked. However, kinesically marked boundaries of movement tend to follow the prosodic contour: acceleration, deceleration, or pulse of effort often go with the prosody, and prosodically unmarked verbal expressions therefore are less likely to attract a gesture at all.

Another factor contributing to the greater use of bounded gestures overall with these German tenses is that gestures are often embedded in larger sequences of movement and they may take over the dominant movement quality of the bigger gestural unit. In the third example (Figure 4.12) we find such a case: The speaker

expresses how happy she was not having ordered a traditional Polish dish, with a name she could not understand, since it was made from tripe, something she finds really disgusting. She says: 'I was happy I did not order it, since it was actually cow's stomach' (*ich **war** froh, dass ich's nicht bestellt hab, weil es nämlich Kuhmagen war*) and performs two small palm down gestures that accentuate the two elements of the predicate adjective construction "was happy". Here the marked offsets of the gestures appear to be used to rhythmically foreground prosodically relatively unmarked but semantically important elements in speech. This indicates that it was more relevant for the speaker to rhythmically highlight the fact that she was happy (expressed in the adjective *froh*) than to underline the enduring, imperfective character of the 'event' expressed verbally. To put it differently, the two successive gestures that coordinate with the verb in the *Präteritum* (*war*) and the adjective (*froh*) can be considered small beats, highlighting the information which carries a high communicative dynamism (Firbas 1971; McNeill 1992). In a nutshell, highlighting the plot of her story appears more important for the speaker than expressing the ongoingness of the state of happiness. The bounded gestural movement quality (a marked offset) functions as a beat and thus overrides the possibility of an unbounded movement that would have underlined the ongoingness of the state of happiness that she describes.

Figure 4.12 Example for *Präteritum* with bounded gestures: "*ich **war** froh, dass ich's nicht bestellt hab, weil es nämlich Kuhmagen war*"

In the fourth example, the gestures synchronize with a list that repeats a syntactic structure three times: "*und dann*" followed by two copulas and one modal verb in the *Präteritum*; "*und dann **war**…, und dann **war** …, und ich **mußte***" ('and then **was** …, and then (there) **was** … and then I **had to**…'). Each verb in the *Präteritum* comes with a bounded gesture:

A list of events in the *Präteritum* with	**bounded gestures**
*und dann **warn** da drei Spuren hintereinander*	marked onset
*und dann **war** da auf einmal ne Ampel*	marked onset
*und ich **mußte** halt stoppen*	marked offset
('and then there **were** three lanes in a row,	
and then there **was** the red light,	
and I **had to** stop')	

With this list, the speaker presents the three relevant points of a story: The first two describe the general setting of the narrated situation: an American highway with several lanes in a row, a red light ahead, and the third point concludes this listed exposition: "and I had to stop". All this put her into a stressful situation: an inexperienced German driver driving a big car in a complex American traffic situation. Two of the *Präteritum* verbs are copulas 'were', 'was' (*warn, war*), the third concluding one is a modal verb 'had to' (*mußte*). Each of the listed points comes with a gesture and each of them has either a marked onset (the first two ones) or a highlighted offset (the concluding one). It therefore seems that the pragmatic structure of presenting this little event not only as a list (three bounded gestures marking the successive points) but also as an exposition (onset marked) and a conclusion (offset marked) overrides the imperfectivity of the three sub-events. What the gestures do here is highlight the sequential structure of the list, not the imperfective character of the single events.

In conclusion, these examples indicate that gestures also may correlate with various semantic or pragmatic factors, other than aspectual event construal. For the *Präteritum*, they particularly 'suffer' from the semantic, prosodic, and morphological backgrounding of German verb forms typical for the *Präteritum* tense. The semantic weakness, an unmarked prosodic contour, and morphological simplicity (often monosyllabic, i.e. short, forms) can be considered to account for the fact that the *Präteritum* tense forms did not occur significantly frequently with unbounded gestures – which involve sustained, control of effort and movement (see the notion of "gain control" in Chapter 1, Section 2.2.1.4).

3.3 Discussion: German as a complex case

When comparing the use of bounded and unbounded gestures with regard to German *Perfekt* and *Präteritum*, what we find can be described in brief as a complex story. Reconsidering the findings for German with regard to the gestural expression of aspectuality, what we see in the gestures can actually be said to reflect the usage situation of the *Perfekt* and *Präteritum* tenses in German as outlined in Section 3, Chapter 3. While *Perfekt* is widely used to describe semantically rich verbal events,

the *Präteritum* is mostly used with semantically bleached and abstract verbs (e.g. copula, modal, epistemic stance, and stative), which, moreover, are short (morphologically simple) and not particularly highlighted prosodically. This means for the verb forms in the *Präteritum* tense, the attraction of gestures is relatively weak because the verb form is short, semantically weak, and prosodically unmarked. However, pragmatic and discourse factors can result in short, stressed (bounded, in our terms), beat gestures co-occurring with these verb forms. For verb forms in the *Perfekt* on the other hand the situation is different. They typically come with semantically rich verbs that are morphologically more complex (often with long and detachable prefixes) and that are more likely to be prosodically highlighted. Moreover – and this also holds for the use of *Perfekt* (there was no 100% matching between bounded gestures and the use of *Perfekt*) – semantic and pragmatic factors that do not relate to verb aspect might overrule the gestural expression of aspectual meaning through its movement quality (for examples from Russian, see Section 4.2.2. of this chapter). Gesture movement quality with these verbs is thus integrated with the ways in which the tense forms are used and other factors of spoken language use.

Our study thus might well be enriched by including examination of a more 'lexical', more 'iconic' way of expressing aspect gesturally, e.g., expressing aspectual notions not through the movement quality, but iconically in other ways, through repetitive or cyclic movements for iterativity, by looking at how movement quality (marking of onset) might coincide with *Aktionsart* verbs that have an inchoative meaning. The same holds for durative verbs and cyclic motions. Cyclic motions often accelerate particularly at one point within the circle they perform, which we would count as marking a boundary. However, since gestural movements are multifactorial, they can express several different aspects of meaning at the same time. So, they could be expressing durativity by a cyclic motion and an internal structure of an event as having intermediate peaks at the same time. Reducing the gesture analyses to only one factor thus is always a simplification.

While in the case of German, it could be the case that the *Perfekt* often comes with a vivid and active aspectual conceptualization, for the imperfect(ive) (*Präteritum*), it could be that more iconic ways of expressing imperfectivity (including iteration and duration) might be more relevant for the German context than the movement quality of the gesture (cf., Section 2.2, Chapter 1). Last but not least, it would also be interesting (in a separate study) to look at the gestures used with the historical present tense in German, to see if they come with an unbounded movement quality: the historical present is known to provide an internal, vivid perspective on an event (see Wolfson 1979 for an overview of this position in the literature), like the imperfective aspect can, and could thus lend itself to greater use of unbounded gestures, highlighting qualities internal to an event.

4. Russian (*Denisova, Iriskhanova, Cienki*)

4.1 Introduction: Hypothesis for Russian

As discussed in Chapter 3, Section 4, the basic aspectual distinction in Russian is that of an opposition between verbs in the perfective versus imperfective aspect. One of the crucial semantic components that lies in the basis of the opposition is the idea of boundaries, as discussed in the history of research reviewed in Chapter 1, Section 1.2. As perfective verbs are traditionally characterized as expressing an event viewed as a whole, and imperfective as not expressing this construal, we hypothesized that perfective verbs would correlate with bounded gestures, characterized by a pulse of effort, while imperfective verbs would correlate with unbounded gestures, with controlled movement and lacking such a pulse. Grammatical distinctions in the opposition are most evident in Russian in the past tense and in the infinitive, and in the framework of our project, we focused on the kinds of gestures used with verbs in the past tense (with only one form available in the language) in the two aspectual forms. We thus formulated the hypothesis for Russian that past-tense perfective verbs in Russian would co-occur significantly more frequently with bounded gestures, and that past-tense imperfective verbs would co-occur significantly more frequently with unbounded gestures.

4.2 Results of boundary schema analysis for Russian

4.2.1 *Quantitative results*

The analysis of 10 videos with the speech of 20 Russian native speakers showed the results displayed in Figure 4.13.

As can be seen from Figure 4.13, Russian speakers used many more bounded than unbounded gestures, in general and for each verb type – a difference that is significant in each case. That is, 73% of perfective verbs correlated in time with bounded gestures ($N = 130$) and only 27% with unbounded ($N = 48$), a difference that was statistically significant ($X^2 = 37.78$, $df = 1$, $p < 0.01$, $phi = 0.46$); 63% of imperfective verbs co-occurred temporally with bounded gestures ($N = 149$) and 37% with unbounded ($N = 88$), a difference that was also significant ($X^2 = 15.7$, $df = 1$, $p < 0.01$, $phi = 0.26$). While this presents mixed results in relation to our hypothesis, the effect size (*phi* values indicated above) was greater for the correlation of bounded gestures with perfective verbs than it was for bounded gestures in relation to imperfective verbs. In addition, a crosstab calculation shows that there were significantly more bounded gestures with perfective verbs than with imperfective verbs (X^2 (1, $n = 415$) = 4.32, $p = 0.04$, $phi = .11$).

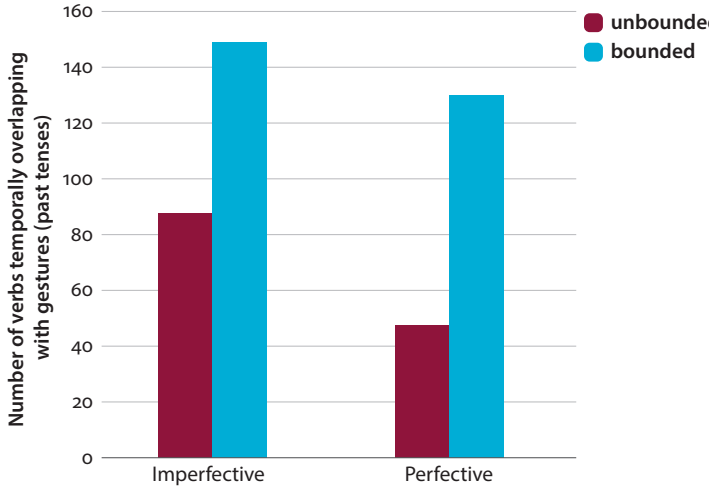

Figure 4.13 Use of bounded and unbounded gestures with the perfective and imperfective aspects in the past tense

It is noteworthy, that even though the results varied from one video to another, there is still a tendency for Russian gestures to be more bounded, regardless of the aspectual form of the verb used. In eight videos out of ten analyzed, perfective verbs correlated in most cases with bounded gestures; in the two videos in which this was not the case, the use of the two types of gestures with perfective verbs was practically equal. In six videos out of ten, imperfective verbs were used with bounded gestures to a significant degree. In the three other videos, the distribution of gestures is nearly equal, and in the last one there is a difference towards unbounded gestures, but this is a matter of the use of two verbs with gestures. The pattern found on the whole thus carries across most of the dyads in the individual videos.

As the category of aspect in Russian can be traced throughout different tenses and in the infinitive itself, we checked the same hypothesis on all the verbs, and the results were the same, as shown in Figure 4.14.

The results present a similar picture of co-verbal gesturing with aspectual forms, even beyond our focus on verbs in the past tense.

At first glance, it might seem that perfectivity and imperfectivity are indistinguishable in terms of gestural behavior with verbs in these aspectual forms. However, a closer look at the data shows a number of factors that are relevant, as explored in Section 4.2.2 below.

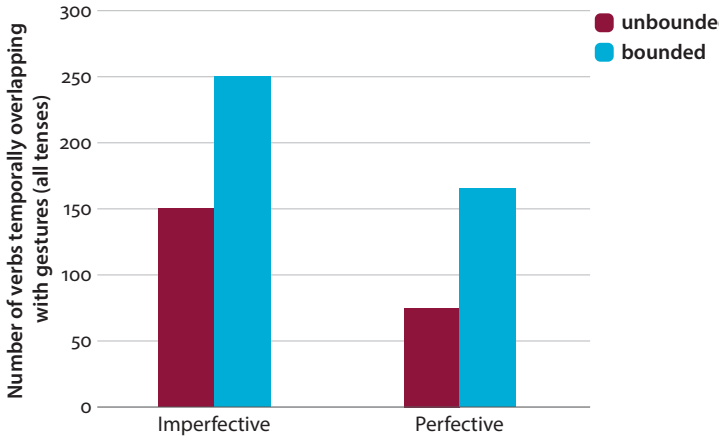

Figure 4.14 Use of bounded and unbounded gestures with the perfective and imperfective aspects across all verb forms, including infinitives, in absolute numbers

4.2.2 *Additional factors analyzed qualitatively and quantitatively*

4.2.2.1 *Preliminary analysis*

The results reported above still leave questions as to why verbs in the imperfective aspect also co-occurred so frequently with bounded gestures. Further examination of the cases that ran counter to the hypothesis provides several sets of explanations that account for most of these cases. The first set of explanations includes the influence of various gesture factors while the second set focuses on pragmatic and semantic parameters of the speech-gesture combinations.

An important factor to consider is gestural types in terms of forms and functions. When we were annotating the corpus, we considered practically all the gestures (apart from self-adaptors, such as scratching oneself or adjusting one's hair) that were synchronized in time with verbs. However, a main distinction that appears to be crucial for our research is the one between imagistic, representational gestures versus non-representational gestures. Simply put, representational gestures are ones that convey an 'image' of an event referred to, while non-representational gestures do not represent or act out the event or object that is being talked about. Pointing gestures, though able to make reference to some entity or idea via deictic indication, are not representational gestures, as they do not provide any or much iconic image of the form of the referent. (These distinctions are well known from the gesture studies literature, e.g., Ekman and Friesen 1969; Kendon 2004; McNeill 1992).

So-called beat or baton gestures (see previous references), that primarily mark the rhythm of speech (accentuation), are also considered here as non-representational, given their normally low iconicity in relation to speech. (Although see Yap and

Casasanto 2016 on the potential of beat gestures for simple expression of semantic components, such as directionality up or down.) As rhythmical gestures are related to the rhythm of speech, and in most cases these gestures are bounded by nature as they include a pulse of effort regardless of the event that is being described, their use by the participants in our data resulted in chains of bounded gestures. Let us consider one of the examples of the use of rhythmical gestures (Example 4.4.1). All the words that are accompanied by gestures are marked in bold type.

Example 4.4.1
[…] *i* ***skazal mne prosto čtoby ja byla akkuratnoj***.
('[…] and **told me just to be careful**.')

In this example the speaker makes two small beat gestures that correlate in time with the words *skazal mne* ('told me'), paused after that, and started to make other rhythmical gestures that consisted of five beats, each one correlated with the words: *prosto* 'just', *čtoby* 'so that', *ja* 'I', *byla* 'was', *akkuratnoj* 'careful'. Thus, the sample contains two verbs: the first one (*skazal* 'told') is perfective and the second one (*byla* 'was') is imperfective, however, they are used with similar gestures as the main gesture function here is to mark the rhythm of speech. The use of punctual beats thus provides one explanation for the use of bounded gestures with imperfective verbs in the Russian data.

In order to consider imagistic gestures, we conducted another layer of analysis, described in the following section.

4.2.2.2 *In-depth analysis*

As the notion of event boundaries is an important semantic component of the category of aspect in Russian, we decided to gain deeper insight into the representational gestures that convey an image of the described event. Thus, we decided to assess the degree to which gestures that represent semantics of the verbs they are synchronized with follow aspectual boundary schemas, and the degree to which gestures that represent the meaning of other words, but synchronized with verbs, do not follow boundary schemas.

In order to proceed with this kind of analysis we made a new layer of annotation, marking gesture types. We made a rough distinction dividing gestures into representational ones and non-representational ones. Representational gestures involve a certain degree of iconic relation between the form of the gesture (e.g., hand shape, movement trajectory, relative location of the hands) and form features of the entity, process, or relation being expressed, as ascertained through the accompanying speech. Müller (1998b, 1998c) notes that gestural representation of referents consists of one of four modes (the following is an adaptation of her terms): enacting what one would do in the represented situation, appearing to hold or touch a referent entity, drawing a path of movement or the shape of a referent, or embodying (standing in for) the represented referent. Non-representational gestures do not employ a discernable mode of representation.

Representational gestures were subdivided into two further groups: representational-verb and representational-other. Gestural representation can concern the verb meaning, or it can relate to something else in the verb phrase, such as a prepositional phrase or an object of the verb. An example of a verb-related gesture would be someone talking about grabbing something while enacting grasping their empty hand in the air, while an example of a non-verb-related gesture would be talking about baking a cake while holding one's two hands in front of oneself, hands facing each other loosely halfway open, as if holding some round medium-size object (which would relate to the cake, in this instance).

The following examples help illustrate the distinction. In one of the narratives (Example 4.4.2), the speaker described a dispute two drivers were having after a car accident. All the verbs marked in bold in the example were used with representational-verb gestures.

Example 4.4.2
vyšel *iz mašiny,* ***podošël*** *k ètomy pensioner,* ***otkryl*** *u nego dver',* ***vytaščil*** *jego, načal jego kak-to* ***trjasti***
('**got out of** the car, **came up** to this retired man, **opened** the door, **took** him outside and started to somehow **shake** him')

When the speaker pronounces the verbs *vyšel* 'got out of ', her hand draws a trace indicating the direction of the movement of a person getting out of the car; the verbs *otkryl* 'opened', *vytaščil* 'took outside' and *trjasti* 'shake' are accompanied by an enactment of the actions that are being talked about. Hence, the speaker uses different modes of representation to illustrate the marked verbs.

Another example comes from a different speaker, however, it also concerns the topic of disputes. In this example the speaker represents two people with her hands and makes a bounded gesture illustrating a confrontation between them (Figure 4.15).

Figure 4.15 "*vot oni* ***sošlis'***." ('So they **confronted** each other.')

The second group of gestures includes representational-other gestures that are still representational, but they represent a word that precedes or follows the verb it is synchronized with in time. In Figure 4.16 the speaker draws a circle representing the noun that follows the imperfective verb that it correlates with in time.

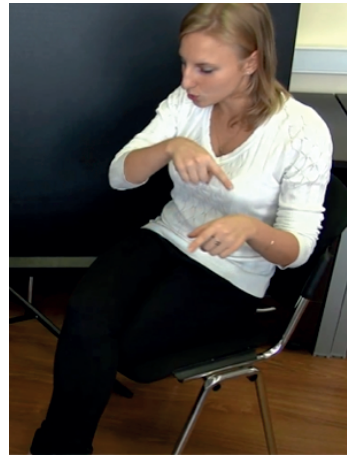

Figure 4.16 "*Tam takoj krug* ***stoit*** *s časami*." ('There '**stands**' a circle like that with a clock.')

The second step of annotation suggested checking whether gestures that represent the semantics of the verbs they are synchronized with followed the predicted aspectual boundary schemas, and whether gestures that represent the semantics of other words but are synchronized with verbs were not used with the predicted boundary schemas.

4.2.2.3 *Results and discussion*

The analysis yielded the results shown in Figure 4.17.

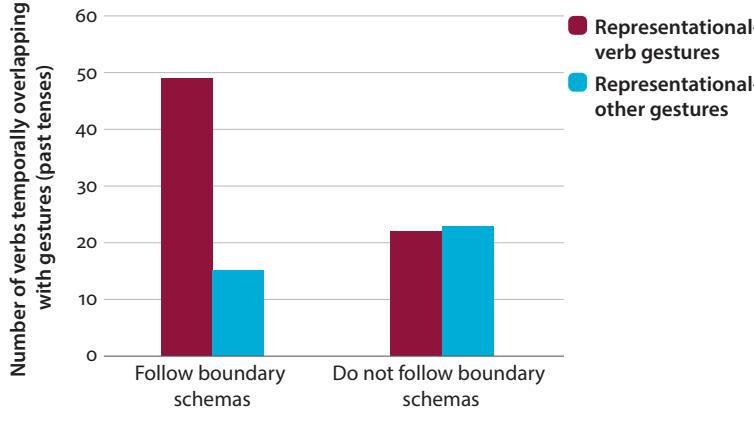

Figure 4.17 Use of gestures representing verb semantics versus semantics of other elements of the phrase

In this part of research we considered all the verbs that were used in the data and annotated them for aspect. We found 71 representational-verb gestures synchronized with verbs. In 69% of the cases, the gestures followed the aspectual boundary schemas. As far as representational-other gestures are concerned, it must be stated that they are not numerous in the data ($n = 38$), however, in 61% of the cases they did not follow the aspectual boundary schemas. That is, with gestures representing verb meanings, significantly more gestures were used that supported the hypothesis ($N = 49$) than did not ($N = 22$) ($X^2 = 10.27$, $df = 1$, $p < 0.01$, $phi = 0.4$). However, with gestures representing other elements of the verb phrase, there was no such correlation; 15 gestures correlated with the hypothesis versus 23 that did not. While it is interesting that more of the gestures in this case did not correlate with the hypothesis, the difference was not a statistically significant one. Nevertheless, a X^2-test of the distribution of follow-boundary schemas vs. do-not-follow-boundary schemas for the two types of representational gestures shows: X^2 (1, $n = 109$) = 7.73, $p = 0.005$, $phi = 0.29$; there are significantly more gestures that follow the boundary schema among the representational-verb gestures than among the representational-other gestures.

Thus, gesture analysis shows that if the semantics of the verb is represented in gesture, then there was more likely to be an accompanying reflection of pulse of energy with perfective verbs than with imperfective ones. This provides evidence supporting a multimodal approach to aspect in connection with its lexico-grammatical status in Russian.

The next factor that was considered in the framework of our research is resonance, which Du Bois (2014: 372) identifies as "the catalytic activation of affinities across utterances". Here we extend the notion to gestural repetition by the same speaker or across speakers (see Iriskhanova, in press; Iriskhanova and Prokof'eva, in press). It is on the border between two sets of explanations as it actually has two sides: a gestural and a pragmatic one. Hence, gestures produced one after another often have similar qualities, which means that bounded gestures are usually followed by bounded gestures and unbounded – by unbounded, regardless of the kind of verb that was used.

Let us draw an example from one of the videos (Example 4.4.3). The speaker was talking about a failed attempt to make an order at the restaurant in Thailand. The verbs that correlated with gestures are in bold type.

Example 4.4.3

K nam ***podošla*** *devuška. I my* ***pytalis'*** *daže jej v menju pokazat' […] v menju my* ***pytalis'*** *pokazat', čto nam nužno [..],* ***zakazali*** *dva. /*

('A girl **came up** to us. And we **were even trying** to show to her in the menu […] in the menu we **were trying** to show what we needed […], we **ordered** two.')

The verb *pytalis'* ('were trying to') is imperfective and all the other marked verbs are perfective. All the verbs here are used with bounded gestures just as in another phrase from the same narrative (Example 4.4.4):

Example 4.4.4
*My **pytalis'** jej požalovat'sja, ona opjat' ničego ne ponimala, potom uže podošla vtoraja devuška, my s nej **pytalis'** kak-to… /*
('We were **trying to** complain, she didn't understand anything again, then the second girl **came up**, with her we were somehow **trying to**…')

Here again the verbs *pytalis'* ('were trying to') in both cases and the verb *podošla* ('came up') are used with bounded gestures. However, only the verb *podošla* ('came up') is in its perfective form, while the verb *pytalis'* ('were trying to') is imperfective.

Such examples show that, on the one hand, gestures have a tendency towards assimilation as such gesture quality as a pulse of effort can be traced in a chain of gestures. On the other hand, however, it might imply that in some cases the speaker sees the whole event as a bounded one and, consequently expresses this on a non-verbal level.

The other side of this resonance parameter is a pragmatic one. In dialogue, speakers sometimes mirror each other's gestures but it does not mean that the words that correlated with the gestures of the first speaker will be repeated by the second speaker, hence in such cases of mutual adaptation, the use of gesture is highly significant for the discussed event, but it does not necessarily express aspectual semantics. An illustration of such resonance was found in another narrative, produced by a different speaker, about the difficulties of going to a restaurant in a foreign country (Example 4.4.5). The verbs that correlated with gestures are in bold type.

