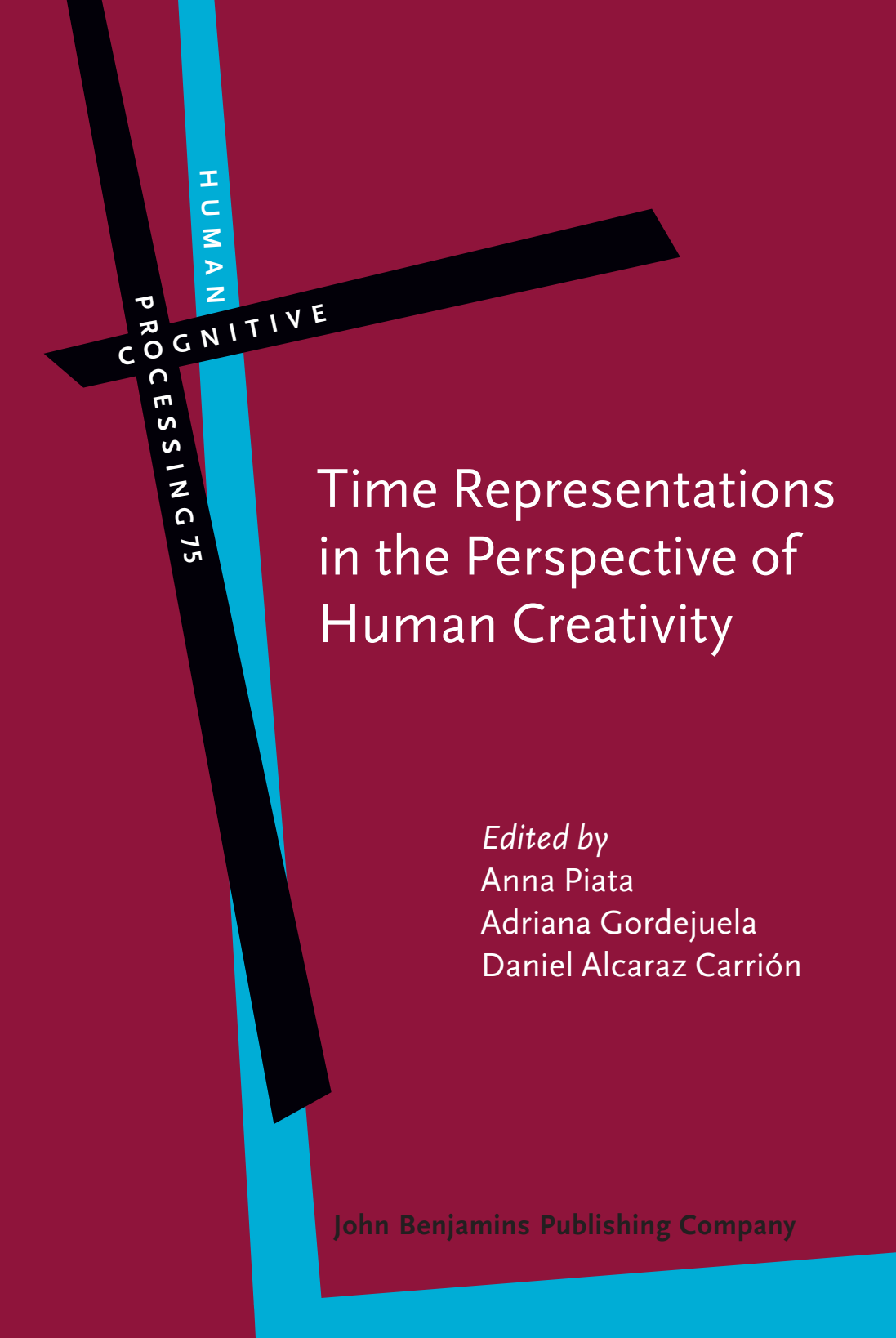




HUMAN
COGNITIVE
PROCESSING 75

Time Representations in the Perspective of Human Creativity

Edited by
Anna Piata
Adriana Gordejuela
Daniel Alcaraz Carrión

John Benjamins Publishing Company

Time Representations in the Perspective of Human Creativity

Human Cognitive Processing (HCP)

Cognitive Foundations of Language Structure and Use

ISSN 1387-6724

This book series is a forum for interdisciplinary research on the grammatical structure, semantic organization, and communicative function of language(s), and their anchoring in human cognitive faculties.