Example 4.4.5
– *Kak vy v itoge objasnili, čto vy khotite?*
('How did you explain what you wanted [to order]?')
– *Ty znaješ*, ***metodom tyka***.
('You know, by **pointing** [the method of the point]')
– *Vy prjamo **v menju pokazyvali?***
('You **were pointing right at the menu?**')

The first speaker produced a representational gesture to illustrate the act of pointing which was a multiple-bounded one. The gesture consisted of several micro-acts of pointing. The second speaker mirrored the gesture and used the imperfective verb *pokazyvali* ('were pointing'). In this case we can speak of a simple mirroring of the gesture. Nevertheless, the gesture itself marks boundaries between smaller actions

and allows us to see the event of pointing at different dishes on the menu as a large macro-event that consists of a few smaller events.

The next set of explanations concerns mainly pragmatic and semantic characteristics. The first parameter considered here is the profiling parameter. The patterns for gestural choices may be related to the event properties that are conceptually profiled by the verb's dependents. Hence, adverbial modifiers, for example, can influence the meaning of the whole event (Figure 4.18).

Figure 4.18 "*Ja učastkovogo svoego* ***videla*** *vsego odin raz v žizni.*" ('I **saw** our local policeman only once in my life.')

The hand shape of the speaker represents the word *odin* 'once' (extended index finger), in the form of a demonstration of the single finger. The preparatory phase of the bounded gesture of pointing overlaps with the imperfective verb *videla* 'saw', but the stroke is synchronized with the words *odin raz v žizni* 'once in my life'. It suggests that although the verbal description is unbounded (imperfective), the gesture highlights the bounded nature of the whole event, which is construed as a unique one by means of the adverbial modifier.

The second parameter in this set is the complexity parameter that concerns the compound nature of events (in the sense of Šabes 1989 and van Dijk 1980). Let us consider Example 4.4.6:

Example 4.4.6
Vydavalas' *takoj ček, takaja kvitancija.*
('[They] **gave out** some bill, receipt.')

The verb *vydavalas'* 'was given out' is imperfective, however, the event of giving out a receipt consists of smaller micro-events. The gesture, synchronized with this word consisted of a chain of bounded gestures, which suggests that if a regular

event, expressed by an imperfective form (*vydavalas'*), is a repetition of punctual events, the bounded gesture can correlate with the boundaries of the smaller events. Compare what was discussed with regard to the German data, above, that durativity could be expressed by a cyclic motion and the internal structure of the event with intermediate peaks during the motion.

The last parameter in this set is the speech mode parameter that includes specific features of oral communication. In our oral narrative data, the imperfective copula verb *bylo* 'was' was used extensively. It is difficult to speak about stable semantic components of the verb *byt'* 'to be', especially when it serves as a copula verb. In this case the surroundings of the verb *byt'* 'to be' are crucially important in terms of the semantics of the events, hence, they determine the boundaries of the event. See, for instance, Example 4.4.7.

Example 4.4.7
Primerno čerez mesjac ja byl, moj passport ***byl yže na rukakh***
('About a month later I was, my passport was **already in my hands.**')

In this example the verb *byl* ('was') is part of the set expression *byt' na rukakh* ('to be/have in one's hands'), used in informal conversation when a speaker talks about receipts, passports, tickets, and other documents. Here the locative meaning of the verb is bleached, bringing it closer to copula verbs in terms of function. The latter is confirmed by the fact that the verb can be omitted in the present tense: *U tebja bilety na rukakh?* 'Do you have the tickets with you (=in your hands)?'. The bounded gesture that is synchronized with the verb *byl* correlates with the whole expression that sets a clear endpoint of the event.

4.3 Conclusion

The sets of parameters considered here give an insight into the factors that influence expression of event construal in Russian on the verbal and the non-verbal (gestural) level.[29] The initial hypothesis we had about event-boundaries and their expression in gesture was not confirmed, however, a deeper analysis shows that Russian data is highly sensitive to lexical and pragmatic features of discourse that may have influenced the qualities of gestures. It also appears that, being tightly connected with the semantics of verbs in Russian, event boundaries tend to be expressed in representational gestures that capture the image of the illustrated word. Thus, the gesture analysis conducted here highlights the connection between the category of

29. See Grišina 2016 for a set of additional gestural parameters studied in relation to the use of perfective and imperfective verbs in Russian.

aspectuality and the lexical meaning of the verbs in Russian. Overall, the results of this secondary analysis of the data shed light on the complex interplay of factors relating to the use of gesture movement qualities with speech, having to do with the semantic, grammatical, and discourse-pragmatic levels of language.

5. Summary (*Cienki*, *Müller*)

The results for the three languages showed an interesting pattern: The results for French confirmed the hypothesis: for French there was a significant correlation between bounded gestures and the perfect tense (*passé composé*) as well as between unbounded gestures with the imperfect tense (*imparfait*). For German and Russian, on the other hand, the results did not confirm the hypothesis. Both the imperfect (*Präteritum*) and perfect (*Perfekt*) tense in German, and both the imperfective and perfective aspects in the past tense in Russian, occurred significantly more with bounded than unbounded gestures. The difference between gesture use with the German *Präteritum* and the comparable past tense in French (*imparfait*) can be accounted for in terms of the difference in semantic functions of the imperfect tenses in the two languages. Whereas the French imperfect sets up events in the past in general as a background against which other events may be highlighted, the German imperfect past tense is not used as consistently this way in conversation; the imperfect is the frequently used past tense only with certain specific verbs (*sein* 'be', *haben* 'have', and the modal auxiliaries). The difference between the results for French and Russian may be accounted for in terms of the lexical semantic bases of grammatical aspects in Russian, rather than in terms of the grammatical aspectual distinction per se.

As suggested in Chapter 5, Section 1, a kinesiological analysis of gesture production offers new ways of looking at gesture movement qualities, a different focus than what have become the traditional means of analyzing gestures for their forms. This could provide further insights into whatever relations there might be between the expression of effort in gesture production and the construal of events as expressed in verbal grammatical forms. Section 4 of Chapter 5 provides a case study considering the analysis of kinesiological properties of gesture in our French data and how they relate to the use of the imperfect and perfect past tense forms.

CHAPTER 5

Looking ahead

Kinesiological analysis (*Boutet, Morgenstern, Cienki*)

In this chapter, we consider how event structure differences expressed by different forms of grammatical aspect (perfective and imperfective) may be reflected in kinesiological features of the gestures. We focus on the speed and flow of the movements as well as the segments involved (fingers, hand, forearm, arm, shoulder). A kinesiological approach to gestures helps us analyze the movements of human bodies according to a biomechanical point of view, which includes physiological features, in order to determine their functions.

In line with the theoretical discussion of aspect in Chapter 1, Section 1.2, we consider that perfective aspect generally characterizes an event as bounded and imperfective aspect – as unbounded or unspecified as to boundedness. By taking a kinesiological approach to gestures, we can uncover key components of gesture used to express boundedness and unboundedness.

Boundaries are a metaphor that comes from the analysis of vocal languages, which themselves are not spatial in nature, but sonic. However, coding boundary schemas in gesture is an exercise that involves what the coders perceive visually, which is relative to the amplitude of the gestures, the type of segments involved and the quality of the videos themselves. Coding *kinesiological* features is also done through our perception (when using motion capture technology is not feasible), but can add objectivity and rigor. When we determined the boundary schemas of gestures in our project, our discrimination was mostly based on velocity and acceleration of the hand and arm movements; now we focus on those features, adding the flow of the movement and the number of segments involved in the gesture.

When we take movement dynamics, for which we use the term *kinematics* (including speed, acceleration, jerks), into consideration, we need to re-locate movement in gesture space. We also need to understand the constraints linked to how each segment of the gesture involved (shoulder, arm, forearm, hand, fingers) can actually move in space.

Whereas kinematic features represent the study of the movements independently from their cause, a kinesiological approach to gestures helps us determine the links between form and function. A kinesiological approach – detailed in the next section – allows us to understand the nature of the components of movement and to evaluate

the constraints imposed on bodily segments, revealing the role of biomechanics in gesture production. We can thus assess what aspects of movement depend on the speaker's/gesturer's choice and what depend on the facility of bodily movement production.

1. Initial main concepts

1.1 Segments

What we call a segment is a non-deformable anatomical unit situated between two articulations. We distinguish the segments of the shoulder, the arm, the forearm, the hand and the phalanges (often grouped together per finger) from each other. At the intersection of those units, the articulations carry the degrees of freedom around which motion appears.

1.2 Degrees of freedom

A degree of freedom is defined as an axis around which movements relative to a segment are possible. A degree of freedom depends on the rotation of a segment around an axis in relation to the other axis. Generally that axis goes through an articulation. Each degree of freedom is thus defined according to a rotation axis. Each degree of freedom allows movements that have a specific amplitude expressed in degrees, as shown in Figure 5.2.

From top to bottom, starting from the shoulder down to the fingers, there are 28 degrees of freedom. Each of these degrees of freedom is unique. Together they make up the infrastructure of manual gestures. All manual movements are determined by those degrees of freedom. If a muscular impulse emerges somewhere between the shoulder and the fingers, its effect is inevitably related to the motion possibilities the degrees of freedom can offer. They thus structure space according to a kinesic geometry.

The articulation of the shoulder involves three degrees of freedom: abduction/adduction, flexion/extension and interior/exterior rotation (see Figure 5.1). The articulation of the elbow involves two degrees of freedom: flexion/extension and pronation/supination (see Figure 5.1). The latter degree of freedom is often attributed to the hand because its visual effect mostly involves the hand. Similarly interior/exterior rotation, which engages the articulation of the shoulder, is more often attributed to a movement of the forearm. We note that those two degrees of freedom (pronation/supination and interior/exterior rotation) are rotations performed according to a longitudinal axis along a bone. The wrist involves two degrees of

freedom which affect the hand: flexion/extension and abduction/adduction (see Figure 5.1). The amplitudes permitted by those two degrees of freedom are different. The first (flexion/extension) offers a 180° rotation in total, whereas the second one (abduction/adduction) – only 80°. The other degrees of freedom involve the fingers (we omit some details in this section). Beyond the geometry that those degrees of freedom enforce, amplitude is also an important factor that weighs on the circulation of motion within the upper limb. The lower the amplitude, the quicker the articulatory stop is reached. Once the stop is reached, motion is transferred unto an adjacent segment. Thus manual abduction/adduction, which has low amplitude, is an important location for movement transfer unto the forearm.

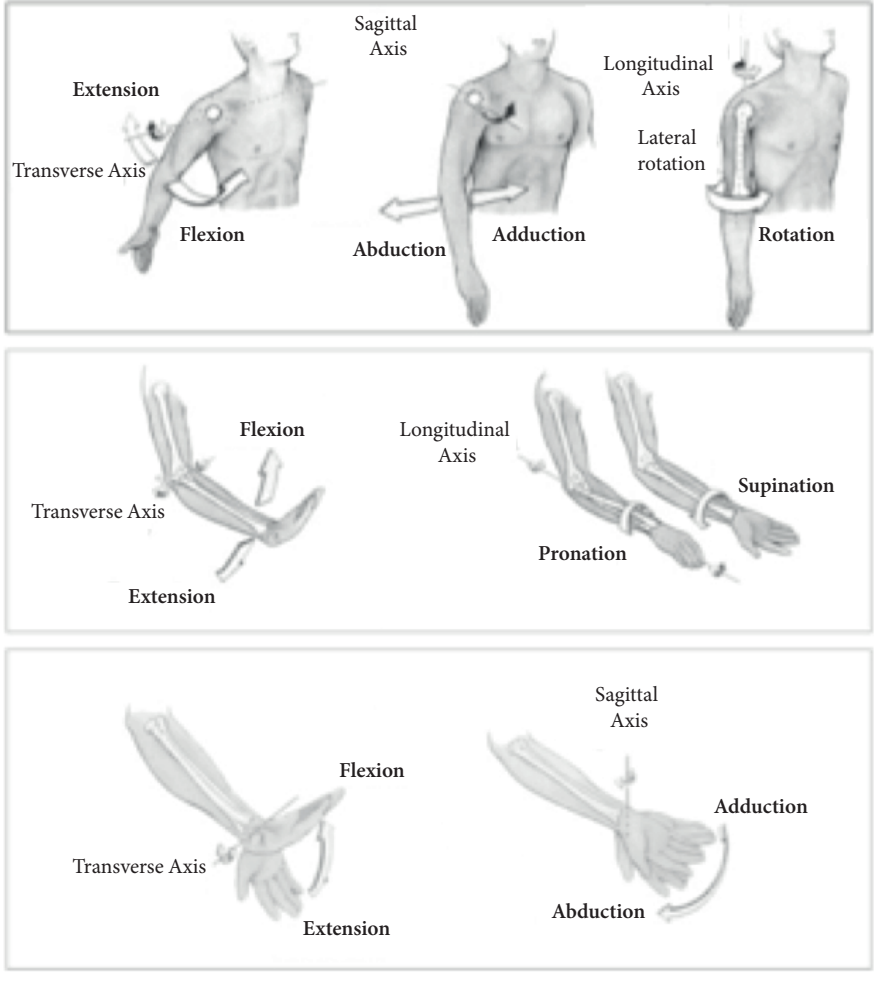

Figure 5.1 Presentation of the degrees of freedom of the arm, the forearm, and the hand

2. A kinesiological view of gesture

The kinesiological approach consists in integrating physiological factors in gesture analysis. This approach brings in three new domains: (1) intrinsically multiple frames of reference, (2) a geometry associated with space, and (3) dynamics.

2.1 Intrinsically multiple frames of reference

Gesture analysis is generally conducted based on an egocentric reference frame which, for the upper limb, often concerns the hand, which has the ultimate (final) segments of gesture production. In some rare cases, the shoulders are the location for specific gestures (for example, the shrug analyzed by Streeck 2009 or Debras 2013). The rare studies that highlight an intrinsic frame for gestures focus only on one segment (Brown and Levinson 1993; Le Guen 2011; Levinson 1996; Nuñez and Sweetser 2006). The great majority of gesture studies are exclusively oriented on one segment at a time.

In a kinesiologic approach, the intrinsic frame of reference is distributed on each segment that carries an articulation: shoulder, arm, forearm, hand, and finger segments, known as phalanges. The various alternatives for positions and movements of each segment are considered in an intrinsic manner according to the movement possibilities offered by each articulation. Consider the gestures of *totality* and of *negation* by speakers of English and French, analyzed in Calbris (1990), Harrison (2009), and Kendon (2004). A symmetrical gesture performed with two hands that spread apart on either side of the sagittal plane when the palms remain oriented towards the front, fingers up, can mean either *totality* or *negation*, according to the order of the moving segments, as can be explained by the following reinterpretation of examples from the studies cited above. When the two hands are moved apart because of the motion of the arms and the movement propagates to the forearms and then the hands with an orientation of the palm towards the exterior sides, then the general meaning refers to *totality* (Figure 5.2). Reversely, when the gesture begins by a lateral movement of the hands, which triggers the opening of the forearms towards the exterior, then the gesture pertains to *negation* (Figure 5.3). The quality of the movements indicate that the gesture is fluid with constant speed at the level of the hands, whereas the second gesture, on the other hand, indicates a negation mediated by a more uneven movement, especially at the beginning of the gesture.

Figure 5.2 "*Donc y avait du sang partout*" ('then, it was blood everywhere'). The gesture begins with a movement of the forearm (exterior rotation, frames 1 to 3). Then, this movement affects the hand (frames 3 and 4) in the same exterior direction. This gesture corresponds to the expression of *totality*.

Figure 5.3 "*Enfin, on n'était pas nombreux*" ('I mean, we were not numerous'). This gesture begins with a movement of the hand (toward the exterior). The movement propagates to the forearm (frames 4 and 5) in the same direction. This gesture corresponds to a *negation*. For the first three frames, when the hand is in motion, the upper part of the right wrist remains at the same place (as you can see in these frames, according to the left elbow in the background).

Proprioception gives us the possibility of making a thorough assessment of the difference in the dynamics and the meaning of those gestures. We have the possibility to reenact those gestures with our own body, which makes us actually feel the differences in play. We have just seen that movement can be transferred from a proximal segment (having a closer bodily connection to the torso, as the arm does, compared with the hand) to a distal segment (in the *totality* gesture), or that, on the contrary, movement from a distal segment (the hand) can be transferred to a more proximal segment (in the *negation* gesture). This notion of propagation flow of the movement on the upper limb produces meaning, and is inherently grounded in its dynamics.

2.2 A geometry associated with space

The relative position of each segment and its movements depend on the potentialities created by its possible movements. The first constraints pertain to "articular stops": a forearm does not spread further than its alignment with the whole arm; the articular stop of the elbow prevents it from going further. The maximal amplitude of each movement (we can call it the degree of freedom; see Section 3.2 in this chapter) also participates in the construction of a specific geometry that includes the possibilities involved for each segment.

For example, we cannot touch the interior of the forearm with the tip of our fingers because the articulatory possibilities of the wrists do not allow it. The gesture space is thus based on all those possibilities and depends on a series of geometries composed of non-deformable anatomical units (that is, segments: units which have no joint and so cannot be bent), of specific degrees of freedom and of determined amplitudes. Thus the gestural expression of totality, described above, can also be rendered in a reduced way by the sole movement of the hands, on the condition that it unfurls the complete amplitude of the movement on the hand up to its articular stop. The same totality can be expressed by a movement of the forearms and the hands with a slight difference: a larger coverage. Visually, the amplitude covered might be different, but the relative amplitude inside each segment remains within the limits of the articular stop.

2.3 Dynamics

The general geometry of gestural space is composed of singular geometries (those of the degrees of freedom). This affects the position of the segments that are constrained by what we can call that *segmental* geometry. But does this specific geometry constrain the movement and its dynamics – its progress? Are the progress of a gesture, its trajectory, its shape, and the manner in which the form is spread, affected by the geometric ratios of the segments between each other? The answer is yes for several reasons. Our difficulty in controlling our movements leads us to optimize this control since there are a great number of segments that are set in motion in a movement. Kinesiological solutions or options linked to motor control can be used because of this constraint.

3. Movement (motor) control from a kinesiological perspective

Movement and its dynamics are constrained by the physiological possibilities of our upper limbs. The trajectory, the shape, and the manner in which a gesture can be performed are impacted by geometrical relationships between segments (shoulder, arm, forearm, hand…). The number of possible movements of a gesture can be optimized. Kinesiological solutions for motor control follow four principles, which we detail below.

3.1 Velocity in relation to shape

The velocity of a movement depends on the shape that is traced. The more a shape is curved, the more speed increases. The radius/velocity relation between the bend radius of a shape and the velocity of the hand has a power of 2/3 according to the two-thirds power law relation (Viviani and Flash 1995). This law has a direct impact on the appreciation of the velocity and acceleration of gestures in relation to grammatical aspect and is thus very important for our study. A rectilinear gesture will be perceived as being faster than a curved gesture with changes in the bend radius, even though the increase of the velocity with the increase of the curve is totally independent on the speaker's own will.

3.2 The opposition of phase law

The opposition of phase law points to an economic solution to couple together several possibilities for a movement to be performed and to decrease the number of degrees of freedom that must be controlled. During the performance of a gesture, when the angle created between the arm and the body increases, the angle of the arm and forearm varies in equal measure. For instance, for a pointing gesture, regardless of the distance of the target or of the velocity of the gesture, the angles of the arm and the forearm increase or decrease linearly during the gesture. This joint torque control is an optimal solution to minimize the number of degrees of freedom and nevertheless to maintain good accuracy. Thus our brain only controls one parameter in a complex movement: the amplitude rate between the two angles.

3.3 The principle of isochrony

The third principle, which is called the principle of isochrony or Fitts' law (1954), stipulates that the average velocity of a gesture between two points increases according to the distance between those points. Two distant points will be linked up with higher velocity than closer points. This also has a direct impact on how we analyze gestures in our study. We have taken the visual effect of this law into account in the process of coding the gestures in our video data.

3.4 Codman's paradox

The fourth principle called Codman's paradox (1934) reveals that joint involuntary rotation movements are produced when movements are performed. Figure 5.4 illustrates this paradox. The voluntary movements in this cycle are flexing (raising from the front) and then adduction of the arm (lowering from the side). The voluntary movements only affect the shoulder. However, at the end of the cycle, the thumb is turned towards the back despite the fact that it was turned towards the front at the beginning. An involuntary rotation of the arm has taken place during the elevation of the arm phase, then an involuntary rotation of the forearm appears during the lowering of the arm. The arm and forearm have undergone an involuntary exterior rotation. Those involuntary movements are automatically coupled to certain movement cycles, which diminishes the number of controlled movements.

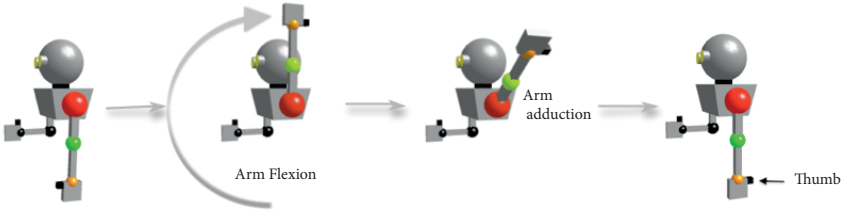

Figure 5.4 Codman's paradox. In the starting position, the thumb is directed towards the front. In the final position, the thumb is directed towards the back. There has been an involuntary exterior rotation movement of the forearm and supination during the bending and adduction movement of the arm.

These kinesiological principles are anchored on the segments of the body but also on the degrees of freedom and propagate along the upper limb thanks to movement transfers.

3.5 Types of motion transfer

Two types of motion transfer can be distinguished. The first one depends on the kinesiological structure of the upper limb and on its geometry. The second one depends on the motion itself and on the inertial relation the segments maintain between each other.

Codman's paradox perfectly illustrates this kinesiological transfer of motion (see Figure 5.4). This paradox is available for any articulation that involves certain characteristics. MacConaill (1948) summarize these characteristics in the following fashion: for any articulation with three degrees of freedom one of which is a rotation (internal/external rotation and pronation/supination), when the other two degrees of freedom are set in motion, it triggers an involuntary joint movement on the rotation. The shoulder presents these characteristics as we have seen in Codman's paradox but the wrist (with three degrees of freedom: flexion/extension, abduction/adduction and pronation/supination) does as well. When the hand is in a full extension/flexion position, the abduction/adduction motions and the pronation/supination are then in another plane. In the case of a full extension of the hand, abduction (of the hand) merges with a pronation (rotation of the forearm) (Figure 5.5).

This first type of motion transfer can help us distinguish the voluntary share and the involuntary share of the motion of a gesture. The pronation/supination and the interior/exterior rotations, when they are the recipients of joint movements, are performed involuntarily and do not depend on any of the qualities of the intentional movement. We therefore cannot take those movements into account in our appreciation of the quality of the movement in a gesture.

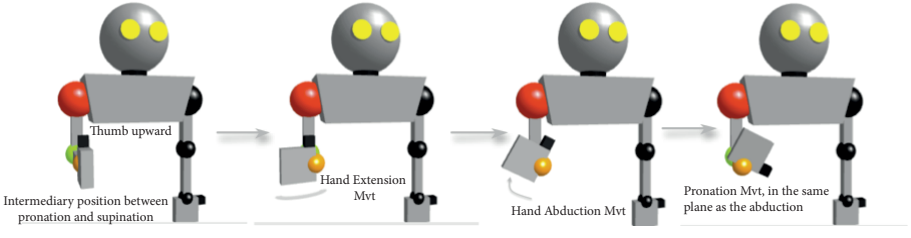

Figure 5.5 Manual example of the alignment of the rotation axis between abduction/adduction and pronation/supination

The second type of transfer is linked to the issue of inertia: the resistance of an object to any change in its state of motion or rest. The inertial relations between the segments favor the arm (Dumas et al. 2007, the inertia of the forearm represents an average of 65% of that of the arm and the inertia of the hand 24% of that of the

arm). The closer we are to the most distal segments (the fingers), inertia decreases according to a constantly decreasing gradient. A movement performed with the arm can thus be more easily transferred unto the forearm and the hand rather than the reverse. A movement initiated on the hand will not be able to move up higher than the forearm. Motion transfers are therefore asymmetrical according to an inertial slope that is more favorable to the arm and less favorable to the fingers. This differential in inertia is very directly linked to acceleration phenomena.

3.6 Discussion

A kinesiological approach places gesturality in its articulatory structure. It involves a change in reference framework: the framework is shifted from being egocentered to being intrinsic to each segment and it therefore becomes multiple. The movement is considered as being relative to each segment of the upper limb. The possible gestures are placed in an articulatory geometry consisting in degrees of freedom, constraints and laws of movement. It is thus impossible to take only the kinematics of the hand into consideration. The hand must be reconsidered according to the determining factors linked to all the segments of the upper limb. The propagation flow of each gesture must be considered. The number of segments that move as well as their distance to the trunk must be taken into account for they constitute cues to measure the propagation flow of the movement. The number of segments involved in the movement during a gesture can be determined thanks to inertia. Finally, the duration of gestures should depend on the propagation flow: it is shorter for a distal-proximal flow because the gesture propagates lower on the upper limb, longer for a proximal-distal flow because the gesture affects more segments.

4. Case study: Kinesiological analysis of the French gesture data

In this section, the principles analyzing kinesiological properties of gesture are applied to our French data to illustrate how they can shed light on the notion of boundedness in terms of a pulse of effort. We then consider how the findings relate to the use of the imperfect and perfect past tense verb forms in the data.

Three types of results are presented:

- the propagation flow of the movement of the gesture in relation to imperfective and perfective aspect on the verbal level;
- the number and type of segments involved in the movement associated to the two aspects; and
- length of the flows associated with perfective and imperfective aspect.

4.1 Propagation flow and perfectivity

The propagation flow expected for the gestures connected with use of the *imparfait* (imperfect tense) is proximal-distal (from the arm to the fingers), whereas for the gestures associated with the *passé composé* (perfect tense), the flow is expected to be distal-proximal (from the fingers to the arm). These expectations are in the same direction as the kinematic properties of the boundary schemas. For the bounded gestures, the pulse of effort causes accelerations presumably due to the movement of a distal segment (hand) because of its shorter amplitude, which triggers the movement of a more proximal segment (forearm, for instance). The transfer of the movement goes against the inertial gradient. The movement on the hand has to be powerful – jerky perhaps – to overcome the inertial gradient. On the contrary, the unbounded gestures seem to be smoother, with a more uniform velocity. This kinematic property must rely on physiological support. Kinesiology allows us to explain the tendency in the uniformity of the velocity. If we consider a proximal-distal flow, the movement of the more proximal segment, such as the arm, reaches its stop articulation after the transfer of the movement to the forearm because of the favorable slope of inertia, up to the hand or the fingers. Finally, a movement is perceived on the hand (we should say a displacement) because of the motion of the arm, followed by the motion of the forearm, and finally we can see a proper movement of the hand. In this latter case the movement seems to be more continuous in nature, corresponding to the unbounded gesture.

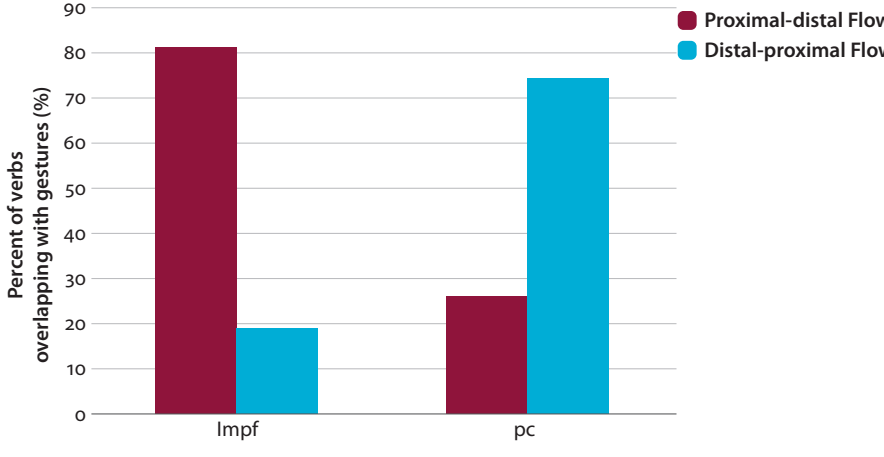

Figure 5.6 Distribution of the two propagation flows according to the tenses used *imparfait* (*Impf,* imperfect tense and *passé composé* (*pc*, perfect tense). $N_{\text{Proximal-distal flow}} = 52$; $N_{\text{distal-proximal flow}} = 46$. Some illustrated examples are given in Section 2.2.3 of Chapter 4, repeated below in Section 4.3 of this chapter.

We conducted a kinesiological analysis on four out of the ten French sessions, chosen at random. The results presented in Figure 5.6 indicate a marked tendency, even stronger than the one we found with the boundaries. The proximal-distal propagation flow is predominantly associated with the *imparfait* (for 81.3% of the occurrences). The distal-proximal flow is associated predominantly with the passé compose (74%). This dichotomy seems to be even more relevant to gestures associated with aspect than the boundary schemas for our sample.

4.2 Number and type of segments and perfectivity

Another level of differentiation inherent to the propagation flow and to inertia concerns the number and type of segments involved in the movement. Let us briefly summarize the nature of that link. In the case of a proximal-distal propagation flow, inertia drives the transfer of the movement to the segments with weaker inertia. Segments have decreasing inertia as they go from shoulder to arm, to forearm, to hand and finally to the last phalanx of the fingers. Thus, when the arm initiates a gesture, the transfer of the movement to the fingers will not encounter inertial resistance. The shoulder to arm direction involves a naturally declining slope. Whatever segment initiates the movement at the beginning of the gesture, transfer will be made onto a more distal segment.

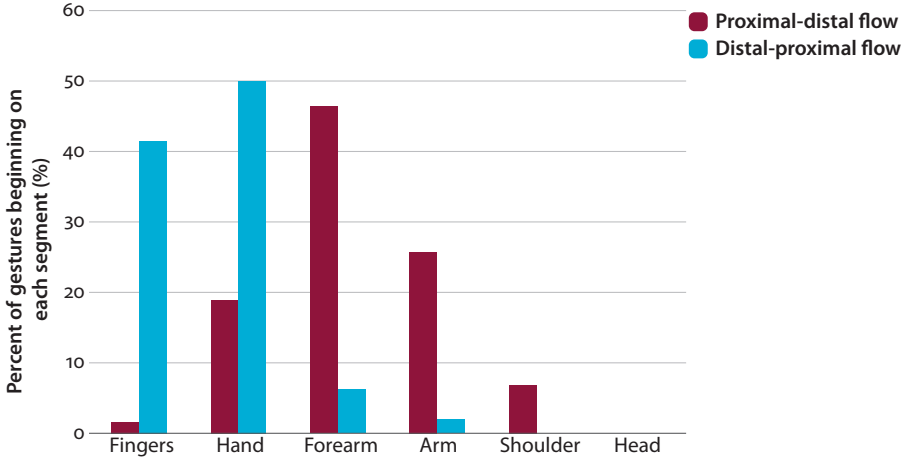

Figure 5.7 Distribution of the first segment in motion according to the flow

The number of segments involved in the gesture will therefore be higher in this case. For the opposite flow – distal-proximal – it will be the contrary. Within that flow, for each new segment involved by the movement transfer, inertia will increase. Thus

for the gestures with a distal-proximal flow, the number of segments involved by a movement should be reduced. This difference is not found to be large in our subset of the data (four sessions out of ten). We come back to that in our discussion. The second expectation – the type of segments involved in the flow – is clearly found in our results. We expect distal-proximal gestures to begin with a movement of a distal segment – on fingers or hand for instance. At the beginning, the movement affects either the shoulder or the arm for proximal-distal gestures.

We found that the results met our expectation. Over 90% of the gestures with distal-proximal flow start on the fingers or the hand, whereas over 80% of the gestures with proximal-distal flow are initiated by the shoulder, the arm or the forearm.

Our data do not show significant differences in the temporal length of the gestures (the stroke phase) associated with the verbs in the *imparfait* and those associated with the *passé composé*. The results concerning the length of gestures in Duncan's study (2002), as well as in Malaia and Wilbur (2012) for American Sign Language, are not confirmed in our study.[30, 31] In that respect, gestures co-produced with speech cannot be compared to signs. However, a similar tendency can be observed: the gestures used with the perfect tense verbs are shorter than the gestures used with those in the imperfect tense (see last two columns of Table 5.4) although verbs in the *imparfait*, which is an inflected form, are on average shorter to pronounce than verbs in the *passé composé,* which combine an auxiliary and a past participle (see first column of Table 5.4). The speech flow can influence the timing and length of the gestures that are associated with it. In the four sessions under examination here, the average length of the verbal constituent of the verbs in the *passé composé* was 364 ms ($N = 51$, $SD = 154$) whereas the length of *imparfait* was 309 ms ($N = 52$, $SD = 110$). The perfect tense form was longer than the imperfect for these verbs. Do those durations have an impact on the gestures? The analysis of the gestures co-occurring with each tense form indicates that the imperfect is associated with longer gestures than the perfect tense is (columns 3 and 4 in Table 5.1).

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30. The length of the gesture strokes associated to the perfective in English is 0.249 ms (SD: 0.114) versus 1.158 ms (SD: 0.623) for imperfective gestures (ibid.: 196).

31. In the ASL study by Malaia and Wilbur the length of the stroke phase of signs is significantly different between telic and atelic verbs regardless of the position in the clause: telic verbs, medial $M = 420$ ms, final $M = 468$ ms; atelic verbs, medial $M = 445$ ms, final $M = 513$ ms. (ibid.: 413, 414 for the values of standard error).

Table 5.1 Length of verbs in the *imparfait* and *passé composé* and gestures produced with those verbs

	Duration (ms)	Duration Flow (mean) proximal – distal ($N = 52$)	Duration Flow (mean) distal – proximal ($N = 46$)
imparfait	309	594ms SD: 439 ($N = 39$)	502ms SD: 293 ($N = 9$)
passé composé	364	548ms SD: 386 ($N = 13$)	493ms SD: 284 ($N = 37$)

4.3 Qualitative analyses

Our kinesiological analyses indicate that the flow of the movement (distal-proximal or proximal-distal) might be an excellent candidate to correlate with the aspectual alternation between perfectivity and imperfectivity. Here are three examples in which the boundary schemas did not correlate with the aspectual feature of the verbal forms used but for which our kinesiological coding indicates a better fit.

In Example 4.2.4 from Section 2.2.3, Chapter 4, an abrupt gesture was produced with the *imparfait* "*sa jambe elle était arrachée*" ('her leg was torn away'). We observed great acceleration from the middle of the gesture and coded it as an offset-bounded gesture. But if we add the kinesiological coding, we find a "whip-wave" movement, that is: the flow of the gesture is proximal-distal as it propagates from the arm, then the forearm and finally the hand all the way to the tip of the fingers, and then there is an acceleration. Thus, in terms of boundaries, it was not compatible with our hypothesis, but in terms of kinesiological features, it was.

In the next example, we have a *passé composé* produced with an unbounded gesture.

435 *LAU: *et euh ?* ('and…')
436 *CLA: *un acte de gentillesse gratuit.* ('a nice action with no reward')
437 *LAU: *t(u) en as vu ?* ('have you ever seen any?')
438 *CLA: *ben toi t(u) en as vu ou pas ?* ('well have you seen any or not')
439 *LAU: *un acte de gentillesse gratuit. Euh si … ben euh Marie l'autre jour elle a aidé un [/] un des aveugles de la fac à …*
('a nice action with no reward, um yes well, Marie help one of the the blind persons in the university the other day')
442 *CLA: *ah ouais.* ('oh yeah')

The gesture produced with the *passé composé* in the phrase in bold type was coded as unbounded. The speaker was using a presentation gesture that seemed to complement the pronoun "*toi*" ('you') rather than the semantics of the verb 'have you seen (any)'.

However, the gesture is distal-proximal in nature, which we associate with perfectivity. Thus, the kinesiological features of the gesture correspond to our hypothesis.

Let us turn back to Example 4.2.7 from Section 2.2.3, Chapter 4, in which a *passé composé* ("*elles ont continué à s'engueuler*"/'they continued to yell at each other') was produced with an unbounded gesture as well. We coded the flow as distal-proximal, propagation from the hand to the arm, and there is a slight acceleration when the hand starts repeating the tracing of the circle. The boundary schema in this example does not correspond to our hypothesis, but the kinesiological coding does. The distal-proximal flow could be associated with perfective aspectuality: the scene is construed in its globality, but the iteration of the circle and the stability of the rhythm could be linked to the semantic aspect grammaticalized in the use of the verb "*continuer*" ('to continue') which indicates duration. Interestingly enough, each time the hand accelerates slightly, the speaker's head moves upwards counterbalancing the acceleration of the hand. This creates an impression of insistence; the head is involved as well as the arm and hand. This example illustrates that gesture is multifunctional and that multilayered/multilevel analyses can help us tease apart the complexity of multimodal communication.

5. Discussion

The analysis of the specificities of flow gives coherences to apparently unrelated phenomena. Perfectivity can be semantically related to the propagation flow of the movement. The distal-proximal flow involves the initiation of the movement with segments whose amplitude is reduced (see Boutet 2015: 121–122). The stopping point of articulatory movement is reached more quickly on the fingers and the hands than on the forearm and the arm. The movement is blocked more rapidly even if the transfer of the gesture continues onto the forearm. This natural boundary echoes the perfectivity of the event – or the accomplishment of the event. On the contrary, the proximal-distal flow involves a movement that is predominantly executed on the arm or the forearm. The amplitude of those segments, being much greater, they rarely reach a stop before the adjacent distal segment is in turn in motion. As inertia decreases, the movement propagates progressively and seems to be more homogeneous and without borderlines, even when it involves the hand. The homogeneity of speed is due to the ratio between the length of each segment and the force that rises from the attachment point where the movement is anchored in the segment (the tendon) or the inertial force transmitted from one segment to the next. Length and force co-vary in such a way that the ratio is globally respected. When the force that is transferred decreases from one segment to the next, the length of the segment set in motion also decreases. The imperfective aspect of the event, without marked

boundaries, corresponds to the proximal-distal flow. Moreover, the internal point of view carried by the imperfective (Comrie 1981: 3) is echoed in the involvement of the segments closer to the chest – that are more internal – whereas the gestures of the distal-proximal flow set more distal segments in motion, which can correspond to an external point of view associated to the perfective.

The length of the gestures associated to the *imparfait* and the *passé composé* is interesting to consider. The distal-proximal gestures are executed more quickly (means: 493 ms with *passé composé* and 502 ms with *imparfait*) and the proximal-distal gestures are lengthier (means: 548 ms and 594 ms). The difference in standard deviation for each flow is also important (see SD values in columns 3 and 4, Table 5.1). These observations that are only trends, are not statistically significant and indicate that a more thorough investigation of the duration of each gesture according to the number of segments involved in the movement could be relevant. These results illustrate the importance of taking co-verbal gestures into account in the analyses of aspect in French (and presumably for other languages) for past events.

As far as gestures are concerned, the notion of boundary is not only conceptual: it is also anchored in kinesiological features. Boundaries are marked by change or preservation of speed. It is a purely kinematic feature.

In our more detailed kinesiological study of four sessions of French interactions, the specific features of flow correspond to verbal perfectivity even more closely than do the boundary schemas we had defined based on kinematic criteria. Indeed kinematic features represent the study of the movements independently from their cause, whereas a kinesiological approach to gestures helps us determine the links between form and function. The question raised is whether physical and kinematic features are the ultimate criteria we should take into account for the gestural expression of perfective and imperfective aspect.

Flow, which is a kinesiological notion that takes both biomechanic properties and their cause into account, corresponds better to the enactment of (im)perfectivity in French than do gestural boundaries based on purely kinematic criteria. The question of the status of kinematics and kinesiology is thus at play in this study. Are the physical and kinematic properties the ultimate criteria to understand the gestural expression of aspect? If they are, at a kinesiological level, flow would simply be one means of exploring this. Another option is to consider flow as a marker, whereas the kinematic elements (speed, duration, acceleration) would only be its natural consequences. The issue is to understand whether the gestural expression of aspect is linked to logic that is external to gesturality itself (kinematic features independent of the speakers' conceptualizations and intentions), or whether they derive from the internal functioning of gestures.

Further investigations are needed in order to pursue the difference between the kinematic option in which the gestures' boundedness would be an enactment of the aspects marked in speech, and the kinesiological option that accounts for the biomechanic properties of the movement enacting (im)perfectivity.

We have shown in this chapter that both kinematic features and kinesiological features are expressed in the gestures with speech when past event are narrated by French speakers. Either way, co-verbal gestures associated to the *passé composé* and the *imparfait* could thus be enactments of perfectivity and imperfectivity.

CHAPTER 6

Comprehension of event construal from multimodal communication (*Becker, Gonzalez-Marquez*)

The previous chapters concerned the expression of event construal in relation to the use of specific grammatical categories (aspect and tense) and manual gesture. The focus was therefore on language production as variably multimodal. The present chapter turns to questions of the comprehension of multimodal communication about events with particular attention to the specificities of French, German, and Russian, discussed above. The turn to studying comprehension brings with it an experimental approach from psychology. Therefore, we begin with some attention to what this means from an epistemological perspective, by first considering psychology as a way of knowing, and then discussing some of the theoretical approaches in cognitive psychology to the comprehension of discourse about events.

1. Approaches in psychology

1.1 Psychology as a way of knowing

As discussed in the previous sections, linguistics and gesture studies use a variety of methods to understand how and why a particular way of speaking emerges in multimodal environments. Psychology uses a broad repertoire of quantitative methods to generate and test inferences. These can be used to investigate an individual's ability to understand what is being communicated in given settings. As a neighboring discipline to linguistics and gesture research, it can use these tools to provide converging evidence to questions raised about communication. Psychology also includes a large literature on language production, as well as on theories that see the coordinated dynamics of communication between speaker and listener as difficult to separate and study in isolation (e.g., alignment theory; Pickering and Garrod 2004). In the following sections we discuss the role of psychology in speech and gesture studies, focusing on methodological and theoretical advances, to provide background on the state of the art.

Mental Chronometry, commonly referred to as reaction or response times, is a central paradigm in psychology. In linguistic environments, it is commonly used to measure how quickly and accurately a person can read a sentence and make a decision about it, i.e., grammatical, sense or nonsense, etc. This use of response times became instrumental to the application of *information processing* theory (Shannon and Weaver 1949) to human cognition in the mid-twentieth century. The theory proposed that human cognition functioned in a matter akin to a computer, hence the origin of the computer metaphor for the mind, as described in Lakoff and Johnson (1980). Response times are now considered a valid measure across a plethora of theories, including those that seek to account for linguistic behavior. This is useful in that various theories can vie for the best possible explanation of a linguistic phenomenon. For example, if a participant in an experiment read a sentence such as, *The officer shot the suspect* versus *The officer was shooting the suspect*, they might show a processing difference of about a 40 millisecond increase for the second sentence. What could that mean? It could be that something as simple as the sentence having the extra word *was* or syllable *-ing* caused the difference in reading time. This explanation could be ascribed to language statistics (Louwerse et al. 2015). That said, the results could also be framed in terms of simulation semantics (Bergen and Wheeler 2010), with the interpretation that the participant simulated an unbounded event that took more time than to do so for a bounded event. Mental simulation is a term that refers to the activation of motor, sensory, and emotional systems, when reading or listening, that are similarly activated when a person directly experiences something (Barsalou 1999; Glenberg 1997; Glenberg & Kaschak 2002; Lakoff 1993; Lakoff and Johnson 1980; Zwaan 2009). Teasing apart a language-statistics explanation versus one in terms of a simulation effect is made possible by the use of such empirical methods developed in psychology.

1.2 Theories in cognitive psychology

The previous section illustrated the relationship between research methods and theory. Before introducing the experimental components of the work described below, we describe several cognitive psychological theories that have directly addressed event structure.

During the last few decades, several theories have addressed the linguistic and nonlinguistic properties of event boundaries. The state-of-the-art in the area of event comprehension features two key advancements in theory. One concerns the composition of a situation model, and the second when such a model is updated.

A situation model is a part of the mental representation of a text (Kintsch and van Dijk 1978). One of the earliest findings involved event boundaries and how they determined which entities described in a text were contained in the model. Morrow

and Greenspan, in association with Bower (1987, 1989), investigated the nature of change or updates to the composition of a situation model. They conceptualized the problem as texts that described situations akin to a person looking at the floor plan of a house. They hypothesized that a text that described a person moving through a house from room to room, learning which objects were in each room, would result in the reader creating a new situation model for each room thus updating the model of the previous room, which would now reside in memory. This updating process would have implications for the reader when processing a word for an object such as *lamp* when said lamp was not in the current room, but instead in a room the reader had visited before.

1.2.1 *Situation models in discourse processing*

Researchers in psychology studying reading comprehension have formed a subdiscipline called discourse processing over the last 40 years. Central to this discipline is the construction of a situation model, which in this case is a mental representation of a text. The main theme in this area is how a word/concept mentioned in a text can shift in and out of focus, such that the current situation model may no longer contain the concept. This idea has been supported by evidence showing that by shifting various dimensions of a text (e.g., time, space, etc.…), the ease of access to a concept is affected. The following subsections discuss two proposals for how a situation model might be constructed, focusing on how each explains shifts in time with respect to event boundaries.

1.2.1.1 *Event Indexing Model*

The Event Indexing Model describes how situation model shifts can occur across many dimensions of a written discourse (Zwaan et al. 1995; Zwaan and Radvansky 1998). According to this view, there are five event indices in situation models: spatiality, temporality, causality, protagonist, and intentionality. As the reader progresses in a story and new information is added, the situation model is updated, but only if the new information requires a shift along any of the five indices. For example, a change in temporal setting such as *A few hours later* requires the reader to update the situation model to the new time index. It is not clear whether the nodes that constitute the representation of an event are based on amodal or perceptual symbol systems (Barsalou 1999; Glenberg 1997). In amodal symbols systems, the sensory modalities with which the event was perceived are not part of the representation. Perceptual symbol systems, by contrast, keep the sensorimotor systems that were active when the event was originally perceived as the representation. However recently, proponents of embodied cognition, such as Rolf Zwaan, have more recently argued for the grounding of event nodes in sensorimotor experience (Kelter et al. 2004).

1.2.1.2 *Dynamic View*

Criticizing the Event Indexing Model as being too static in terms of when a shift in narrative occurs, Kelter et al. (2004) proposed the Dynamic View. Here, events in long-term memory are thought to be static representations, whereas events in working memory are considered dynamic. Thus, as readers process a text, they construct a situation model through two updating processes; tracking and fresh starts. For example, if a story continues to unfold in a temporally continuous manner and the reader can track the narrative within the same time frame, then the same situation model continues. However, if the story shifts in time too abruptly, then a fresh start is made and a new model becomes the current model or narrative. As demonstrated later, the Dynamic Model can lead to differences in empirical predictions as compared to the Event Indexing Model with respect to how readers process durativity and time shifts.

Time shifts are a second intrinsic property of events. Either a long time shift (e.g., *Rachel weeded the garden*) or a short time shift (e.g., *Rachel picked a tomato*) can move along the narrative's timeline and significantly affect the availability of the event preceding them. Kelter et al. (2004) investigated whether a short or long duration time shift in an ongoing situation model would affect the accessibility of objects in the situation model. As a second manipulation, they either added the long/short duration time shift to the end of the critical sentence as a durative adverbial (e.g., *for an hour/six hours)*, or began the subsequent sentence with one (e.g., *After one hour*/*six hours*). These durative adverbial phrases differ in that *for an hour* is a continuation of the event, whereas the adverbial phrase, *after one hour*, shifts the event boundary to indicate a new event. The dynamic narrative model (Kelter et al. 2004) predicts that durative statements allow the reader to *track* the narrative and gives the reader the experience of an ongoing situation, foregrounding the information in that sentence and making it more accessible. In contrast, the adverbial phrase at the beginning of the sentence, *After an hour/six hours*, draws the attention of the reader to another type of time shift (i.e., a fresh start), where the event is beginning anew. Kelter et al. (2004) found that, consistent with their own account (a dynamic view), participants had more difficulty accessing information about events that preceded a long duration rather than a short one. Their findings indicate that the static representations of situation models may not be accurate. In addition, further research by Becker et al. (2013) suggests that whether a time shift occurs is a combination of many subdimensions of temporal experience (e.g., duration and telicity).