For an overview of all books published in this series, please see
benjamins.com/catalog/hcp

Editors

Klaus-Uwe Panther
University of Hamburg

Linda L. Thornburg

Editorial Board

Réka Benczes
Corvinus University of
Budapest

Bogusław Bierwiaczonek
Jan Dlugosz University,
Czestochowa, Poland

Mario Brdar
University of Osijek, Croatia

Barbara Dancygier
University of British Columbia

Sabine De Knop
Université Saint-Louis

N.J. Enfield
University of Sydney

Elisabeth Engberg-Pedersen
University of Copenhagen

Renata Geld
University of Zagreb

Raymond W. Gibbs, Jr.
University of California at Santa
Cruz

Elżbieta Górská
University of Warsaw

Martin Hilpert
University of Neuchâtel

Zoltán Kövecses
Eötvös Loránd University,
Hungary

Carita Paradis
Lund University

Chongwon Park
University of Minnesota Duluth

Esther Pascual
Shanghai International Studies
University

Lorena Pérez-Hernández
University of La Rioja

Francisco José Ruiz de
Mendoza Ibáñez
University of La Rioja

Doris Schönefeld
University of Leipzig

Mateusz-Milan Stanojevic
University of Zagreb

Debra Ziegeler
University of Paris III

Jordan Zlatev
Lund University

Volume 75

Time Representations in the Perspective of Human Creativity

Edited by Anna Piata, Adriana Gordejuela and Daniel Alcaraz Carrión

Time Representations in the Perspective of Human Creativity

Edited by

Anna Piata

University of Neuchâtel & National
and Kapodistrian University of Athens

Adriana Gordejuela

University of Navarra

Daniel Alcaraz Carrión

University of Wisconsin-Madison

John Benjamins Publishing Company

Amsterdam / Philadelphia



The paper used in this publication meets the minimum requirements of the American National Standard for Information Sciences – Permanence of Paper for Printed Library Materials, ANSI Z39.48-1984.

DOI 10.1075/hcp.75

Cataloging-in-Publication Data available from Library of Congress:
LCCN 2022030413 (PRINT) / 2022030414 (E-BOOK)

ISBN 978 90 272 1159 0 (HB)
ISBN 978 90 272 5741 3 (E-BOOK)

© 2022 – John Benjamins B.V.

No part of this book may be reproduced in any form, by print, photoprint, microfilm, or any other means, without written permission from the publisher.

John Benjamins Publishing Company · <https://benjamins.com>

Table of contents

Preface	VII
Introduction	1
<i>Anna Piata, Adriana Gordejuela and Daniel Alcaraz Carrión</i>	
Part I. Time and creativity in language	
CHAPTER 1	
A corpus-based look at time metaphors	15
<i>Javier Valenzuela and Rosa Illán Castillo</i>	
CHAPTER 2	
Time moves more often in poetry: A comparative corpus study	41
<i>Rosa Illán Castillo and Cristóbal Pagán Cánovas</i>	
CHAPTER 3	
What is time? Verbal creativity in copula constructions	61
<i>Anna Piata</i>	
CHAPTER 4	
Working on it: The creation of chronological time in political discourse and the democratic meaning of elections	81
<i>Liron Lavi</i>	
Part II. Beyond language: Multimodal representations of time	
CHAPTER 5	
Creative visual metaphors of protracted and frozen time in autobiographical comics about depression	101
<i>Elisabeth El Refaie</i>	
CHAPTER 6	
Time-creation in film: An embodied cognitive perspective	125
<i>Maarten Coëgnarts</i>	

CHAPTER 7	
Beyond the limits: Merging past and present in film flashbacks	147
<i>Adriana Gordejuela</i>	
CHAPTER 8	
From “slow lettuce” to “striated time”: On Pierre Boulez’s conceptualizations of musical temporality	163
<i>José L. Besada</i>	
CHAPTER 9	
Physical and imaginary landmarks in English time gestures	187
<i>Daniel Alcaraz Carrión</i>	
CHAPTER 10	
Time in Chinese hands: Gesture and sign	209
<i>Yan Gu</i>	
EPILOGUE	
Creative to whom, and on what basis? The role of perspective	233
<i>Alan Cienki</i>	
Index	243