1.2.2 *Event segmentation theory*

Event segmentation theory (Zacks and Swallow 2007) states that events are divided into meaningful subparts, and organized hierarchically in memory. This approach makes the case for bottom-up processing of perceptual boundaries along with top-down conceptual processing that influences how events become organized. With respect to bottom-processing, Zacks (2004) argues that distinctive movement features correlate with perceived event boundaries. In contrast, he refers to top-down processing as knowledge structures that come from an observer's prior experience with others' actions. Hence, actors' intentions are also correlated with perceived event boundaries.

Zacks and Tversky (2001) tested the interplay between bottom-up and top-down processes in event perception in a series of experiments. In the first experiment, participants watched short videos of a person performing a sequence of actions. The sequences were grouped into familiar (e.g., washing the dishes) or unfamiliar (e.g., assembling a saxophone) events. The participants were asked to watch each video and decide when they perceived an event boundary by pressing the spacebar on a keyboard. The next set of instructions was given to only half of the participants. They were told to "mark off the behavior of the person you'll be seeing into the *largest* units that seem natural and meaningful to you." The other half of the participants were told to mark the behavior off into the smallest units. After the participants completed this part of the experiment, they took a short break. Then they watched the videos again, but this time if they had done the marking of behavior with the largest-units instruction, then they were given the smallest-units instruction, and the instructions were also reversed for the other half of the participants. The researchers found that participants' boundary segmentation for fine versus coarse task instructions were more aligned for familiar compared to unfamiliar events. This effect suggests that background knowledge about actions and events comes into play regardless of the task instructions, meaning that knowledge of different kinds of events has influence over even top-down strategies for focusing attention on low-level motion and change detection.

Event segmentation theory is well suited to gesture studies. A bottom-up process guides the listener to movement quality in the gesture stroke. However, an observer also has experience with the way that people gesture about certain types of events (e.g., with a pulse of energy versus with controlled movement). As such, when a punctual event is described with a gesture that has controlled movement (rather than a pulse of effort), this movement quality may violate the observer's expectations and potentially interfere with speech comprehension. This leads us to the experiment we conducted, presented in the sections below.

2. Background to the comprehension experiment

The field of psychology has undergone a revolution in statistical analyses in recent years, complemented by the development of better research methods. These changes are directly relevant to the study described here given that it uses relatively novel research methods, and that it raises questions about the effective replication of experimental studies. In light of this, the following section gives a brief overview of the issues.

The three main abuses of statistical inferences that occur in psychology, as well as other sciences, are *p*-hacking, HARKing, and stargazing. The term, *p*-hacking refers to a practice where a researcher repeatedly re-analyzes data, making small changes each time to various criteria, until the *p*-value reaches significance (usually a criterion of $p < 0.05$). HARKing is an acronym for Hypothesizing After Results are Known (Kerr 1998). Unless an experiment is explicitly stated as an exploratory study, hypotheses should in good practice be decided on before data collection. Finally, stargazing refers to looking for significant correlations in large datasets (typically marked with an asterisk, or star, in many statistical software packages) and then claiming to have been interested in those specific correlations at the onset of the study. (See also Simmons et al. 2011 for a discussion on false-positive psychology.) These practices are now widespread across the sciences. As different fields continue to explore deterrents, the pre-registration of studies has emerged as a preferred solution, and is described in more detail below. Returning to our original point, consider the case where, in an exploratory analysis, a researcher finds a potentially meaningful difference between the numbers of observed gestures of a given type compared to another. The researcher might consider changing the narrative from an exploratory to a confirmatory study *after* he or she knows what the data are. An additional problem might be the choice of annotation scheme. An annotator may start with one scheme, analyze the data, find nothing, and then decide on a second method of coding, find an effect, and report that this method was the first choice all along, or at least the correct one without any further explanation. The recommended approach, however, would be to acknowledge and report the findings from the first analysis, and then motivate and justify engaging in the second analysis.

Pre-registration of studies is the new practice of describing a research plan, predictions, alternative hypotheses, methods used, etc., in detail before data are collected (for a recent review and tutorial see van 't Veer and Giner-Sorolla 2016). The practice has many benefits, but because it comes out of the psychological tradition, linguistic factors are not always considered to be relevant. For example, in a pre-registered replication of Estes et al., (2008), Renkewitz and Müller (2013) wrote only one sentence in the section of their report describing differences from

the original study. It was, "The only difference from the original study is the translation of instructions and experimental stimuli into German" (Renkewitz and Müller 2013: 2). According to their report, the replication made essentially no changes to the experiment, a claim that a cursory examination of the study materials quickly disproves, e.g., there are language specific differences related to lexical semantics, word frequency, and word lengths that are never considered as factors when assessing the success of the replication.

To combat the problem of questionable research practices, a large network of labs collaborated to attempt an historic replication of 100 experiments (Open Science Collaboration 2012), all originally published in the journal *Psychological Science*, the flagship journal of the Association for Psychological Science. A remarkably low number of studies replicate the original results (roughly 33%). This strikingly low reproducibility rate stunned many researchers, some of whom have based a good proportion of their research careers investigating what may in fact have been spurious effects.

2.1 Introduction to the comprehension experiment

The experiment below involves a replication of the procedure used by Becker et al. (2011), a study conducted in, and about, English, and that focused on semantic Aktionsart, rather than on morphologically expressed grammatical aspect, as is the case with the present study. Our primary research question was whether L1 speakers of French, German and Russian would show different gestural patterns based on language habits. However, since the original study used naturalistic elicited data, it was not possible to use the exact same materials and simply translate them. Instead, we chose to replicate the procedure for eliciting speakers' gestures from native speakers of each of the languages. Briefly, that process involved cuing participants to produce speech and gesture, while being video-recorded. This is one of the novel methods developed by Becker et al. (2011), in this case, to elicit speakers' gesture in a relatively more natural way, and then use those materials in a task where participants make judgments about video clips taken from the corpus. This was the production study, reported in Chapters 4 and 5. For this study, video clips were created from the production data showing bounded and unbounded gestures (with speech), and presented to a separate group of participants. This stands in contrast with many experiments in psychology that involve linguistic materials created somewhat artificially in the lab. In the typical setting, usually a student, or in the case of gesture, potentially an actor, is paid to act out the speech and/or gesture for utterances that become the stimuli for a comprehension experiment. The manipulation, as described below, was that for half the trials, participants watched

the clip in its original form, and for the other half we combined imperfective speech (utterances with verbs in the imperfective aspect or imperfect tense) with bounded gestures, or perfective speech with unbounded gestures, to create mismatches.

2.2 Hypotheses

In the previous chapters we provided analyses from the production studies that laid the groundwork for testing the degree to which the differences found in the use of bounded and unbounded gestures with perfective and imperfective verb forms in each of the languages are relevant in relation to how we multimodally perceive verbs used in these different tense/aspect forms.

Based on the results obtained from the production studies, we developed an hypothesis for each of the languages. The guiding question was whether one type of gesture (bounded or unbounded) occurred in the production study significantly more frequently than the other type with one tense/aspect form (perfective versus imperfective) than the other, and whether this was a characteristic that influenced our perception of these verbs. In the production study we found a reliable tendency in French, although less so for German and Russian, for participants to gesture in an unbounded manner for imperfective and a bounded manner for perfective. Thus we hypothesized that for French, the difference in response times between matched and mismatched videos would be greater than for Russian or German.

3. Methods

3.1 Participants

We collected data from a total of 161 participants. The breakdown is as follows: Russian 52, 20 women; French 54, 22 women; German 56, 48 women. All were native speakers of each of their respective target languages. All gave informed consent. The basic age range of the participants was 19–26, with most being university students. Russian participants were recruited at Moscow State Linguistic University, Russia; German participants were recruited from the European University Viadrina, located in Frankfurt Oder, Germany; and French participants were recruited at the New Sorbonne University, Paris 3, France. All volunteered their time to participate.

3.2 Materials

3.2.1 *Language background*

Language background was ascertained using the Language Experience and Proficiency Questionnaire (LEAP-Q) developed by Marian et al. (2007). The electronic version developed for Microsoft Word was used, with data exported as text files for subsequent analysis.

3.2.2 *Video clips*

This section is a bit more detailed than is typical in reporting experimental research. Naturalistic data manipulated for experimental use creates unusual challenges. As such, we feel that it is particularly important to provide descriptions of not only the preparation methodology we ultimately used, but also of the methods we attempted and chose to discard as ineffective. This level of detail should also benefit any replication attempts.

Our goal was to select 16 pairs of clips for a total of 32 clips. Each pair would consist of utterances from the same speaker, with one using perfective and the other using imperfective aspect. These would be used in two ways. (1) They would be presented unaltered as half of a set of experimental stimuli. (2) They would be used to create the second half of stimuli as pairs of clips where the audio had been switched, i.e. mismatched stimuli. Out of this, two, non-overlapping lists of stimuli would be produced. For each, the first 16 items would appear unaltered, and the second non-overlapping set would be the mismatched items. These would also be counterbalanced so that each of the two lists only contained one item out of each pair, and each list would then be randomized for each participant by the program used for presentation (PsyScript, Slavin 2003–2017).

Our criteria for selecting clips were as follows:

- good examples of the qualitative selection criteria, i.e. perfective versus imperfective utterance accompanied by a bounded or unbounded gesture, respectively
- clear, easily comprehensible accompanying speech
- gesture beginning and end points that were relatively easy to discern
- of approximately the same length to avoid any possible confounds related to absolute length of the videos as opposed to the factors being manipulated.

To facilitate identifying clips that fit our criteria, we began by selecting between 2–3 times as many possible clips as would be needed for the experiment. Once final selection was made, we formatted the clips so that the frame size was 630 x 420 pixels. In addition, the videos were cropped so that the conversation partner was removed to avoid distractions, the head of the speaker was removed to prevent mouth

movement cues, and to eliminate the possibility that an item might be identified as a mismatched clip when the speech did not correspond to the mouth movements (see Figure 6.1 below). The unused items were reserved for use as fillers, and similarly cropped.

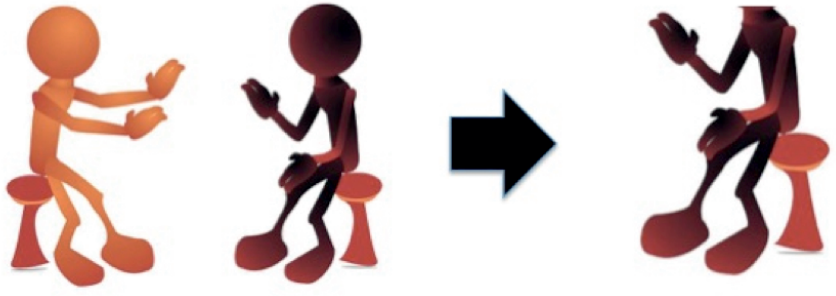

Figure 6.1 The way in which the video clips were cropped for presentation to experiment participants

We then turned to the process of creating the mismatched clips. The term "mismatched clip" should be distinguished from the term "mismatched gesture". Mismatched gesture refers to a situation where what a speaker says will provide information that is different from that of their accompanying gesture (see Goldin-Meadow 1997 and Özyürek 2001 for overviews). As such, this is a naturalistic mismatch. A mismatched clip, in contrast, refers to the manipulation of audiovisual recordings.

Creating the mismatched clips involved extracting the audio from the video of each pair of clips using Quicktime (10.4), and then exchanging them. However, Table 6.1 helps reveal a problem with this process.

Table 6.1 Average length of video clips, in frames (24 frames/sec), for each language

French	Imp	31.69	**German**	Imp	42.88	**Russian**	Imp	40.13
	Perf	30.43		Perf	44.06		Perf	39.50

The clips are not all the same length (although there was no statistically significant difference in length within each language), meaning that we would be attempting to fit audio files to video files that were either too long or too short. For the experiment to work, this manipulation would have to be undetectable. This meant we had to extend either the video or the audio, depending on whether we were faced with short video or short audio. For short audio, aligning the audio with the beginning of the video produced undetectable naturalist results. The problem of longer audio than video was more complicated. There were several possibilities:

1. extend video by inserting white space before and/or after the extant video, and then shift audio to the beginning or end, or alternately saddle the audio so that it began slightly before and ended slightly after the video.
2. Align audio with the beginning of the video, and allow the audio to play beyond the video.
3. Extend the last frame of the video so that it ended at the same as the audio.

Solution 1 where the audio began before the video was deemed to be conspicuously unnaturalistic. Further, in exploring the literature we found that in naturalistic settings, there is a strong tendency for a gesture to begin slightly before speech (Habets et al. 2011; McNeill 1992). This likely accounted for the perceived strangeness of that implementation, and also eliminated this option.

Solution 2 was also found to not be naturalistic. Having the audio continue after the video had ended made very obvious that the two did not belong together, or at the very least, made it seem as if there was a playback problem.

Solution 3 was ultimately the most viable. We used MPEG Streamclip (1.9.3B8) to repeat the last frame of the short video until it caught up with the audio resulting in a wholly naturalistic effect, where manipulation was virtually undetectable.

In summary, our preferred solutions were as follows. For long video with short audio, place the video at the beginning of the video and allow it to play out as is. For long audio with short video, extend the last frame until it reached the length of the audio.

Final editing done to all clips normalized the volume so that all the videos had approximately the same amplitude, i.e. to avoid jarring participants or causing ear damage. In addition, some clips had audio that either began or ended rather abruptly. To soften the sounds, we used the fade-in/fade-out function in SoundStudio (4.1.1).

As mentioned above, the experiment also used fillers. In total, three times as many fillers as target items were used to create two stimuli sets, each comprising 128 items.

3.2.3 *Program*

The experiment was produced as a computer program written using PsyScript (2) for Apple Macintosh computers (Slavin 2003–2017). The program consisted of three parts. A. Three practice trials. B. 128 experimental items split into two sets so that participants could receive a break half way through the set. C. A mismatch evaluation series of 16 items where a sub-selection of the target trials were presented again to evaluate whether participants has identified the items as manipulated.

3.3 Procedure

Participants were greeted by the experimenter and given consent forms to read and sign. Any questions were answered at this point. They were then instructed to complete an electronic version of the LEAP-Q questionnaire presented on the same computers (Apple Macintosh) where they would later be completing the experiment. Once the LEAP-Q was complete, and saved to the hard drive, the experimenter started the experimental program, and instructed the participant to follow the instructions on the screen. Upon completion, the participant was thanked for their time, and dismissed.

The experimental procedure as written in the computer program was as follows. Participants were presented with a short video clip of a speaker having a conversation with another person. Only the person speaking, from the neck down, was shown in the clip (see Figure 1). Upon completion of the clip, a conjugated verb form appeared in the middle of the screen. The participant was asked whether it was used by the speaker in the video clip. If yes, they were asked to press a 'yes' button, if not, the 'no' button. The response time taken to respond 'yes' or 'no' was the measure used to evaluate possible processing differences.

4. Results

4.1 Reporting of results

The Open Science Collaboration (2015) discusses five ways of estimating reproducibility; here we focus on two relevant for our study: effect sizes and confidence intervals. Conceptually, an effect size is the difference between two groups, such as a difference of 50 milliseconds in response time to reading two different words. Many experiments would report an effect such as this using what is known as a *p*-value. The *p* is the probability of this result in the sample, given that the null hypothesis is true for the population (Cohen et al. 2003). The null hypothesis is the claim that the difference is 0. As such, if the *p*-value is very low, with the standard baseline being less than 0.05, then the null hypothesis is rejected. However, for decades psychologists have argued that researchers should focus more on effect size estimation, and not simply null hypothesis significance testing. Cohen et al., argued that often it is the case that the question that investigators are interested in is not whether an effect exists or not, but how big the effect is. Because of this, many erroneous interpretations of *p*-values occur, such as in the claim that a finding is *very* significant (as opposed to being significant or not) or the practice of reporting *p*-values beyond three decimal places, or significant digits (e.g., $p < 0.00001$ x $10^{e\text{-}42}$).

Confidence intervals are the boundaries around the effect size estimate that provide an analysis of error. The larger the interval is, the greater the amount of error in the estimate. Again, by convention 95% confidence intervals are usually what are reported in psychological science. This percentage means that if an experiment were run many times, the effect size in the population, if we tested all of the people in the world, would fall into that interval 95% of the time. Thus, in using effect size estimates and confidence intervals, we are working toward a better fit between the kind of answers we seek and the questions that we are asking.

In terms of data preparation, our analysis of response times (RTs) was only performed on correct responses. Fillers were also removed. These RTs were trimmed in each experiment by 2.5 standard deviations.

4.2 French

We analyzed RTs using a speech by gesture type repeated-measures ANOVA. The main effect of speech was not significant, $F(1, 53) = 0.03$; $p = 0.86$; $\eta_p^2 = 0.001$. RTs were not reliably different for *passé composé* ($M = 1166$, $SD = 313$) versus *imparfait* ($M = 1169$, $SD = 277$). The main effect of gesture type was also not significant, $F(1, 53) = 1.61$; $p = 0.21$; $\eta_p^2 = 0.03$. We found no significant difference in RTs between bounded ($M = 1153$, $SD = 262$) versus unbounded gesture types ($M = 1183$, $SD = 325$). The interaction for speech by gesture type was not significant, $F(1, 53) = 1.43$; $p = 0.23$; $\eta_p^2 = 0.03$. As a follow-up test of our hypothesis, we tested the simple main effects of gesture type for *imparfait* and *passé composé*. Specifically, we performed a Student's T-test that in the case of the *imparfait*, participants were faster when the gesture type was unbounded versus bounded. For *passé composé*, we hypothesized that participants were faster when the gesture type was bounded relative to unbounded. These t-tests were one-tailed, meaning that we did not test whether the effects of boundedness were in the opposite direction of our hypothesis, e.g., for *imparfait*, participants were faster for bounded than for unbounded. We found that for *imparfait*, participants were not reliably faster for unbounded ($M = 1172$, $SD = 290$) compared to bounded gestures ($M = 1167$, $SD = 265$); $t(53) = -0.20$; $p = 0.58$; $d = 0.03$. However, for *passé composé*, participants were marginally faster for bounded ($M = 1139$, $SD = 259$) versus unbounded gestures ($M = 1193$, $SD = 360$), $t(53) = 1.57$; $p = 0.06$; $d = 0.21$.

4.3 German

First, we found a significant effect of speech, $F(1, 55) = 9.24$; $p < 0.001$; $\eta_p^2 = 0.14$. Participants were faster for *Präteritum* ($M = 1356$, $SD = 406$) than *Perfekt* speech, ($M = 1463$, $SD = 464$). Second, we found a significant effect of gesture type, $F(1, 55) = 6.64$; $p = 0.01$; $\eta_p^2 = 0.11$. Participants were reliably faster for bounded ($M = 1370$, $SD = 421$) relative to unbounded gestures ($M = 1449$, $SD = 453$). Finally, the interaction between speech and gesture type was not significant, $F(1, 55) = 0.03$; $p < 0.86$; $\eta_p^2 = 0.001$.

4.4 Russian

Participants' RTs showed no significant difference with respect to speech, $F(1, 50) = 0.58$; $p = 0.45$; $\eta_p^2 = 0.01$. The type of gesture also did not reliably affect participants' RTs, $F(1, 50) = 0.23$; $p = 0.63$; $\eta_p^2 = 0.005$. The interaction between speech and gesture was not significant, $F(1, 50) = 2.20$; $p = 0.14$; $\eta_p^2 = 0.04$. We found that for *imperfective* speech, participants were not reliably faster for unbounded ($M = 1270$, $SD = 300$) compared to bounded gestures ($M = 1295$, $SD = 354$), $t(50) = 0.89$; $p = 0.18$; $d = 0.13$. For *perfective* speech, participants were not significantly faster for bounded ($M = 1271$, $SD = 374$) versus unbounded gestures ($M = 1322$, $SD = 402$), $t(53) = 1.13$; $p = 0.13$; $d = 0.16$.

4.5 Interim summary

For Russian, the results lie in the direction of the original hypothesis (that the recognition of imperfective verbs with unbounded gestures would be faster than that of imperfective with bounded gestures, and of perfective verbs with bounded gestures than with unbounded ones), but not to a significant degree. For German, the hypothesis was not supported. For French, the hypothesized difference between matching and mismatching video (gesture)/audio (verb) combinations was also not significant.

4.6 Combined analyses

As a final step we combined the data from all three languages into one, giving us an N of 161. This analysis served two purposes. First, it tested the hypothesis that lack of power was the reason that we found no significant effect of bounded and unbounded gesture types for perfective speech. Second, it provided us with a more reliable estimate of the effect size of the differences between gesture types for perfective and imperfective speech. The design of the analysis was again a speech by gesture type repeated-measures ANOVA, but this time with language as a between-subjects factor.

Our combined analysis showed a significant difference for speech, $F(1, 158) = 7.08$; $p = 0.01$; $\eta_p^2 = 0.04$. Participants were faster on trials with imperfective ($M = 1270$, $SD = 350$) versus perfective speech ($M = 1310$, $SD = 412$). We also found a significant interaction of speech by language, $F(2, 158) = 5.47$; $p = 0.01$; $\eta_p^2 = 0.07$. For German, the differences between participants' RTs were reliably faster for *Perfekt* versus *Präteritum,* although not to a significant degree for Russian's *perfective* versus *imperfective*, and for French the difference between the *passé composé* and *imparfait* was slightly in the opposite direction (see Table 6.2). Next, participants' RTs were significantly affected by the type of gesture, $F(1, 158) = 6.57$; $p = 0.01$; $\eta_p^2 = 0.04$. Across all languages participants were faster on trials with bounded ($M = 1269$, $SD = 365$) versus unbounded gestures ($M = 1311$, $SD = 397$). The interaction between language and gesture type was not significant, $F(2, 158) = 1.56$; $p = 0.21$; $\eta_p^2 = 0.02$. Further, the interaction was neither significant between speech and gesture type, $F(1, 158) = 1.74$; $p = 0.19$; $\eta_p^2 = 0.01$, nor was the interaction significant by language, $F(2, 158) = 0.26$; $p = 0.77$; $\eta_p^2 = 0.003$.

Table 6.2 Mean response times (RTs) for each language broadly classified as imperfective and perfective temporal meaning

	French		German		Russian	
	M	*SD*	*M*	*SD*	*M*	*SD*
Imperfective	1169	277	1356	406	1283	327
Perfective	1166	313	1463	464	1297	387

We conducted follow up tests of the simple main effect of gesture type for both forms of speech, this time collapsed as perfective and imperfective. We found that for *imperfective* speech, participants were not reliably faster for unbounded ($M = 1280$, $SD = 374$) compared to bounded gestures ($M = 1261$, $SD = 324$), $t(160) = -0.92$; $p = 0.82$; $d = -0.07$. However, for *perfective* speech, participants were significantly faster for bounded ($M = 1279$, $SD = 402$) versus unbounded gestures ($M = 1343$, $SD = 418$), $t(160) = 2.46$; $p < 0.01$; $d = 0.19$ (see Figure 6.2).

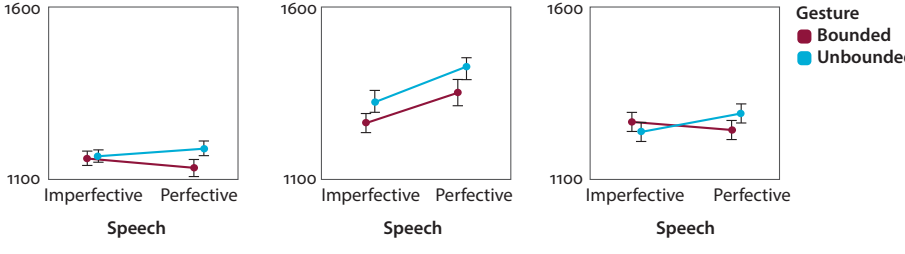

Figure 6.2 Mean RTs for verb type (i.e., speech on the x-axis) as a function of bounded or unbounded for French, German, and Russian as read from left-to-right

5. Discussion of combined analyses

The main finding is that for perfective speech in all three languages bounded gestures led to faster verb recognition than unbounded gestures. One could argue that the combined analysis of RTs was flawed in that the grammatical categories of tense and aspect across languages are fundamentally different. Further, the German form *Präteritum* used here has some different characteristics than the imperfective used in the other two languages (see Section 4.3). To counter this argument, we would say first that we are comparing past tense speech in all cases for this experiment. Second, the main finding involves the *passé composé* in French, the *Perfekt* in German, and the *perfective* in Russian. As morphological markers, the verb forms for these categories are similar semantic cues for guiding a "perfective" mental simulation of an event. Further, for each of the languages, the patterns for bounded versus unbounded gesture quality are the same.

Finally, the case of the imperfective being noisy across different languages suggests that for this category, pooling the data over languages is problematic. It does seem that the *imparfait* (French), the *Präteritum* (German), and the *imperfective* (Russian) are very different categories with respect to tense/aspect markings. More evidence for cross-linguistic differences in tense/aspect effects in verb recognition can be seen in Table 6.2, where German showed a strong advantage for *Präteritum* versus *Perfekt*, but no reliable difference in verb recognition times were found for Russian or French. This is quantitative evidence that the categories of time meanings for German are qualitatively different from those chosen in Russian and French.

6. Conclusion

Across the three languages, one possible explanation for the lack of significant perception of mismatching boundary schemas according to verb types is the multifunctionality of gestures. The boundedness schemas we studied were independent of gesture functions (such as representation, structuring of discourse, or pragmatic functions). It could be that in many cases, participants disregarded differences between the matching and mismatching qualities of the gestures, since these qualities were not linked with the main functions that the gestures might have appeared to serve in the given contexts. It is worth noting that across the languages, an almost significant effect ($p = 0.05$) was found for the recognition of verbs (participants correctly responding that they had heard a given verb or not) for bounded gestures than for unbounded gestures, suggesting differing roles for these qualities of gestures in multimodal communication.

This study becomes an example of the importance of reporting studies as done, with the original hypotheses and without reframing results. The effects found for

each language document the idiosyncrasies of each language, and as such, are valuable for developing a more complete picture of the languages in question, and of language in general. If any type of hypothesis reformulation had been done, it would have tarnished the veracity of knowledge gathered here.

7. Afterword: The need for interdisciplinary collaboration

As noted earlier, psychology is in need of improvement with respect to statistical reporting standards and methodological practices. This increased rigor will make the tools of science better, but that is only part of the picture. Interdisciplinary collaboration with the humanities is also important, because it brings together other theoretical views that, despite their similarity, run parallel to, and are more-or-less unknown in, the psychological literature. In combining these different viewpoints, it is the hope that improvements in hypothesis development will complement the housecleaning currently underway in psychology. In linguistics, we hope that the latest theoretical contributions of psychological research will become part of the discussion in terms of event structure, in addition to the improvements in statistical techniques and reporting conventions.

Looking at how quickly someone reads a sentence is one important "way of knowing", but it has many limitations. First, such experiments are contrived and controlled to the point that they no longer reflect what people actually do outside of the lab. Second, reading as an activity is only shared by 83% of the world's population according to data from the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2017). In 2010, that meant 775 million adults worldwide were illiterate, of which two-thirds were women. Not only is speaking, gesturing, or signing a primary and natural form of communication, but for 17% of the people on this planet, it is the only means to understand one another.

In order for real advancement in the humanities and social sciences to occur, we need to expand our knowledge base from reading studies to research on speech and gesture. Further, collaboration among psychologists, cognitive linguists, and gesture researchers allows for the potential emergence of new knowledge bases. It is through this process that individuals become "unstuck" from functional fixedness: a cognitive bias where a researcher's toolkit becomes locked such that all problems are approached in a similar fashion given. Through interdisciplinary collaboration, someone from a different discipline might view that same toolkit in a different light, and apply it in a new way. This is at least one advantage to considering the state-of-the-art methods in psychology and attempting to apply them in gesture studies, and also taking multi-modal communication seriously and developing naturalistic materials for psychology experiments.

Conclusion

Aspectuality and the expression of event construal as variably multimodal (*Iriskhanova, Cienki*)

The purpose of this study has been to investigate the multimodal construal of events in spoken narratives in three languages – French, German, and Russian. We focused on two modes – the verbal and the gestural – and specifically, on the aspectual forms of verbs accompanied by gestures that were used in oral stories about past events.

We view aspectuality as the cognitive ability to construe events in alternate ways – as having boundaries specified or not specified, or as being telic or atelic, or as being a complete whole or a process unfolding in time. This ability is verbally expressed by the category of aspect. There are two basic ways of conveying aspectuality in language – through grammatical aspect (e.g., via tense systems, as in French, or morphological grammar, as in Russian) and/or lexical aspect (Aktionsart for German, or the "manner of action" for Russian). Thus, the cognitive approach adopted in this research allows for a broader view on aspectuality as a cross-modal phenomenon that finds its way into verbal and non-verbal modes of communication, specifically, into the gestural mode.

Taking into consideration the differences between the aspectual systems of French, German, and Russian, we aimed at finding out whether there was similarity or difference in the correlation between aspect and gesture use in the three languages. An answer to this question may lead to a more profound understanding of how speakers of different languages construe events in the moment they communicate about them.

Motivated by Vygotskij's (1934/1996) and Slobin's (1987) ideas about a special kind of thinking that is fine-tuned to linguistic usage (the so-called "verbal thought", or "thinking for speaking"), we proceeded from a number of assumptions that linked mental representations of events to aspect and gesture use. From the cognitive point of view, events are seen as mental entities representing the construal of some change (or absence of change), either as a single completed whole, or as an ongoing process with an internal structure. The differences in the construal of events (as complete with boundaries, or as a process without boundaries) are regularly marked by the opposition between perfective and imperfective forms of verbs in various languages.

From the narrative point of view, events are regarded as structural elements of storytelling. The grammatical (specifically, tense and aspect) properties of verbs used to describe events follow the sequence of narrative patterns – from introduction and orientation, to the climax, and finale.

From the point of view of spoken discourse, events are regarded as instances of co-occurrence of all the means that are used to communicate about an action, process, or state. These usage events are multimodal, and the correlational patterns between their verbal and non-verbal (gestural) components are repeatedly reproduced by the speakers as the narrative unfolds. In terms of aspect, it means that some properties of perfective and imperfective verb forms would be reflected in certain properties of gestures that accompany these verbs. So, by linking aspect to gestures as "movement events", we provided the basis for comparison between the three languages. Proceeding from these assumptions, we treated events in spoken narratives as points of convergence for various mental, linguistic, and bodily experiences.

The initial hypothesis of the research was that in all the three languages perfect(ive) verb forms would correlate with gestures that capture an event as one single entity with a ballistic pulse of effort. We called such hand movements "bounded" gestures. By contrast, imperfect(ive) forms would correlate with "unbounded" gestures that are devoid of such pulse of effort and reflect the internal structure of events from the inside perspective.

The hypothesis was tested in a series of empirical studies with native speakers of French, German, and Russian talking with each other about their experiences of past events. The analyses of the video materials were focused on the correlation between the aspectual forms of verbs and the co-verbal gestures used by the speakers to describe events of different types.

The hypothesis was confirmed for the French language: a significant correlation was found there between the use of the perfect tense form (the *passé composé*) and bounded gestures, and between the imperfect forms (the *imparfait*) and unbounded gestures. Both German and Russian data showed no difference between the motion qualities of the gestures used with the perfective versus the imperfective aspect: significantly more bounded than unbounded gestures were used with verbs in the past tense with both aspects, i.e., with *Präteritum* and *Perfekt* in German, and with the imperfective and perfective aspect (*vid*) in Russian.

Both the similarities and the differences in the correlation between perfectivity/imperfectivity of verbs and boundedness/unboundedness of gestures, that we observed in the three languages, seem to be rooted, first, in the specifics of the aspectual systems of the languages, namely, in the ways of achieving the balance between more abstract grammatical meanings and more specific lexical meanings that are found in the languages. Aspect in French is a category grammaticalized

through tense forms. In German it is traditionally viewed as a lexical category of the manner of an action (Aktionsart), however, in this language it is also marked by the opposition of past tenses. The difference between gesture use with the German *Präteritum* and the French *imparfait* can be explained by the difference in the semantic functions of the imperfect tenses. The main function of the French imperfect is to set up a background for the events expressed by other tenses. The imperfect past tense in the German spoken narratives is used mostly for certain modal and copula verbs. In Russian there is only one past tense, but *vid* (aspect) cuts across the whole system of tenses and moods, spreading into infinitives and participles, and displaying certain asymmetries. It is regarded as a lexico-morphological category that manifests itself both at the grammatical and lexical-semantic levels. The comparison of aspectual properties of the three languages showed that, while the French aspect is more explicitly marked in the grammar of tenses, aspectual distinctions in Russian and German are more lexically based.

Second, the correlation between perfectivity/imperfectivity of verbs and boundedness/unboundedness of gestures is related in the distribution of verbs in the spoken narratives, characterized by such features as situatedness in the context of communication, intersubjectivity, and spontaneity. For all the three languages the past tense verbs constituted the core element in describing events, helping the speakers to sequence the events and to form the figure-ground relations between them.

Although the past imperfective forms prevailed over the past perfective ones for the three languages, the data showed some differences in the distribution of aspectual forms that could be linked to the specifics of the usage of tenses and the structural and semantic qualities of the verbs used in spoken narratives. For instance, in the French data the way the speakers of this language alternate between *imparfait, passé composé*, and *présent simple,* as well as the aspectual meaning of the tenses, depend on the way the tense forms are placed against each other in a particular context. For German, we found that *Präteritum* was still widely used by the speakers in spoken narratives, mainly with modal verbs and copulas to refer to epistemic stances and states of affairs. Similar to the German data, the Russian corpus shows that semantically bleached verbs (copula and modal verbs) are used quite extensively, along with verbs for concrete physical actions and motion. In terms of structure, the semantically rich verbs were mostly morphologically complex, which goes in line with the lexico-morphological nature of Russian *vid.* Although in our spoken data the variety of prefixes was limited, the most frequent of them were used in various meanings.

In general, the differences in the verbal construal of events in spoken narratives of the three languages had implications for the correlation between these verbal features and gestures within multimodal usage events. Boundedness in gesture appears to be more clearly related to the perfectivity that is grammatically marked

in tenses, as in French. In Russian and German this correlation is less obvious due to the more lexically based aspectual distinction in these languages. The difference between gesture use with the German *Präteritum* and the French *imparfait* can possibly be explained by the difference in the semantic functions of the imperfect tenses in the two languages. The French imperfect tense is generally used to set up the background for other events being profiled in the narrative, while the German imperfect tense is the less frequently used one in the past and has other semantic functions as well.

The Russian results are contrastive to those from the French data in that significantly more bounded than unbounded gestures were used irrespective of the aspectual properties of verbs in the past (cf. the German results). This difference can be explained in terms of the lexical semantic, rather than purely grammatical bases of aspectuality in Russian. A deeper analysis of the Russian dataset revealed that the co-occurrence of verbs and gestures is highly sensitive to lexical semantic and pragmatic features of discourse, especially with the representational gestures that illustrate the event boundaries through the embodied semantics of the hand movement.

Since the French results confirmed that at least with some languages the boundary schemas form a reliable basis for the analysis of the verb-and-gesture co-occurrences in spoken narratives, a further investigation of the nature of "boundary" in gestures was carried out with a view on the kinesiological analysis of gesture production. The question was whether the gestural embodiment of aspect, which at the initial stage of the research was based on the analysis of gesturality from the external point of view of the observer, could be derived from the internal functioning of gestures. This would help to re-define the notion of gesture boundary from the speaker's perspective.

A more detailed study of four French sessions was based on kinesiological characteristics of gestures, such as the propagation of flow, the segments of arm involved in the movement, and the length of flow. The results revealed that the proximal-distal propagation flow was predominantly used with the *imparfait*, and the distal-proximal flow was associated predominantly with the *passé composé*. Consequently, the propagation of flow correlates with perfectivity even more closely than the boundary schemas based on the kinematic (the external view) criteria. Although the analyses of the French data clearly indicate that both kinematic (boundary schematic) and kinesiological features can be viewed as enactments of (im)perfectivity, further investigation is needed which would involve more participants and more languages.

At the final stage of the research we studied the correlation between the (im)perfectivity of verbs and the (un)boundedness of gestures in relation to the comprehension (perception) of events being talked about. Answering the need

for interdisciplinary collaboration, we conducted a psychological experiment with native speakers of each of the three languages to determine whether this correlation (or its violation) could affect their recognition of verbs being uttered in video clips. The video clips, some of which were created through mismatching, showed the gesture with the verb that either followed our original hypothesis (perfect[ive] verb + bounded gesture or imperfect[ive] verb + unbounded gesture) or breached it (perfect[ive] + unbounded or imperfect[ive] + bounded). For the individual languages the results were not statistically significant, which can be possibly explained by the functional and individual variability of gesture use. It could be that a larger number of participants might lead to more significant results. However, across the languages we did observe an almost significant effect for the recognition of verbs for bounded gestures than for the unbounded gestures, which probably points to the different role these gestural properties play in multimodal comprehension processes.

In general, the results and observations presented in this book suggest that the interrelation between the cognitive, verbal, and gestural dimensions of the construal of events is variable across languages. Languages differ with respect to the sensitivity of verbal and gestural behavior of the speakers to abstract grammatical schemas – boundary schemas, in our case. With a view on aspectuality, the languages we investigated appear to follow different patterns of correlation between the (im)perfectivity of verbs and the (un)boundedness of gestures. Linking back to Slobin's (1987) notion of "thinking for speaking", we can infer a connection between different ways of conceptualizing events and more abstract ("grammatical") or more concrete ("lexical semantic") forms of expressing them verbally and gesturally. In various ways, and to varying degrees, we can say that "thinking for speaking and gesturing" (Cienki 2008; Cienki and Müller 2006; McNeill and Duncan 2000), or perhaps "construing for speaking and gesturing" about events, may be tuned in to mental simulations that can have embodied manifestations.

References

Agrell, S. 1908. Aspektänderung und Aktionsartbildung beim polnischen Zeitworte: ein Beitrag zum Studium der indogermanischen Praeverbia und ihrer Bedeutungsfunktionen. Lunds Universitets Ärsskrift n.S. I, IV.2.

Aksakov, K. S. 1855. *O russkikh glagolakh* [On Russian verbs]. Moscow: Tipografija L. Stepanovoj Publ.

Aristotle. 2006. *Metaphysics. Book Theta*. Translated with an introduction and commentary by Stephen Makin. Oxford: Clarendon Press

Arutjunova, N. D. 1988. *Tipy jazykovykh značenij. Ocenka. Sobytie. Fakt*. [Types of linguistic meanings: Evaluation, events, facts]. Moskva: Nauka.

Bach, E. 1981. On time, tense, and aspect: An essay in English metaphysics. In P. Cole (Ed.), *Radical pragmatic* (63–81). New York: Academic Press.

Bach, E. 1986. The algebra of events, *Linguistics and Philosophy*, 9, 5–16.

Badiou, A. 2000. *Being and event*. Translated by L. Burchell. Minneapolis: University of Minnesota Press.

Barlow, M. & Kemmer, S. (Eds.) 1999. *Usage-based models of language*. Stanford: CSLI Publications.

Barsalou, L. 1999. Perceptual symbol systems. *Behavioral and Brain Sciences*, 22(4), 577–609.

Bartenieff, I., & Lewis, D. 1980. *Body movement. Coping with the environment*. New York: Gordon and Breach Science Publishers.

Bateman, J. 2008. *Multimodality and genre. A foundation for the systematic analysis of multimodal documents*. Hampshire: Palgrave Macmillan.

Beck, S. 2005. There and back again: A semantic analysis. *Journal of Semantics*, 22, 3–51. https://doi.org/10.1093/jos/ffh016

Becker, R., Cienki, A., Bennett, A., Cudina, C., Debras, C., Fleischer, Z., Haaheim, M., Müller, T., Stec, K., & Zarcone, A. 2011. Aktionsarten, speech and gesture. In C. Kirchhof (Ed.), *Proceedings of GESPIN2011: Gesture and speech in interaction* [http://gespin.amu.edu.pl/?page_id=46].

Becker, R. B., Ferretti, T. R., & Madden-Lombardi, C. J. 2013. Grammatical aspect, lexical aspect, and event duration constrain the availability of events in narratives. *Cognition*, 129(2), 212–220. https://doi.org/10.1016/j.cognition.2013.06.014

Behaghel, O. 1924. *Deutsche Syntax. Eine geschichtliche Darstellung. Bd. 2*. Heidelberg: Winter.

Bennett, J. F. 1988. *Events and their names*. Indianapolis, IN: Hackett Pub. Co.

Benveniste, E. 1959. Les relations de temps dans le verbe français. *Bulletin de la Société de Linguistique*, 54(1). Reprinted in E. Benveniste, 1966, *Problèmes de linguistique générale*, Vol. 1 (237–250). Paris: Gallimard.

Bergen, B., & Wheeler, K. 2010. Grammatical aspect and mental simulation. *Brain and Language*, 112(3), 150–158. https://doi.org/10.1016/j.bandl.2009.07.002

Berthoz, A.. 1997. *Le sens du mouvement*. Paris: O. Jacob.

Bierwisch, M. 1989. Event nominalizations: Proposals and problems. In W. Motsch (Ed.), *Linguistische Studien* (1–73). Berlin: Akademie Verlag.

Boas, F. 1911/1916. *The mind of primitive man*. New York: Macmillan.
Boldyrev, A. V. 1812. Rassuždenie o glagolakh. *Trudy obščestva ljubitelej rossijskoj slovesnosti*, 2, 65–84.
Bondarko, A. V. 1971. *Vid i vremja russkogo glagola* [Aspect and tense of Russian verbs]. Moscow: Nauka.
Bondarko, A. V. 1983. *Principy funkcional'noj grammatiki i voprosy aspektologii* [Principles of functional grammar and aspectology]. Leningrad: Nauka.
Boutet, D. 2001. *Approche morpho-dynamique du sens dans la gestuelle conversationnelle*. Université de Paris VIII, Paris.
Boutet, D. 2010. Structuration physiologique de la gestuelle: Modèle et tests. *Lidil* 42: 77–96.
Boutet, D. 2015. Conditions formelles d'une analyse de la négation gestuelle. *Vestnik of Moscow State Linguistic University. Discourse as social practice: Priorities and prospects*, 6(717), 116–129.
Brecht, R. D. 1985. The form and function of aspect in Russian. In M. S. Flyer & R. D. Brecht (Eds.), *Issues in Russian morphosyntax* (9–34). Columbus, OH: Slavica.
Bres, J. 1988. Temps, langage, praxis: de l'imparfait et du passé simple. *L'Information Grammaticale* 77: 33–37. https://doi.org/10.3406/igram.1998.2873
Bres, J. 2000. Un emploi discursif qui ne manque pas de style: l'imparfait en cotexte narratif. In A. Carlier, V. Lagae & C. Benninger (Eds.), *Passé et parfait* (59–77). Amsterdam/Atlanta: Editions Rodopi.
Bressem, J., & Ladewig, S. 2011. Rethinking gesture phases: Articulatory features of gestural movement? *Semiotica*, 184(1/4), 53–91.
Bressem, J., & Müller, C. 2014a. The family of away-gestures: Negation, refusal, and negative assessment. In C. Müller, A. Cienki, E. Fricke, S. H. Ladewig, D. McNeill, & J. Bressem (Eds.), *Body – language – communication: An international handbook on multimodality in human interaction* (1592–1604). Berlin: De Gruyter Mouton.
Bressem, J., & Müller, C. 2014b. A repertoire of German recurrent gestures with pragmatic functions. In C. Müller, A. Cienki, E. Fricke, S. Ladewig, D. McNeill, & J. Bressem. (Eds.). *Body – language – communication: An international handbook on multimodality in human interaction*. Volume 2 (1575–1591). Berlin: De Gruyter Mouton.
Brown, R. 1976. Reference: In memorial tribute to Eric Lenneberg. *Cognition*, 4, 125–153. https://doi.org/10.1016/0010-0277(76)90001-9
Brown, P., & Levinson, S. C. 1993. "Uphill" and "downhill" in Tzeltal. *Journal of Linguistic Anthropology*, 3(1), 46–74. https://doi.org/10.1525/jlin.1993.3.1.46
Bruner, J. 1991. The narrative construction of reality. *Critical Inquiry*, 18, 1–21. https://doi.org/10.1086/448619
Brunot, F. 1953. *La pensée et la langue*. Paris: Masson et Colin.
Bühler, K. 1933. *Ausdruckstheorie. Das System an der Geschichte aufgezeigt*. Jena: Gustav Fischer.
Bulygina, T. V. 1982. K postrojeniju tipologii predikatov v russkom jazyke [Towards building a typology of predicates in Russian]. In O. N. Seliverstova (Ed.), *Semantičeskie tipy predikatov* (7–85). Moscow: Nauka.
Bybee, J. 2010. *Language, Usage, and Cognition*. NY: Cambridge University Press. https://doi.org/10.1017/CBO9780511750526
Bybee, J. L. 2003. Aspect. In W. J. Frawley (Ed.) *International encyclopedia of linguistics*. Second Edition (157–158). Oxford: Oxford University Press.
Calbris, G. 1990. *The semiotics of French gestures*. Bloomington: Indiana University Press.
Carlson, G. N. 1980. *Reference to kinds in English*. New York: Garland Publishing Co.

Carter, R. J. 1976. Some linking regularities. In B. Levin & C. Tenny (Eds.), *On linking: Papers by Richard Carter, Lexicon Project Working Papers 25, MIT Center for Cognitive Science* (1–92). Cambridge, MA: MIT Press.

Chisholm, R. M. 1970. Events and propositions, *Noûs*, 4, 15–24. https://doi.org/10.2307/2214288

Chu, M. & Kita, S. 2008. Spontaneous gestures during mental rotation tasks: Insights into the microdevelopment of the motor strategy. *Journal of Experimental Psychology: General*, 137, 706–723. https://doi.org/10.1037/a0013157

Chu, M. & Kita, S. 2016. Co-thought and co-speech gestures are generated by the same action generation process. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 42(2), 257–270.

Cienki, A. 2008. Why study metaphor and gesture? In A. Cienki & C. Müller (Eds.), *Metaphor and gesture* (5–25). Amsterdam/Philadelphia: John Benjamins. https://doi.org/10.1075/gs.3

Cienki, A. 2010. Gesture and (cognitive) linguistic theory. In R. Caballero Rodriguez & M. J. Pinar Sanz (Eds.), *Ways and modes of human communication* (45–56). Cuenca: Ediciones de la Universidad de Castilla-La Mancha.

Cienki, A. 2013. Cognitive Linguistics: Spoken language and gesture as expressions of conceptualization. In C. Müller, A. Cienki, S. Ladewig, D. McNeill, & S. Teßendorf (Eds.), *Body – language – communication: An international handbook on multimodality in human interaction*. Volume 1 (182–201). Berlin: Mouton de Gruyter.

Cienki, A. 2016. Cognitive Linguistics, gesture studies, and multimodal communication. *Cognitive Linguistics*, 27(4), 603–618.

Cienki, A., & Müller, C. 2006. Verbal to gestural, and gestural to verbal, metaphoric expression. Presentation at the conference "Researching and Applying Metaphor 6," Leeds, UK, April 2006.

Clark, H. 1973. Space, time, semantics, and the child. In T. E. Moore (Ed.). *Cognitive development and the acquisition of language* (27–63). New York: Academic Press.

Codman, E. A. 1934. *The shoulder: rupture of the supraspinatus tendon and other lesions in or about the subacromial bursa*. Boston, MA: Thomas Todd Co.

Cohen, D. 1989. *L'aspect verbal*. Paris: Presses Universitaires de France.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. 2003. *Applied multiple regression/correlation analysis for the behavioral sciences*. Mahwah, NJ: LEA Inc.

Coseriu, E. 1976. *Das Romanische Verbalsystem*. Tübingen: Narr.

Comrie, B. 1976. *Aspect: An introduction to the study of verbal aspect and related problems*. Cambridge: Cambridge University Press.

Comrie, B. 1981. Aspect and voice: Some reflections on perfect and passive in tense and aspect. In P. Tedeschi and A. Zaenen (Eds.), *Syntax and semantics* (65–78). Ann Arbor: University of Michigan Press.

Croft, W. 1991. *Syntactic categories and grammatical relations: The cognitive organization of information*. Chicago: University of Chicago Press.

Croft, W. 2012. *Verbs: Aspect and causal structure*. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199248582.001.0001

Croft, W., & Cruse, D. A. 2004. *Cognitive linguistics*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511803864

Culioli, A., 1999. *Pour une linguistique de l'énonciation, Formalisation et opérations de repérage*, tome 2 (Collection *L'Homme dans la langue*, animée par Janine Bouscaren). Paris: Ophrys.

Dahl, Ö. 1985. *Tense and aspect systems*. Oxford: Basil Blackwell.

Damourette, J., & Pichon, E. 1911–1936. *Des mots à la pensée*. Paris: D'Artrey.

Davidson, D. 1967. The logical form of action sentences. In N. Rescher (Ed.), *The logic of decision and action* (81–95). Pittsburgh: University of Pittsburgh Press

Davidson, D. 1969. The individuation of events. In N. Rescher (Ed.), *Essays in honour of Carl G. Hempel* (216–234). Reidel: Dordrecht. https://doi.org/10.1007/978-94-017-1466-2_11

Davydov, I. I. 1853. *Opyt obšesravnitel'noj grammatiki russkogo jazyka*. Izd. II otd. Imp. AN [Tentative comparative Russian grammar, published by the Second department of the Imperial Academy of Sciences]. St. Petersburg, Tipografija Imperatorskoj Akademii Nauk.

De Boer, C. 1947. *Syntaxe du français moderne*. Leiden: Leiden University Press.

Debras, C. 2013. L'expression multimodale du positionnement interactionnel : étude d'un corpus oral vidéo de discussions sur l'environnement en anglais britannique. Thèse de doctorat en linguistique anglaise, Université Sorbonne Nouvelle – Paris 3.

Declerck, R. 1979. Aspect and the bounded/unbounded (telic/atelic) distinction. *Linguistics*, 17, 761–794. https://doi.org/10.1515/ling.1979.17.9-10.761

Deleuze, G. 1990. *The logic of sense*. Transl. by M. Lester with C. Stivale. NY: Columbia University Press.

de Saussure, F. 1959/1916. *Course in general linguistics*. New York: Philosophical Library.

Desclés, J. -P., & Guentchéva, Z. 1996. Convergences et divergences dans quelques modèles du temps et de l'aspect. In V. Koseska-Toszewa and D. Rytel-Kuc (Eds.), *Semantyka a konfrontacja jezykowa, Tom I* (23–42). Warsaw: Instytut Slawistyki PAN.

Dickey, S. M., & Kresin, S. C. 2009. Verbal aspect and negation in Russian and Czech. *Russian Linguistics*, 33(2), 121–176. https://doi.org/10.1007/s11185-009-9040-0

Divjak, D. 2009. Mapping between domains. The aspect-modality interaction in Russian. *Russian Linguistics*, 33, 249–269. https://doi.org/10.1007/s11185-009-9045-8

Dowty, D. R. 1977. Toward a semantic analysis of verb aspect and the English 'imperfective' progressive. *Linguistics and Philosophy*, 111, 45–78. https://doi.org/10.1007/BF00351936

Dowty, D. R. 1979. *Word meaning and Montague Grammar: The semantics of verbs and times in Generative Semantics and in Montague's PTQ*. Dordrecht: Reidel. https://doi.org/10.1007/978-94-009-9473-7

Du Bois, J. W. 1985. Competing motivations. In J. Haiman (Ed.), *Iconicity in syntax* (343–366). Amsterdam: Benjamins. https://doi.org/10.1075/tsl.6.17dub

Du Bois, J. W. 2014. Towards a dialogic syntax. *Cognitive Linguistics*, 25(3), 359–410. https://doi.org/10.1515/cog-2014-0024

Ducrot, O. 1979. Les lois de discours. *Langue française*, 42, 21–33. https://doi.org/10.3406/lfr.1979.6152

Dumas, R., Chèze, L., & Verriest, J. -P. 2007. Adjustments to McConville et al. and Young et al. body segment inertial parameters. *Journal of Biomechanics*, 40(3), 543–553. https://doi.org/10.1016/j.jbiomech.2006.02.013

Duncan, S. 1996. Grammatical form and 'thinking-for-speaking' in Mandarin Chinese and English: An analysis based on speech-accompanying gestures. Unpublished doctoral dissertation. University of Chicago.

Duncan, S. 2002. Gesture, verb aspect, and the nature of iconic imagery in natural discourse. *Gesture*, 2(2), 183–206. https://doi.org/10.1075/gest.2.2.04dun

Duncan, S. 2006. Co-expressivity of speech and gesture: Manner of motion in Spanish, English, and Chinese. In *Proceedings of the 27th Berkeley Linguistic Society Annual Meeting* (353–370). Berkeley, CA: Berkeley University Press.

Edwards, J. A. 1993. Principles and contrasting systems of discourse transcription. In J. A. Edwards & M. D. Lampert (Eds.), *Talking data: Transcription and coding in discourse research* (3–31). Hillsdale, NJ: Lawrence Erlbaum Associates.

Eggins, S., & Slade, D. 1997. *Analysing casual conversation*. London: Cassell.
Eisenberg, P. 1986. *Grundriß der deutschen Grammatik*. Stuttgart: Metzler.
Ekman, P., & Friesen, W. 1969. The repertoire of nonverbal behavior: Categories, origins, usage and coding. *Semiotica*, 1, 49–98. https://doi.org/10.1515/semi.1969.1.1.49
Ellis, N. C. 1996. Sequencing in SLA: phonological memory, chunking and points of order. *Studies in Second Language Acquisition*, 18(1), 91–126. https://doi.org/10.1017/S0272263100014698
Emmott, C. 1999. *Narrative comprehension: A discourse perspective*. Oxford: Oxford University Press.
Estes, Z., Verges, M., & Barsalou, L. W. 2008. Head up, foot down object words orient attention to the objects' typical location. *Psychological Science*, 19(2), 93–97. https://doi.org/10.1111/j.1467-9280.2008.02051.x
Evans, V., & Green, M. 2006. *Cognitive linguistics: An introduction*. Edinburgh: Edinburgh University Press.
Ferretti, T. R., Kutas, M., & McRae, K. 2007. Verb aspect and the activation of event knowledge. *Journal of Experimental Psychology: Learning, Memory & Cognition*, 33(1), 182–196.
Filimonova, E. V. 2015. *Funkcional'no-semantičeskaja kategorija aspektual'nosti v russkom žestovom jazyke* [Functional-semantic category of aspectuality in Russian Sign Language]. Doctoral thesis. Novosibirsk: Novosibirskij gosudarstvennyj texničeskij universitet.
Filip, H. 1999. *Aspect, eventuality types and noun phrase semantics*. New York & London: Garland Publishing.
Fillmore, C. J., Kay, P., & O'Connor, M. C. 1988. Regularity and idiomaticiy in grammatical constructions: The case of *let alone*. *Language*, 64(3), 501–538. https://doi.org/10.2307/414531
Firbas, J. 1971. On the concept of Communicative Dynamism in the theory of Functional Sentence Perspective. *Sbornik prací filosofické fakulti brnenské universiti* A 19/71, 135–144.
Fitts, P. M. 1954. The information capacity of the human motor system in controlling the amplitude of movement. *Journal of Experimental Psychology*, 47(6), 381. https://doi.org/10.1037/h0055392
Fleischman, S. 1990. *Tense and narrativity: From medieval performance to modern fiction*. Austin: U. of Texas.
Fludernik, M. 1996. *Towards a "natural" narratology*. London & New York: Routledge. https://doi.org/10.4324/9780203432501
Folejewsky, Z. 1953. Otvečat: Otvetit' – A Point in Russian Aspectology. *Word*, 9(4), 377–388. https://doi.org/10.1080/00437956.1953.11659482
Fortunatov, F. F. 1897. Kritičeskij razbor soč. G. K.Ul'janova "Značenija glagol'nykh osnov v litovsko-slavjanskom jazyke" [Critique of the work "The meanings of the verbal stems in Lithuanian-Slavic language' by Prof. G. K. Ulianov, Imperial Warsaw University Parts 1–2 (Warsaw, 1891–95)]. St. Petersburg, Tipografija Imperatorskoj Akademii Nauk.
Gabka, K. (Ed.) 1985. *Morphologie (Die russische Sprache der Gegenwart Bd 2)*. Leipzig: Verlag Enzyklopädie.
Galton, A. P. 1984. *The logic of aspect: An axiomatic approach*. Oxford: Clarendon Press.
Gardes-Tamine, J. 1990. *La Grammaire, t.2: syntaxe*, 4e édition [2010] (éd. 5e, Vol. II). Paris: Armand Colin.
Garey, H. 1957. Verbal aspect in French. *Language*, 33(2), 91–110. https://doi.org/10.2307/410722
Geeraerts, D. & Cuyckens, H. 2007. Introducing cognitive linguistics. In D. Geeraerts & H. Cuyckens (Eds.), *The Oxford handbook of cognitive linguistics* (3–21). Oxford: Oxford University Press.
Geis, M. L. 1995. *Speech acts and conversational interaction*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511554452

Gennette, G. 1980. *Narrative discourse: An essay in method*. Ithaca: Cornell University Press.
Gibbs, R. W., Jr. 2006. Metaphor interpretation as embodied simulation. *Mind & Language*, 21(3), 434–458. https://doi.org/10.1111/j.1468-0017.2006.00285.x
Gibbs, R. W., Jr., & Colston, H. L. 1995. The cognitive psychological reality of image schemas and their transformations. *Cognitive Linguistics*, 6, 347–378. https://doi.org/10.1515/cogl.1995.6.4.347
Gibbs, R. W., Jr., & Perlman, M. 2010. Language understanding is grounded in experiential simulations: A response to Weiskopf. *Studies in History and Philosophy of Science*, 41, 305–308. https://doi.org/10.1016/j.shpsa.2010.07.004
Gibson, J. J. 1979. *The ecological approach to visual perception*. Boston: Houghton Mifflin.
Gladrow, W. (Ed.) 1998. *Russisch im Spiegel des Deutschen: Eine Einführung in den russisch-deutschen und deutsch-russischen Sprachvergleich*. Leipzig: Verlag Enzyklopädie.
Glenberg, A. M. 1997. What memory is for. *Behavioral and Brain Sciences*, 20, 1–55.
Glenberg, A. M., & Gallese, V. 2012. Action-based language: A theory of language acquisition, comprehension, and production. *Cortex*, 48, 905–922. https://doi.org/10.1016/j.cortex.2011.04.010
Glenberg, A., & Kaschak, M. 2002. Grounding language in action. *Psychonomic Bulletin & Review*, 9(3), 558–565. https://doi.org/10.3758/BF03196313
Goldberg, A. 1995. *Constructions: A construction grammar approach to argument structure*. Chicago: University of Chicago Press.
Goldin-Meadow, S. 1997. When gestures and words speak differently. *Current Directions in Psychological Science*, 6(5), 138–143. https://doi.org/10.1111/1467-8721.ep10772905
Goldin-Meadow, S. & Brentari, D. 2017. Gesture, sign and language: The coming of age of sign language and gesture studies. *Behavioral and Brain Sciences*, 40(e46), 1–30.
Gosselin, L. 1996. *Sémantique de la temporalité en français: un modèle calculatoire et cognitif du temps et de l'aspect*. Louvain-la-neuve: Duculot.
Greč, N. I. 1827. *Praktičeskaja russkaja grammatika* [Russian grammar in use]. St. Petersburg: Tipografija Imperatorskogo St.-Peterburgskogo vospitatel'nogo doma Publ.
Grevisse, M. 1953. *Le bon usage: cours de grammaire francaise et de langage francaise*. Gembloux: Duculot.
Grimshaw, J. 1990. *Argument structure*. Cambridge, MA: MIT Press.
Grinsell, T. W. 2012. Russian imperfective imperatives. In *Proceedings of Sinn und Bedeutung 16*. Vol.1 (279–292). Utrecht: Utrecht University.
Grišina, E. A. 2016. Vid russkogo glagola: žestikuljacionnyj profil' [Russian verbal aspect and gesticulation]. *Computational Linguistics and Intellectual Technologies: Proceedings of the Annual International Conference 'Dialogue' (2016)*, Issue 15, 182–199.
Grundzüge einer deutschen Grammatik. 1981. Berlin: Akademie Verlag.
Grush, R. 2004. The emulation theory of representation: Motor control, imagery, and perception. *Behavioral and Brain Sciences*, 27, 377–442. https://doi.org/10.1017/S0140525X04000093
Guillaume, G. 1964/1951. *Langage et science du langage*, La représentation du temps dans la langue française (184–207). Paris, Québec: Librairie A. Nizet, Presses de l'Université Laval.
Guillaume, G. 1970/1929. *Temps et verbe: théorie des aspects, des modes et des temps*. Paris: Librairie Honoré Champion.
Guillaume, G. 1971. *Leçons de linguistique*, 1948–1949, Série A, tome I, Québec: Presses de l'unviersité de Laval / Paris: Klincksieck.
Habets, B., Kita, S., Shao, Z., Ozyurek, A., & Hagoort, P. 2011. The role of synchrony and ambiguity in speech – gesture integration during comprehension. *Journal of Cognitive Neuroscience*, 23, 1845–1854. https://doi.org/10.1162/jocn.2010.21462

Hacker, P. M. S. 1982. Events and objects in space and time, *Mind*, 91, 1–19. https://doi.org/10.1093/mind/XCI.361.1

Halliday, M. A. K. 1978. *Language as social semiotic: The social interpretation of language and meaning*. London: Edward Arnold.

Harrison, S. 2009. Grammar, gesture, and cognition: The case of negation in English. Unpublished doctoral dissertation, Université Michel de Montaigne Bordeaux, France.

Harrison, C., Nuttall, L., Stockwell, P., & Yuan, W. 2014. *Cognitive grammar in literature*. Amsterdam: John Benjamins. https://doi.org/10.1075/lal.17

Harrower, M. R. 1936. Some factors determining figure-ground articulation. *British Journal of Psychology*, 26, 407–424.

Hegel, G. W. F. 1824/1956. *The philosophy of history*. New York: Dover Publications.

Heidegger, M. 1969. *Was ist Metaphysik?* Frankfurt: Klostermann.

Herman, D. 1999. Toward a socionarratology: New ways of analyzing natural-language narratives. In D. Herman (Ed.). *Narratologies: New perspectives on narrative analysis* (218–46). Columbus: Ohio State University Press.

Higginbotham, J. 2000. On events in linguistic semantics. In J. Higginbotham, F. Pianesi, & A. C. Pianesi (Eds.), *Speaking of events* (49–80). Oxford: Oxford University Press.

Hill, J. H., & Mannheim, B. 1992. Language and world view. *Annual Review of Anthropology*, 21, 381–406. https://doi.org/10.1146/annurev.an.21.100192.002121

Hoekstra, T. 1986. Deverbalization and inheritance. *Linguistics*, 24(3), 549–584. https://doi.org/10.1515/ling.1986.24.3.549

Holt, J. 1943. *Etudes d'aspect*. (Acta Jutlandica, 15–2.) Aarhus: Universitetsforlaget.

Hopper, P. J. 1979. Some observations on the typology of focus and aspect in narrative. *Studies in Language*, 3, 37–64. https://doi.org/10.1075/sl.3.1.03hop

Hostetter, A. B., & Alibali, M. W. 2008. Visible embodiment: Gestures as simulated action. *Psychonomic Bulletin and Review*, 15(3), 495–514. https://doi.org/10.3758/PBR.15.3.495

Hühn, P. 2009. *Handbook of narratology*. Berlin: Walter de Gruyter. https://doi.org/10.1515/9783110217445

Hymes, D. 1974. *Foundations in sociolinguistics: An ethnographic approach*, Philadelphia: University of Pennsylvania Press.

Imbs, P. 1960. *L'Emploi des temps verbaux en français moderne. Essai de grammaire descriptive*. Paris: Klincksieck.

Iriskhanova, O. K. 1996. *Semantika sobytijnykh imjon sušestviteľnykh v jazyke i reči* [Semantics of the nouns of events in language and speech]. Doctoral thesis. Moscow: MSLU Publ.

Iriskhanova, O. K. 2004. *O lingvokreativnoj dejateľnosti čeloveka: otglagoľnye imena* [On linguistic creativity: deverbal nouns]. Moscow: VTI Publ.

Iriskhanova, O. K. In press. Kognitivnyj rezonans i ego verbaľnye i neverbaľnye projavlenija [Cognitive resonance and its verbal and non-verbal instantiations].

Iriskhanova, O. K. & Prokof'eva, O. N. In press. Fokusirovanie v ustnom opisateľnom diskurse: Analiz vizualľnoj percepcii, reči i žestov [Focusing in oral descriptive discourse: An analysis of visual perception, speech, and gestures].

Isačenko, A. V. 1960. *Grammatičeskij stroj russkogo jazyka v sopostavlenii s slovackim. Časť vtoraja: morfologija* [Grammatical system in Russian as opposed to Slovak. Part 2: Morphology]. Bratislava: Izdateľstvo akademii nauk.

Ivanova, P. 1961. *Vid i vremja v sovremennom anglijskom jazyke* [Aspect and tense in contemporary English]. Leningrad: LGU Publishers.

Jäger, G., & Blutner, R. 2000. Against lexical decomposition in syntax. In *Proceedings of IATL* 15, 113–137. University of Haifa.

Janda, L. 2004. A metaphor in search if a source domain: the categories of Slavic aspect. *Cognitive Linguistics*, 15, 471–527. https://doi.org/10.1515/cogl.2004.15.4.471

Janda, L. 2007. Aspectual clusters on Russian verbs. *Studies in Language*, 31, 607–648. https://doi.org/10.1075/sl.31.3.04jan

Janda, L., & Lyashevskaya, O. 2011. Grammatical profiles and the interaction of lexicon with aspect, tense, and mood in Russian. *Cognitive Linguistics*, 22(4), 719–763. https://doi.org/10.1515/cogl.2011.027

Jespersen, O. 1924. *The philosophy of grammar*. London: George Allen and Anwin.

Johnson, M. 1987. *The body in the mind: The bodily basis of meaning, imagination, and reason*. Chicago: University of Chicago Press.

Kelter, S., Kaup, B., & Claus, B. 2004. Representing a described sequence of events: a dynamic view of narrative comprehension. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 30(2), 451.

Kendon, A. 1988. How gestures can become like words. In F. Poyatos (Ed.), *Cross-cultural perspectives in nonverbal communication* (131–141). Toronto: Hogrefe.

Kendon, A. 2004. *Gesture: Visible action as utterance*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511807572

Kenny, A. 1963. *Action, emotion and will*. London: Routledge and Kegan Paul.

Kerr, N. L. 1998. HARKing: Hypothesizing after the results are known. *Personality and Social Psychology Review*, 2(3), 196–217. https://doi.org/10.1207/s15327957pspr0203_4

Kibrik, A. A. 2003. *Analiz diskursa v kognitivnoj perspektive* [Discourse analysis from a cognitive point of view]. Doctoral thesis. Moscow: Moscow State University Press.

Kim, J. 1993. *Supervenience and mind: Selected philosophical essays*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511625220

Kintsch, W., & Van Dijk, T. A. 1978. Toward a model of text comprehension and production. *Psychological Review*, 85(5), 363–394. https://doi.org/10.1037/0033-295X.85.5.363

Kita, S. 1993. Language and thought interface: a study of spontaneous gestures and Japanese mimetics. Unpublished doctoral dissertation. University of Chicago.

Kita, S. 1997. Two-dimensional semantic analysis of Japanese mimetics. *Linguistics*, 35, 379–415. https://doi.org/10.1515/ling.1997.35.2.379

Kita, S., & Özyürek, A. 2003. What does cross-linguistic variation in semantic coordination of speech and gesture reveal? Evidence for an interface representation of spatial thinking and speaking. *Journal of Memory and Language*, 48, 16–32. https://doi.org/10.1016/S0749-596X(02)00505-3

Klein, W. 2000. An analysis of the German perfect. *Language*, 76, 358–382. https://doi.org/10.1353/lan.2000.0140

Klein, W. 2009. How time is encoded. In W. Klein & P. Li (Eds.), *The expression of time* (39–82). Berlin/New York: Mouton de Gruyter. https://doi.org/10.1515/9783110199031.39

Knox, J. 2007. Visual-verbal communication on online newspaper home pages. *Visual Communication*, 6(1), 19–36.

Koerner, E. 1977. The Humboldtian trand in linguistics. *Cahiers Linguistiques d'Ottawa*, 5, 22–40.

Koptjevskaya-Tamm, M. 1993. *Nominalizations*. London: Routledge.

Koschmieder, E. 1928/29. Studien zum slavischen Verbalaspekt. *Zeitschrift für vergleichende Sprachforschung*, 55, 208–304 (part 1) and 56, 78–105 (part II).

Koschmieder, E. 1929. *Zeitbezug und Sprache. Ein Beitrag zur Aspekt- und Tempusfrage*. Leipzig/Berlin: Teubner. https://doi.org/10.1007/978-3-663-15740-3

Kress, G. 2010. *Multimodality: A Social Semiotic Approach to Contemporary Communication*. London: Routledge.

Kress, G., & van Leeuwen, T. 1996. *Reading images: The grammar of visual design*. London: Routledge.

Krifka, M. 1992. Thematic relations as links between nominal reference and temporal constitution. In I. Sag & A. Szabolcsi (Eds.), *Lexical matters* (29–53). Stanford: CSLI.

Krifka, M. 1998. The origins of telicity. In S. Rothstein (Ed.), *Events and grammar* (197–235). Dordrecht: Kluwer. https://doi.org/10.1007/978-94-011-3969-4_9

Krongauz, M. A. 1998. *Pristavki i glagoly v russkom jazyke: semantičeskaja grammatika* [Prefixes and verbs in Russian: A semantic grammar]. Moscow: Jazyki russkoj kul'tury.

Laban, R., & Lawrence, F. C. 1947. *Effort*. London: Macdonald and Evans.

Labov, W. 1972. The transformation of experience in narrative syntax. In W. Labov (Ed.), *Language in the inner city: Studies in the Black English vernacular* (354–396). Philadelphia: University of Pennsylvania Press.

Labov, W. 2001. *Principles of linguistic change. Vol 2. Social factors*. Oxford: *Blackwell*.

Labov, W. 2010. *Principles* of linguistic change. *Vol 3. Cognitive and cultural factors*. Oxford: Blackwell.

Labov, W., & Waletzky, J. 1967. Narrative analysis. In J. Helm (Ed.). *Essays on the verbal and visual arts* (12–44). Seattle: University of Washington.

Ladewig, S. H. 2010. Beschreiben, auffordern und suchen – Varianten einer rekurrenten Geste. *Sprache und Literatur*, 41(1), 89–111.

Ladewig, S. H. 2011. Putting the cyclic gesture on a cognitive basis. *CogniTextes* 6. http://cognitextes.revues.org/406#article-406

Ladewig, S. H. 2014a. The cyclic gesture. In C. Müller, A. Cienki, E. Fricke, S. H. Ladewig, D. McNeill, & J. Bressem (Eds.), *Body-language-communication: An international handbook on multimodality in human interaction*. Volume 2 (1605–1618). Berlin: De Gruyter Mouton.

Ladewig, S. H. 2014b. Recurrent gestures. In C. Müller, A. Cienki, E. Fricke, S. Ladewig, D. McNeill, & J. Bressem. (Eds.). *Body – language – communication: An international handbook on multimodality in human interaction*. Volume 2 (1558–1574). Berlin: De Gruyter Mouton.

Ladewig, S. H. & Bressem, J. 2013. A linguistic perspective on the notation of gesture phases. In C. Müller, A. Cienki, E. Fricke, S. H. Ladewig, D. McNeill, & S. Teßendorf (Eds.), *Body-language-communication: An international handbook on multimodality in human interaction* (1060–1079). Berlin & Boston: De Gruyter Mouton.

Lakoff, G. 1993. The contemporary theory of metaphor. In A. Ortony (Ed.), *Metaphor and thought*, 2nd Edition (202–251). Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9781139173865.013

Lakoff, G., & Johnson, M. 1980. *Metaphors we live by*. Chicago: University of Chicago Press.

Laleko, O. 2010. The syntax-pragmatics interface in language loss: Covert restructuring of aspect in heritage Russian. Doctoral dissertation. University of Minnesota.

Landolf, J. P. 2006. Re(de)fining language proficiency in light of the concept of 'languaculture'. In H. Byrnes (Ed.), *Advanced language learning: The contribution of Halliday and Vygotsky* (72–94). London: Continuum.

Langacker, R. 1987. *Foundations of Cognitive Grammar. Vol. I: Theoretical prerequisites*. Stanford: Stanford University Press.

Langacker, R. 1988. A usage-based model. In B. Rudzka-Ostyn (Ed.), *Topics in cognitive linguistics* (127–161). Amsterdam: John Benjamins. https://doi.org/10.1075/cilt.50.06lan

Langacker, R. W. 1990. *Concept, image, and symbol: The cognitive basis of grammar*. Berlin: Mouton de Gruyter.

Langacker, R. 1991. *Foundations of Cognitive Grammar. Vol. II: Descriptive application*. Stanford: Stanford University Press.

Langacker, R. 2000. *Grammar and conceptualization*. Berlin & New York: Mouton de Gruyter.

Langacker, R. 2001. Discourse in Cognitive Grammar. *Cognitive Linguistics*, 12(2), 143–188. https://doi.org/10.1515/cogl.12.2.143

Langacker, R. W. 2007. Cognitive Grammar. In D. Geeraerts, & H. Cuyckens (Eds.), *The Oxford handbook of cognitive linguistics* (421–462). Oxford: Oxford University Press.

Langacker, R. W. 2008. *Cognitive grammar: A basic introduction*. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780195331967.001.0001

Langlotz, A. 2015. *Creating social orientation through language*. Amsterdam: John Benjamins. https://doi.org/10.1075/celcr.17

Le Guen, O. 2011. Modes of pointing to existing spaces and the use of frames of reference. *Gesture*, 11(3), 271–307. https://doi.org/10.1075/gest.11.3.02leg

Lehmann, V. 2009. Aspekt und Tempus im Slavsichen. In W. Kempgen, P. Kosta, T. Berger, & K. Gutschmidt (Eds.), *Die slavischen Sprachen/The Slavic languages* (526–556). Berlin: Mouton de Gruyter.

Leiss, E. 1992. *Die Verbalkategorien des Deutschen. Ein Beitrag zur Theorie der sprachlichen Kategorisierung*. Berlin/New York: de Gruyter.

Levin, B., & Rapoport, T. R. 1988. Lexical subordination. *Papers from the 24th Regional Meeting of the Chicago Linguistic Society*, 275–89.

Levinson, S. C. 1996. Frames of reference and Molyneux's question: Crosslinguistic evidence. In P. Bloom, M. A. Peterson, L. Nadel, & M. F. Garrett (Eds.), *Language and space* (109–169). Cambridge, MA: MIT Press.

Lewis, D. K. 1986. Events. *Philosophical Papers, Vol. 2* (241–269). Oxford: Oxford University Press.

Linde, C. 1999. The transformation of narrative syntax into institutional memory. *Narrative Inquiry*, 9(1), 139–174. Amsterdam: John Benjamins.

Linell, P. 2005. *The written language bias in linguistics*. London: Routledge. https://doi.org/10.4324/9780203342763

Lis, M., & Navarretta, C. 2013. Classifying the form of iconic hand gestures from the linguistic categorization of co-occurring verbs. In *Proceedings from the 1st European Symposium on Multimodal Communication*, University of Malta, Valletta, October 17–18, 2013.

Liverence, B. M., & Scholl, B. J. 2012. Observation: Discrete events as units of perceived time. *Journal of Experimental Psychology: Human Perception and Performance*, 38(3), 549–554.

Lomonosov, M. V. 1951. Rossijskaja grammatika [Russian grammar]. *Lomonosov M. V. Polnoje sobranie sočinenii*. [Lomonosov M. V. Complete collection of works]. T.7: Trudy po filologii 1739–1758 gg. [Vol. 7: Works in philology 1739–1758] (389–578). Moscow & Leningrad: Academy of Sciences of the USSR.

Lotman, Ju. M. 1977. *The structure of the artistic text*. Ann Arbor: U of Michigan Press.

Louwerse, M. M., Hutchinson, S., Tillman, R., & Recchia, G. 2015. Effect size matters: The role of language statistics and perceptual simulation in conceptual processing. *Language, Cognition and Neuroscience*, 30(4), 430–447. https://doi.org/10.1080/23273798.2014.981552

Lucy, J. A. 1992. *Language diversity and thought: A reformulation of the linguistic relativity hypothesis*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511620843

Lyons, J. 1977. *Semantics. Vo1. 2*. Cambridge: Cambridge University Press.

MacConaill, M. A. 1948. The movements of bones and joints. *Journal of Bone & Joint Surgery, British Volume*, 30B(2), 322–326.

Madden, C. J., & Zwaan, R. 2003. How does verb aspect constrain event representations? *Memory & Cognition*, 31(5), 663–672. https://doi.org/10.3758/BF03196106

Magliano, J. P., & Schleich, M. C. 2000. Verb aspect and situation models. *Discourse Processes*, 29, 83–112. https://doi.org/10.1207/S15326950dp2902_1

Malaia, E., & Wilbur, R. B. 2012. Kinematic signatures of telic and atelic events in ASL predicates. *Language and Speech*, 55(3), 407–421. https://doi.org/10.1177/0023830911422201

Marian, V., Blumenfeld, H. K., & Kaushanskaya, M. 2007. The Language Experience and Proficiency Questionnaire (LEAP-Q): Assessing language profiles in bilinguals and multilinguals. *Journal of Speech, Language, and Hearing Research*, 50, 940–967.

Martin, R. 1971. *Temps et aspect. Essai sur l'emploi des temps narratifs en moyen français*, Paris: Editions Klincksieck.

Maslov, J. S. 1959. Glagol'nyj vid v sovremennom bolgarskom literaturnom jazyke [Aspect in modern standard Bulgarian]. In S. B. Bernshtein (Ed.), *Voprosy grammatiki bolgarskogo literaturnogo jazyka* (157–312). Moscow: Izd. AN SSSR.

Maslov, J. S. 1984. *Očerki po aspektologii* [Essays on aspectology]. Leningrad: Leningrad State University.

Maslov, J. S. 2004. *Izbrannye trudy. Aspectologija. Obščee jazykoznanie* [Selected works. Aspectology. General linguistics]. Moscow: Jazyki slavjanskoj kul'tury.

Mathesius, V. 1938. O konkurenci vidů v českém vyjadřování slovesném [On the competition of aspects in Czech verbal expression]. *Slovo a Slovesnost*, 4, 193–202.

Matkhanova, I. P. 2015. Russkie vyskazyvanija s glagolami obraza žizni: osobennosti aspektual'noj kharakteristiki [Russian statements with lifestyle verbs: special traits of an aspectual nature]. *Acta linguistica petropolitana*, XI (I), 83–103.

McNeill, D. 1992. *Hand and mind: What gestures reveal about thought*. Chicago: University of Chicago Press.

McNeill, D. (Ed.) 2000. *Language and gesture*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511620850

McNeill, D. 2003. Aspects of aspect. *Gesture*, 3(1), 1–17. https://doi.org/10.1075/gest.3.1.02mcn

McNeill, D. 2005. *Gesture and thought*. Chicago: University of Chicago Press. https://doi.org/10.7208/chicago/9780226514642.001.0001

McNeill, D. 2009. Imagery for speaking. Unpublished manuscript.

McNeill, D., & Duncan, S. 2000. Growth points in thinking-for-speaking. In D. McNeill (Ed.), *Language and gesture* (141–161). Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511620850.010

Meillet, A., & Vendryes, J. 1924. *Traité de grammaire comparée des langues classiques*. Paris: Champion.

Mikhaylova, A. 2012. Aspectual knowledge of high proficiency L2 and heritage speakers of Russian. *Heritage Language Journal*, 9(1), 50–69.

Montague, R. 1969. On the nature of certain philosophical entities. *The Monist*, 53, 159–194. https://doi.org/10.5840/monist19695327

Morrow, D. G., Greenspan, S. L., & Bower, G. H. 1987. Accessibility and situation models in narrative comprehension. *Journal of Memory and Language*, 26(2), 165–187. https://doi.org/10.1016/0749-596X(87)90122-7

Morrow, D. G., Bower, G. H., & Greenspan, S. L. 1989. Updating situation models during narrative comprehension. *Journal of Memory and language*, 28(3), 292–312. https://doi.org/10.1016/0749-596X(89)90035-1

Mounin, G. 1974. *Dictionnaire de la linguistique*. Paris: Presses Universitaires de France.

Mourelatos, A. P. D. 1981; Events, processes and states, In P. Tedeschi & A. Zaenen (Eds.) *Syntax and semantics* (191–212). New York: Academic Press.

Müller, C. 1994. Semantic structure of motional gestures and lexicalization patterns in Spanish and German descriptions of motion events. In K. Beals et al. (Eds.), *CLS 30. Papers from the 30th regional meeting of the Chicago Linguistic Society. Vol 1: The main session* (281–295). Chicago: Chicago Linguistic Society.

Müller, C. 1998a. Beredte Hände. Theorie und Sprachvergleich redebegleitender Gesten. In T. Noll & C. Schmauser (Eds.), *Körperbewegungen und ihre Bedeutungen* (21–44). Berlin: Berlin Verlag.

Müller, C. 1998b. Iconicity and gesture. In S. Santi, I. Guaïtella, C. Cavé, & G. Konopczynski (Eds.), *Oralité et gestualité: Communication multimodale et interaction* (321–328). Paris: L'Harmattan.

Müller, C. 1998c. *Redebegleitende Gesten. Kulturgeschichte – Theorie – Sprachvergleich*. Berlin: Berlin Verlag Arno Spitz.

Müller, C. 2000. Zeit als Raum. Eine kognitiv-semantische Mikroanalyse des sprachlichen und gestischen Ausdrucks von Aktionsarten. In E. W. B. Hess-Lüttich & H. W. Schmitz (Eds.), *Botschaften verstehen. Kommunikationstheorie und Zeichenpraxis. Festschrift für Helmut Richter* (211–228). Frankfurt: Peter Lang.

Müller, C. 2008. *Metaphors dead and alive, sleeping and waking: A dynamic view*. Chicago: University of Chicago Press. https://doi.org/10.7208/chicago/9780226548265.001.0001

Müller, C. 2010. Wie Gesten bedeuten. Eine kognitiv-linguistische und sequenzanalytische Perspektive. *Sprache und Literatur*, 41(1), 37–68.

Müller, C. 2014a. Gestures as "deliberate expressive movement". In M. Seyfeddinipur & M. Gullberg (Eds.), *From gesture in conversation to visible action as utterance* (127–152). Amsterdam: John Benjamins.

Müller, C. 2014b. Gestural modes of representation as techniques of depiction. In C. Müller, A. Cienki, E. Fricke, S. H. Ladewig, D. McNeill & J. Bressem (Eds.), *Body-language-communication: An international handbook on multimodality in human interaction* (1687–1702). Berlin: De Gruyter Mouton.

Müller, C. 2015. Using gestures with speech: Variable cognitive-semantic and pragmatic relations. *MSLU Vestnik*, 6(717), 452–466.

Müller, C., Bressem, J., & Ladewig, S. H. 2013b. Towards a grammar of gestures: A form-based view. In C. Müller, A. Cienki, E. Fricke, S. H. Ladewig, D. McNeill, & S. Teßendorf (Eds.), *Body – language – communication: An international handbook on multimodality in human interaction*, (707–732). Berlin: De Gruyter Mouton.

Müller, C., Cienki, A., Fricke, E., Ladewig, S., McNeill, D., & Teßendorf, S. (Eds.). 2013. *Body – language – communication: An international handbook on multimodality in human interaction*. Volume 1. Berlin: De Gruyter Mouton.

Müller, C., Cienki, A., Fricke, E., Ladewig, S., McNeill, D., & Bressem, J. (Eds.). 2014. *Body – language – communication: An international handbook on multimodality in human interaction*. Volume 2. Berlin: De Gruyter Mouton.

Müller, C., Ladewig, S. H., & Bressem, J. 2013a. Gestures and speech from a linguistic perspective: A new field and its history. In C. Müller, A. Cienki, E. Fricke, S. H. Ladewig, D. McNeill, & S. Teßendorf (Eds.), *Body – language – communication: An international handbook on multimodality in human interaction*, (29–55). Berlin: De Gruyter Mouton.

Müller, C., & Tag, S. 2010. The dynamics of metaphor: Foregrounding and activating metaphoricity in conversational interaction. *Cognitive Semiotics*, 6, 85–120. https://doi.org/10.3726/81610_85

Nedjalkov, V. P. (Ed.). 1988. *Typology of resultative constructions*. Amsterdam: Benjamins. https://doi.org/10.1075/tsl.12

Nekrasov, N. P. 1865. *O značenii form russkogo glagola* [On the meaning of the forms of the Russian verb]. St. Petersburg: Tipografija I. Paul'sona i Ko.

Norrick, N. R. 2000. *Conversational narrative*. Amsterdam: John Benjamins. https://doi.org/10.1075/cilt.203

Núñez, R., & Sweetser, E. 2006. With the future behind them: convergent evidence from language and gesture in the crosslinguistic comparison of spatial construals of time. *Cognitive Science*, 30, 1–49. https://doi.org/10.1207/s15516709cog0000_62

Olsen, M. B. 1997. *A semantic and pragmatic model of lexical and grammatical aspect*. New York: Garland Press.

Open Science Collaboration. 2012. An open, large-scale, collaborative effort to estimate the reproducibility of psychological science. *Perspectives on Psychological Science*, 7(6), 657–660. https://doi.org/10.1177/1745691612462588

Open Science Collaboration. 2015. Estimating the reproducibility of psychological science. *Science*, 349(6251). doi:10.1126/science.aac4716

Özyürek, A. 2001. What do speech-gesture mismatches reveal about language specific processing? A comparison of Turkish and English. In C. Cavé, I. Guaitella, & S. Santi (Eds.), *Oralité et Gestualité: Interactions et Comportements Multimodaux dans la Communication: Actes du Colloque ORAGE 2001* (567–581). Paris: L'Harmattan.

Özyürek, A., & Kita, S. 1999. Expressing manner and path in English and Turkish: Differences in speech, gesture, and conceptualization. In J. Hahn & S. C. Stoness (Eds.), *Proceedings of the twenty first annual conference of the Cognitive Science Society* (507–512). Mahwah, NJ: Lawrence Erlbaum.

Özyürek, A., Kita, S., Allen, S., Brown, A., Furman, R., & Ishizuka, T. 2008. Development of cross-linguistic variation in speech and gesture: motion events in English and Turkish. *Developmental Psychology*, 44(4), 1040–1054. https://doi.org/10.1037/0012-1649.44.4.1040

Özyürek, A., Kita, S., Allen, S., Furman, R., & Brown, A. 2005. How does linguistic framing of events influence co-speech gestures? Insights from cross-linguistic variations and similarities. *Gesture*, 5, 215–237. https://doi.org/10.1075/gest.5.1-2.15ozy

Padučeva, E. V. 1996. *Semantičeskie issledovanija. Semantika vremeni v russkom jazyke. Semantika narrativa* [Semantic studies. Semantics of time and aspect in Russian. Semantics of narrative]. Moscow: Jazyki russkoj kul'tury.

Paillard, P. J. 1974. Le traitment des informations spatiales. In *Symposium de l'APSLF, (Bruxelles)* (7–54). Paris: Presses Universitaires de France.

Parisse, C., & Morgenstern, A. 2012. The unfolding of the verbal temporal system in French children's speech between 18 and 36 months. *Journal of French Language Studies*, 22(1), 95–114. https://doi.org/10.1017/S0959269511000603

Parrill, F. 2012. Interactions between discourse status and viewpoint in co-speech gesture. In B. Dancygier & E. Sweetser (Eds.), *Viewpoint in language: A multimodal perspective* (97–112). Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9781139084727.008

Parrill, F., Bergen, B., & Lichtenstein, P. 2013. Grammatical aspect, gesture, and conceptualization: Using co-speech gesture to reveal event representations. *Cognitive Linguistics*, 24(1), 135–158. https://doi.org/10.1515/cog-2013-0005

Parsons, T. 1990, *Events in the semantics of English: A study in subatomic semantics*, Cambridge, MA: MIT Press.

Partee, B. H. 1999. Nominal and temporal semantic structure: Aspect and quantification. In E. Hajičová, T. Hoskovec, O. Leška, & P. Sgall (Eds.). *Prague Linguistic Circle Papers, Vol. 3* (91–108). Amsterdam: John Benjamins. https://doi.org/10.1075/plcp.3.07par

Pavskij, G. P. 1842. *Filologičeskie nabljudeniia nad sostavom russkogo jazyka. Rassuždenie III. O glagole* [Philological observations on the Russian language. Contemplation III: On the verbs]. St. Petersburg, Tipografija Imperatorskoj Akademii nauk.

Petrukhina, E. V. 2000. Osobennosti uporeblenija vidov v povestvovatel'nyh tekstakh (na materiale russkogo i zapadnoslavjanskikh tekstakh) [Specifics of aspect use in narrative texts (based on Russian and Western Slavic texts)]. In A. V. Bondarko & C. A. Šubik (Eds.). *Problemy funkcional'noj grammatiki: kategorii morfologii i sintaksisa* [Issues in functional grammar: morphological and syntactic categories in utterances] (52–66). Saint Petersburg: Nauka.

Petrukhina, E. V. 2009. *Russkij glagol: kategorii vida i vremeni*. [Russian verb: Aspect and tense]. Moscow: MAKS Press.

Pickering, M. J., & Garrod, S. 2004. Toward a mechanistic psychology of dialogue. *Behavioral and Brain Sciences*, 27(2), 169–190. https://doi.org/10.1017/S0140525X04000056

Plungjan, V. A. 1989. K opredeleniju rezul'tativa (universal'na li svjaz' rezul'tativa i predel'nosti?) [On defining resultative: Is the link between resultative and boundedness universal?]. *Voprosy Jazykoznanija*, 6, 55–63.

Plungjan, V. A. 2001. Antirezul'tativ: do i posle rezul'tata [Antiresultative: Before and after the result. In V. A. Plungian (Ed.), *Issledovanija po teorii grammatiki. I: Glagol'nye kategorii* [Studies in the theory of grammar. Vol. I: Verbal categories] (50–88). Moscow: Russkie slovari.

Plungjan, V., Gusev, V., & Urmančieva, A. (Eds.) 2008. *Grammatičeskie kategorii v diskurse* [Grammatical categories in discourse]. Issledovanija po teorii grammatiki 4 [Studies in the theory of grammar 4]. Moscow: Gnozis.

Pollak, H. 1967. Problematisches in der Lehre von Aktionsart und Aspekt. *Zeitschrift für Deutsche Philologie*, 86, 397–420.

Potebnja, A. A. 1874/1977. *Iz zapisok po russkoi grammatike* [From the notes on Russian grammar]. T.IV. Vyp.II: Glagol [Vol. IV. Issue II: Verbs]. Moscow: Prosveščenie.

Pustejovsky, J. 1991. The syntax of event structure. *Cognition*, 41, 47–81. https://doi.org/10.1016/0010-0277(91)90032-Y

Quine, W. V. O. 1950. Identity, ostension and hyposthasis. *Journal of Philosophy*, 47, 621–633. https://doi.org/10.2307/2021795

Quine, W. V. O. 1970. *Philosophy of logic*. Englewood Cliffs, NJ: Quinton.

Quinton, A. 1979. Objects and events. *Mind*, 88, 197–214.

Ramsey, F. 1927/1990. Facts and propositions. In D. H. Mellor (Ed.), *Philosophical papers. F. P. Ramsey* (34–51). Cambridge: Cambridge University Press.

Referovskaja, E. A. 1948. *Kategorija vida vo francuzskom glagole* [The category of aspect in the French verb]. *Izv. Ak. Nauk, Otd. Lit. i Jaz*, 7(5), 445–456.

Reichenbach, H. 1947. *Elements of symbolic logic*. New York: Macmillan & Co.

Reid, W. 1976. The quantitative validation of a grammatical hypothesis: The Passé Simple and the Imparfait. In J. A. Kegl et al. (Eds.), *Proceedings of the seventh annual meeting of the North East Linguistic Society, Cambridge, Massachusetts* (315–333). Cambridge, MA: North East Linguistic Society.

Reilly, J., Klima, E., & Bellugi, U. 1990. Once more with feeling: Affect and language in atypical populations. *Development and Psychopathology*, 2(4), 367–391. https://doi.org/10.1017/S0954579400005782

Renkewitz, F., & Müller, S. 2013. Replication of Study 1 by Estes, Z., Verges, M., & Barsalou, L. W. (Psychological Science, 2008). Retrieved from https://osf.io/b7zek/ [PDF file].

Ricoeur, P. 1981. *Time and narrative*. Chicago: University of Chicago Press.

Rossi, A. 1982. *The architecture of the city*. Cambridge, MA: MIT Press.

Rothstein, S. 2003. Secondary predication and aspectual structure. In E. Lang, C. Maienborn, & C. Fabricius-Hansen (Eds.), *Modifying adjuncts* (553–590). Berlin & New York: de Gruyter. https://doi.org/10.1515/9783110894646.553

Rothstein, S. 2004. *Structuring events: A study in the semantics of lexical aspect*. Oxford: Blackwell. https://doi.org/10.1002/9780470759127

Rozental', D. E., & Telenkova, M. A. 1976. *Slovar'-spravočnik linguističeskikh terminov* [Dictionary of linguistic terms]. Moscow: Prosveščenie.

Rozwadowska, B. 1997. *Towards a unified theory of nominalizations: External and internal eventualities*. Wrocław: Wydawnictwo Universytetu Wrocławskiego.

Rubin, E. 1921. *Visuell wahrgenommene Figuren. Studien in psychologischer Analyse*. Copenhagen: Gyldendalske Boghandel.

Rumelhart, D. E. 1977. Understanding and summarizing brief stories. In D. LaBerge & S. J. Samuels (Eds.), *Basic processes in reading: Perception and comprehension* (265–303). Hillsdale, NJ: Lawrence Erlbaum.

Russell, B. 1914. *Our knowledge of the external world*. London: Allen and Unwin.

Russkaya grammatika [Russian Grammar]. 1980. Moscow: Nauka.

Ryle, G. 1949. *The concept of mind*. London: Hutchinson.

Sacks, H. 1995. *Lectures on Conversation: Volumes 1 & 2*. (One volume ed.). Oxford: Blackwell. https://doi.org/10.1002/9781444328301

Sandström, G. 1993. When-clauses and the temporal interpretation of narrative discourse. Ph.D. thesis, University of Umeå.

Sapir, E. 1921/1949. *Language: An introduction to the study of speech*. New York: Harcourt, Brace, and Company.

Sasse, H. -J. (Ed.) 1991a. Aspektsysteme. *Arbeitspapier Nr.14 NF*. Köln: Institut für Sprachwissenschaft.

Sasse, H. -J. 1991b. Aspect and Aktionsart: A reconciliation. *Belgian Journal of Linguistics*, 6, 31–45. https://doi.org/10.1075/bjl.6.03sas

Sasse, H. -J. 2001. Recent activity in the theory of aspect: Accomplishments, Achievements, or just Non-progressive State? *Arbeitspapier Nr.40 NF*. Köln: Institut für Sprachwissenschaft.

Schiffrin, D. 1996. Narrative as self-portrait: Sociolinguistic constructions of identity. *Language in Society*, 25, 167–203. https://doi.org/10.1017/S0047404500020601

Schogt, H. G. 1964. L'aspect verbal en français et l'élimination du passé simple. *Word*, 20(1), 1–17. https://doi.org/10.1080/00437956.1964.11659808

Searle, J. 1969. *Speech acts: An essay in the philosophy of language*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9781139173438

Shannon, C. E., & Weaver, W. 1949. *The mathematical theory of communication*. Urbana, IL: University of Illinois Press.

Shapiro, L. (Ed.). 2014. *The Routledge handbook of embodied cognition*. London: Routledge.

Shklovsky, V. 1921/1965. Sterne's *Tristram Shandy*: Stylistic Commentary. In L. T. Lemon & M. J. Reis (ed. and trans.), *Russian formalist criticism: Four essays* (25–57). Lincoln: University of Nebraska Press.

Silva-Corvalan, C. 1983. Tense and aspect in oral Spanish narrative: Context and meaning. *Language*, 59(4), 760–780. https://doi.org/10.2307/413372

Simmons, J. P., Nelson, L. D., & Simonsohn, U. 2011. False-positive psychology undisclosed flexibility in data collection and analysis allows presenting anything as significant. *Psychological Science*, 22(11), 1359–1366. https://doi.org/10.1177/0956797611417632

Slavin, S. 2003–2017. PsyScript (Version 2.3.0) [Computer software]. Lancaster University. Retrieved March 15, 2013. Available from http://www.psych.lancs.ac.uk/research/research-software

Slobin, D. 1987. Thinking for speaking. In J. Aske, N. Beery, L. Michaelis, & H. Filip (Eds.), *Proceedings of the Thirteenth Annual Meeting of the Berkeley Linguistics Society* (435–445). Berkeley: Berkeley Linguistics Society.

Slobin, D. 1996. From "thought to language" to "thinking for speaking". In J. Gumperz & E. Levinson (Eds.), *Rethinking linguistic relativity* (70–96). Cambridge: Cambridge University Press.

Slobin, D. I. 2003. Language and thought online: Cognitive consequences of linguistic relativity. In D. Gentner & S. Goldin-Meadow (Eds.), *Language in mind: Advances in the study of language and thought* (157–191). Cambridge, MA: The MIT Press.

Sloetjes, H., & Wittenburg, P. 2008. Annotation by category – ELAN and ISO DCR. *Proceedings of the 6th International Conference on Language Resources and Evaluation (LREC 2008)* http://www.lrec-conf.org/proceedings/lrec2008/.

Smith, C. 1991/1997. *The parameter of aspect*. Dordrecht: Kluwer. https://doi.org/10.1007/978-94-015-7911-7

Smotritskij, M. G. 1619. *Grammatiki slavenskija pravilnoje sintagma* [Slavonic grammar with correct syntax]. Jevje.

Stelma, J. H., & Cameron, L. J. 2007. Intonation units in spoken interaction: Developing transcription skills. *Text & Talk*, 27(3), 361–393. https://doi.org/10.1515/TEXT.2007.015

Streeck, J. 2009. *Gesturecraft: The manu-facture of meaning*. Amsterdam: John Benjamins. https://doi.org/10.1075/gs.2

Swallow, K. M., Zacks, J. M., & Abrams, R. A. 2009. Event boundaries in perception affect memory encoding and updating. *Journal of Experimental Psychology: General*, 138(2), 236–257. https://doi.org/10.1037/a0015631

Šabes, V. Ja. 1989. *Sobytie i tekst* [Event and text]. Moscow: Vyssaja škola.

Šafranov, S. N. 1852. *O vidakh russkikh glagolov v sintaksičeskom otnošenii* [On the aspects of Russian verbs from a syntactic point of view]. Moscow: Universitetskaja tipografija.

Šakhmatov, A. A. 1941. *Sintaksis russkogo jazyka* [Russian syntax]. Leningrad. Učpedgiz.

Talmy, L. 1975. Figure and ground in complex sentences. In *Proceedings of the first annual meeting of the Berkeley Linguistics Society* (419–430). Berkeley, CA: Berkeley Linguistics Society.

Talmy, L. 1978. Figure and ground in complex sentences. In J. Greenberg (Ed.), *Universals of human language, vol. 4, Syntax* (625–49). Stanford, CA: Stanford University Press.

Talmy, L. 1985a. Force dynamics in language and thought. In *Papers from the twenty-first regional meeting of the Chicago Linguistic Society* (293–337). Chicago: Chicago Linguistic Society.

Talmy, L. 1985b. Lexicalization patterns: Semantic structure in lexical forms. In T. Shopen (Ed.), *Language typology and syntactic description*, vol. 3 (57–149). Cambridge: Cambridge University Press.

Talmy, L. 1988a. Force dynamics in language and cognition. *Cognitive Science*, 12, 49–100. https://doi.org/10.1207/s15516709cog1201_2

Talmy, L. 1988b. The relation of grammar to cognition. In B. Rudzka-Ostyn (Ed.), *Topics in cognitive linguistics* (165–205). Amsterdam: John Benjamins. https://doi.org/10.1075/cilt.50.08tal

Talmy, L. 1996. Fictive motion in language and "ception". In P. Bloom, M. A. Peterson, L. Nadel, & M. F. Garrett (Eds.), *Language and space* (211–276). Cambridge, MA: MIT Press.

Talmy, L. 2000a. Figure and ground in language. In L. Talmy, *Toward a cognitive semantics. Vol. 1, Concept structuring systems* (311–344). Cambridge, MA: MIT Press.

Talmy, L. 2000b. The relation of grammar to cognition. In L. Talmy, *Toward a cognitive semantics. Vol. 1, Concept structuring systems* (21–96). Cambridge, MA: MIT Press.

Talmy, L. 2000c. *Toward a cognitive semantics. Volume I: Concept structuring systems*. Cambridge, MA: MIT Press.

Tannen, D. 1989. *Talking voices. Repetition, dialogue, and imagery in conversational discourse*. Cambridge: Cambridge University Press.

Tesnière, L. 1976/1959. *Les éléments de syntaxe structurale*. Paris: Klincksieck.

Timberlake, A. 2004. *A reference grammar of Russian*. Cambridge: Cambridge University Press.

Treisman, M. 1963. Temporal discrimination and the indifference interval: Implications for a model of the "internal clock." *Psychological Monographs: General and Applied*, 77(13), 1–31. https://doi.org/10.1037/h0093864

Trudy Aspektologičeskogo Seminara filologičeskogo fakul'teta MGU [Proceedings from the Workshop on Aspectology of the Department of Phiology, MGU]. 1997. MGU: Izd. Moskovskogo universiteta.

Uljanov, G. K. 1895. *Značenia glagol'nykh osnov v litovsko-slavjanskom jazyke* [The meanings of verb roots in the Lithuanian-Slavic language]. Warsaw: Tipografija Imperatorskoj Akademii Nauk.

UNESCO. 2017. Statistics on Literacy. Retrieved from http://www.unesco.org/new/en/education/themes/education-building-blocks/literacy/resources/statistics.

Ungerer, F. 2007. Iconic text strategies: Path, sorting and weighting, kaleidoscope. In E. Tabakowska, C. Ljungberg, & O. Fischer (Eds.), *Insistent images* (229–246). Amsterdam: John Benjamins. https://doi.org/10.1075/ill.5.20ung

van Dijk, T. A. 1980. *Macrostructures*. Hillsdale, NJ: Erlbaum.

van Dijk, T. A. 2009. *Society and discourse: How social contexts influence text and talk*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511575273

van 't Veer, A. E., & Giner-Sorolla, R. 2016. Pre-registration in social psychology – A discussion and suggested template. *Journal of Experimental Social Psychology*, 67, 2–12.

Vendler, Z. 1957. Verbs and times. *Philosophical Review*, 66, 143–60. https://doi.org/10.2307/2182371

Vendler, Z. 1967. *Linguistics in philosophy*. Ithaca, NY: Cornell University Press.

Verhagen, A. 2007. Construal and perspectivization. In D. Geeraerts & H. Cuyckens (Eds.), *The Oxford handbook of cognitive linguistics* (48–81). Oxford: Oxford University Press.

Verkuyl, H. 1972. *On the compositional nature of the aspects*. Volume 15, Foundations of Language Supplementary Series. Dordrecht: D. Reidel Publishing Company. https://doi.org/10.1007/978-94-017-2478-4

Verkuyl, H. 1993. *A theory of aspectuality: The interaction between temporal and atemporal structure*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511597848

Vet, C. 1980. *Temps, aspect et adverbes de temps en français contemporain*. Genève: Librairie Droz.

Vinogradov, V. V. 1938/1972. *Sovremennyj russkij jazyk. Grammatičeskoe učenie o slove* [Modern Russian. Grammatical theory of the word]. Moscow: Učpedgiz/Vysšaja Škola.

Viviani, P., & Flash, T. 1995. Minimum-jerk, two-thirds power law, and isochrony: converging approaches to movement planning. *Journal of Experimental Psychology: Human Perception and Performance*, 21(1), 32.

von Humboldt, W. 1820. Über das vergleichende Sprachstudium in Beziehung auf die verschiedenen Epochen der Sprachentwicklung. In W. von Humboldt, 1963, *Schriften zur Sprachphilosophie*, Werke Bd. 3, Stuttgart.

von Stechow, A. 1996. The different readings of *wieder* 'again': A structural account. *Journal of Semantics*, 13, 87–138. https://doi.org/10.1093/jos/13.2.87

von Stutterheim, C., Andermann, M., Carroll, M., Flecken, M., & Schmiedtová, B. 2012. How grammaticized concepts shape event conceptualization in language production: Insights from linguistic analysis, eye tracking data, and memory performance. *Linguistics*, 50(4), 833–867. https://doi.org/10.1515/ling-2012-0026

von Stutterheim, C., Carroll, M. & Klein, W. 2009. New perspectives in analyzing aspectual distinctions across languages. In W. Klein & P. Li (Eds.), *The expression of time* (195–216). Berlin & New York: Mouton de Gruyter.

Vostokov, A. 1867. Kh. *Russkaja grammatika* [Russian grammar]. 2nd ed. Moscow: D. F.Fedorov.

Vygotskij, L. 1934/1996. *Myšlenie i rech*' [Thinking and speech]. Moscow: Labirint. Published in 1962 as *Thought and language*. Cambridge MA: MIT Press.

Wagemans, J., Elder, J. H., Kubovy, M., Palmer, S. E., Peterson, M. A., Singh, M., & von der Heydt, R. 2012. A century of Gestalt psychology in visual perception: I. Perceptual grouping and figure-ground organization. *Psychological Bulletin*, 138(6), 1172–1217. https://doi.org/10.1037/a0029333

Walker, J. A. 2010. Affairs of state: Defining and coding stativity in English and English-based creole. In J. A. Walker (Ed.), *Aspect in grammatical variation* (95–110). Amsterdam & Philadelphia: John Benjamins. https://doi.org/10.1075/silv.6.07wal

Wallace, S. 1982. Figure and ground: The interrelationships of linguistic categories. In P. J. Hopper (Ed.), *Tense-Aspect: Between semantics and pragmatics* (201–223). Amsterdam/ Philadelphia: John Benjamins. https://doi.org/10.1075/tsl.1.14wal

Weinrich, H. 1964/1973. *Tempus: besprochene und erzählte Welt*. Stuttgart: Kohlhammer. French translation : *Le Temps*. Paris: Seuil.

Wertheimer, M. 1923. Untersuchungen zur Lehre von der Gestalt, II. *Psychologische Forschung*, 4, 301–350. https://doi.org/10.1007/BF00410640

Whitehead, A. N. 1921. *An enquiry into the principles of natural knowledge*. Cambridge: Cambridge University Press.

Whitehead, A. N. 1929. *Process and reality: An essay in cosmology*. New York: Macmillan.

Whorf, B. L. 1956. *Language, thought, and reality: Selected writings of Benjamin Lee Whorf* (J. B. Carroll, Ed.). Cambridge, MA: The Massachusetts Institute of Technology Press.

Wilmet, M. 1970. *Le système de l'indicatif en moyen français. Etude des « tiroirs » de l'indicatif dans les farces, sotties et moralités françaises des XVe et XVIe siècles*, Genève: Droz.

Wilmet, M. 2003. *Grammaire critique du français*, 3e éd. Bruxelles: Duculot.

Wolfson, N. 1978. A feature of performed narrative: The conversational historical present. *Language and Society*, 7, 215–237. https://doi.org/10.1017/S0047404500005534

Wolfson, N. 1979. The conversational historical present alternation. *Language*, 55(1), 168–182. https://doi.org/10.2307/412521

Wu, S. In preparation. Transitivity, multimodality, and gesture. PhD dissertation, Vrije Universiteit Amsterdam.

Yap, D. F., & Casasanto, D. 2016. Semantics of beat gestures. Paper presented at the 7th annual conference of the International Society for Gesture Studies, Paris.

Zacks, J. M. 2004. Using movement and intentions to understand simple events. *Cognitive Science*, 28(6), 979–1008. https://doi.org/10.1207/s15516709cog2806_5

Zacks, J. M., & Swallow, K. M. 2007. Event segmentation. *Current Directions in Psychological Science*, 16(2), 80–84. https://doi.org/10.1111/j.1467-8721.2007.00480.x

Zacks, J. M., & Tversky, B. 2001. Event structure in perception and conception. *Psychological Bulletin*, 127(1), 3–21. https://doi.org/10.1037/0033-2909.127.1.3

Zemskaja, E. A. 2004. *Russkaja razgovornaja reč': Lingvističeskij analiz i problemy obučenia* [Russian oral speech: Linguistic analysis and methods of teaching]. Moscow: Flinta.

Zwaan, R. 2009. Mental simulation in language comprehension and social cognition. *European Journal of Social Psychology*, 39(7), 1142–1150. https://doi.org/10.1002/ejsp.661

Zwaan, R. A., Langston, M. C., & Graesser, A. C. 1995. The construction of situation models in narrative comprehension: An event-indexing model. *Psychological Science*, 6(5), 292–297. https://doi.org/10.1111/j.1467-9280.1995.tb00513.x

Zwaan, R. A., & Radvansky, G. A. 1998. Situation models in language comprehension and memory. *Psychological Bulletin*, 123(2), 162. https://doi.org/10.1037/0033-2909.123.2.162

Zwarts, J. 2006. *Event shape: Paths in the semantics of verbs*. Ms. Radboud University: Nijmegen.

APPENDIX A

The two-part consent form used in the production study, which was translated into French, German, and Russian

Consent form

I freely give my consent to participate in an experiment under the direction of _____. I understand that for the purpose of this study I will be asked to discuss several topics with a fellow student and then to fill out some surveys. My participation will not take more than 30–40 minutes.

I also understand that our discussion will be video recorded. The recording will be used for research on communication. At the end I will have the opportunity to specify how the videorecorded material can be used (e.g., who will be allowed to see it). I am guaranteed that any personal information collected on the surveys will not be made public and that my name will not appear in any publications or reports that may be produced based on this study.

At the end of the experiment the person conducting it will explain to me the purposes of the research. I am aware that at any point I may end my participation in the study without any consequences. In that case, the video recording of me will be erased.

Signature:
Place and date:
Name written clearly:

Your agreement for use of the recording

Participant #_____

With your agreement a video recording was just made of you for the purpose of research on communication. You have the right to view the recording if you wish.

Please indicate below how the recording may be used. The recording will only be used in the manner(s) you agree to. Please sign under all conditions below where we have your consent.

1. **Anonymized information may be used from the recording in research publications and presentations (e.g., transcripts without my name, an artist's rendering of my gestures).**
   ……..
   [please sign if you agree]
2. **My image and voice from the recording may be used in research publications and presentations (e.g., for academic journal articles, teaching purposes, talks at academic conferences).**
   ……..
   [please sign if you agree]

3. **Portions of the video and audio recording with my image and voice may be posted on academic websites (e.g., as a demonstration of a research project, as a demonstration of an example in a research article)**.
   ……..
   [please sign if you agree]

I give my permission for the recording to be used as indicated above.

Date:
Name (written)

APPENDIX B

The conversation prompts as provided in each language

French

1. Quel est ton endroit préféré sur terre ? Pourquoi ?
2. Raconte-moi une fois où… (un seul cas parmi les cas suivants) :
   - Tu as eu des problèmes pour régler des formalités administratives
   - Tu as eu des problèmes pour passer commande au restaurant dans une langue étrangère
   - Tu as eu des problèmes pour t'endormir car quelque chose t'en empêchait
   - Tu as été fier/fière d'avoir relevé un défi personnel
   - Tu as été fier/fière d'avoir organisé une fête surprise pour un ami ou un membre de ta famille
   - Tu as été fier/fière car un(e) ami(e) proche t'a raconté combien tu l'avais aidé(e).
3. Raconte-moi une fois où tu as été témoin… (un seul cas parmi les cas suivants) :
   - … d'un accident
   - … d'une victoire sportive
   - … d'un acte de gentillesse gratuit
   - … d'un événement bizarre
   - … d'une confrontation
   - … de quelque chose de surprenant

German

1. Bitte erzählen Sie von Ihrem Lieblingsort! (eine Stadt, eine Region oder ein Ort, den Sie vor kurzem besucht haben)
2. Wählen Sie eine der beiden Aufgaben (A oder B) aus:
   A. Bitte erzählen Sie davon, wie Sie einmal Schwierigkeiten hatten, eines der folgenden Dinge zu tun:
   - sich mit Bürokratie herumzuschlagen
   - in einer fremdem Sprache Essen in einem Restaurant zu bestellen
   - einzuschlafen.

   B. Bitte erzählen Sie von einer Tätigkeit, auf die Sie stolz waren, als:
   - Sie sich einer persönlichen Herausforderung stellten.
   - Sie eine Überraschungsparty für jemanden organisierten, den Sie sehr mögen.
   - von einem Freund/ einer Freundin erfuhren, wie sehr Sie ihm/ ihr geholfen hatten.

3. Bitte erzählen Sie davon, wie Sie einmal Augenzeuge einer der folgenden Situationen waren:
   - ein Unfall
   - der Sieg bei einer Sportveranstaltung
   - selbstlose Hilfe / eine selbstlose Tat
   - eine absurde Situation
   - eine ernsthafte Auseinandersetzung
   - etwas Überraschendes

Russian

1. Расскажите о Вашем любимом месте, городе или стране.
2. Выберите одну категорию:Расскажите, когда Вы испытывали трудности в одной из приведенных ситуаций:
   - Вам пришлось столкнуться с бюрократической волокитой;
   - Вы были в другой стране и Вам нужно было сделать заказ в ресторане;
   - Вы никак не могли уснуть;

   Или расскажите о случае, когда Вы сделали что-то, чем можете гордиться:
   - Вы намеренно поставили себе сложную задачу;
   - Вы устроили сюрприз для близкого человека;
   - Ваш близкий друг сказал, что Вы очень ему/ей помогли
3. Выберите одну из категорий:

   Расскажите о случае, когда Вы стали свидетелем
   - Аварии
   - Победы на спортивном мероприятии
   - Того, как кто-то совершил добрый поступок
   - Странной, непонятной ситуации
   - Спора или стычки между людьми
   - Чего-то удивительного

APPENDIX C

Illustration of the categories used for controlled vocabulary in ELAN for verb coding, taking the Russian verbal data as an example

Categories for annotation	Explanation	Example	Translation
PresIMPERF	Imperfective verbs in present tense	*(ja) proživaju v gorode Moskva*	[I] live in Moscow
PresIMPERFAUX	Auxilary verbs in present tense, imperfective aspect	*Ja mogu skazat' čto…*	I can say that…
PresinfIMPERF	Imperfective infinitive that is used in reference to the present	*Jesli jekhat' tuda v sanatorij…*	If to go there to the health center…
PresinfPerf	Perfective infinitive that is used in reference to the present	*Ja mogu skazat' čto…*	I can say that…
PastIMPERF	Imperfvective verbs in the past tense	*…kak raz jekhala mašina*	At that point a car was driving
PastPERF	Perfvective verbs in the past tense	*oni stolknulis'*	they crashed
PastIMPERFAUX	Auxilary verbs in present tense, perfective aspect.	*My pytalis' pokazat'*	We were trying to show
PastPERFAUX	Auxilary verbs in present tense, imperfective aspect.	*My pošli poobedat'*	We went to have lunch
PastinfIMPERF	Imperfective infinitive that is used in reference to the past	*Ja mogla tam sidet'*	I could sit there
PastinfPERF	Perfective infinitive that is used in reference to the past	*My pytalis' pokazat'*	We were trying to show
FutIMPERF	The verb to be in the future tense used as a notion verb	*Ja budu samym užasnym čelovekom*	I will be the most terrible persom

(*continued*)

Categories for annotation	Explanation	Example	Translation
futIMPERFAUX	The verb to be in the future tense used as an auxiliary verb	*Ja budu skučat'*	I will miss [it]
futinfIMPERF	The infinitive used as a part of future imperfective form	*Ja budu skučat'*	I will miss [it]
futinfPERF	Perfective infinitive used with reference to the future (a very rare case)	*Odin dogadajetsja pozvonit'*	One will have an idea to call
futPERF	Perfective future form	*Ja rasskažu o…*	I will talk about
infIMPERF	Imperfective infinitive used separately	*Vse ravno prijatno vosvraščjat'sja tuda*	[It's] still pleasant to go back there
infPERF	perfective infinitive used separately	*No čtoby zavernut' nalevo…*	But in order to turn left…
impIMPERF	Imperfective verbs in imperative mood	*Davaj 'spor ili styčka meždu ljudmi'*	Let's [choose the topic] 'argument or dispute between people'
impPERF	Perfective verbs in imperative mood	*Vyberete odnu kategoriju*	Choose one category
subjbypasPERF	Perfective verb in the subjunctive mood	*Ja by ne skazala čto…*	I wouldn't say that
subjbypasIMPERF	Imperfective verb in the subjunctive mood	*Xotelos' by poprobovat'*	I would like to try
pastPART	Past participle	*Tam bylo napisano*	[it] was written there

APPENDIX D

Transliteration conventions used for Russian (Cyrillic to Latin alphabet)

Cyrillic	Latin
а	a
б	b
в	v
г	g
д	d
е	e; je (used after Cyrillic *a, o, y*; at the beginning of a word; and after *ъ*)
ё	jo
ж	ž
з	z
и	i
й	j
к	k
л	l
м	m
н	n
о	o
п	p
р	r
с	s
т	t
у	u
ф	f
х	kh
ц	c
ч	č
ш	š
щ	šč
ъ	(not transliterated)
ы	y
ь	’
э	è
ю	ju
я	ja

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The book provides a nuanced, multimodal perspective on how people express events via certain grammatical forms of verbs in speech and certain qualities of movement in manual gestures. The volume is the outcome of an international project that involved three teams: one each from France, Germany, and Russia, including scholars from the Netherlands and the United States.

Aspect and gesture use are studied in three Indo-European languages, i.e. French, German, and Russian. The book also summarizes the main points and arguments from French, German, and Russian works on aspect in relation to tense, bringing these historical traditions together for an English-speaking reading audience.

The work rekindles some fundamental theorizing about events and aspect, reinvigorating it in a new light with the use of recent theorizing from cognitive linguistics and cognitive psychology, as well as new research methods applied to new data from actual spoken, interactive language use. It illustrates the value of researching the variably multimodal nature of communication – as well as theoretical issues in connection with thinking for speaking and mental simulation – from an empirical point of view.

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