Preface

Preparing a volume on time and creativity amid a global pandemic felt like an oxymoron: how creative can we be *with* and *about* time when life is put on hold and a threat, so far unknown, is just around the corner? This was a challenge that was impossible to foresee when the idea for this volume was born a few years ago, in 2017, at the workshop “*Time Concepts and their Expression: Creativity, Cognition, Communication*” that was held at the University of Navarra in Pamplona, Spain. The workshop was part of the CREATIME project “*Time in the creative mind*”, a consortium of researchers dedicated to the study of time through the lens of creativity, and sowed the seed for the present volume.

Over the last years, the study of time conceptualization has seen a considerable growth, attracting massive interest in cognitive linguistics, psycholinguistics, and cognitive science, and serving as a case study for exploring the cognitive basis of metaphor. But if metaphorical representations of time are established in the cognitive system, how are they manipulated when humans are engaged with their creative expression? This is the question that we aimed to address in this volume, on the assumption that creativity may add new insights into our understanding of time. Our view of creativity is one that encompasses expressions across the board, ranging from TV news and political discourse to poetry and the arts, including all sorts of modalities: verbal, visual, auditory, and gestural.

This volume builds on our common interest in, and long-standing research on, time that has focused on different discourse domains and modalities: verbal creativity (Anna), film studies (Adriana), and gesture (Daniel). But it would not have been possible had it not been for the excellent contributions that we received, some of which originated in the CREATIME workshop while others were recruited later. Taken together, all ten chapters that compose this volume have aimed to reflect the richness and diversity of time representations in terms of the different styles and modalities used to express them, and the different methods implemented to study them. We thank all authors for engaging in this project and each one separately for offering insights into a particular aspect of time and creativity. Special thanks go to Alan Cienki, who kindly agreed to go through the whole manuscript and offer a comprehensive account of it in the form of the volume’s Epilogue.

Finally, our gratitude extends to Klaus-Uwe Panther and Linda L. Thornburg, the HCP book series editors, who embraced this project from the beginning and offered us their unfailing support along the way. We are also grateful to an anonymous reviewer for providing us with constructive comments and, not least, for enthusiastically endorsing the publication of this volume. Of course the usual disclaimer holds in our case too: any errors and omissions remain our own responsibility.

We hope that this volume will be a step further to understanding the workings of time when its *expression* moves beyond the ordinary. It now remains to be seen in what (creative) ways humans may express time when its *experience* moves beyond the ordinary, as it has been the case with the global pandemic the last two years and its impact on our time perception. This will likely posit a new challenge to creators and scholars alike.

March 10, 2022

Anna Piata
Adriana Gordejuela
Daniel Alcaraz Carrión

Introduction

Anna Piata^{1,2}, Adriana Gordejuela³ and Daniel Alcaraz Carrión⁴

¹University of Neuchâtel / ²National and Kapodistrian University of Athens /

³Universidad de Navarra / ⁴University of Wisconsin-Madison

1. Setting the scene: The concept of time

The concept of time has been a notorious puzzle, one that has been tackled from many different disciplinary perspectives and still confronts us with a paradox. We all have a sense of time passing but which mechanisms –neurobiological, cognitive, affective, social, or a combination thereof– make this possible is a question that is still subject to inquiry and debate. Notice that if we are asked to define or describe what time is we are not able to give an answer. Our experience of time is paradoxical for one more reason: it is both private and universal. We perceive the passage of time in subjective terms (for example, an interval may be felt as overly long) while being aware of its objective duration according to clock measurements. Material artefacts and shared norms – clocks, calendars, work plans, and deadlines – are there to regulate time reckoning and hence social life and activity.

Notably, all these different facets in the concept of time are expressed in, and through, language: the concept of time, the units for measuring its passage, the sequence and duration of events, the felt experience of time passing, which may align (or not) with its objective measurement, all these are entrenched in the cognitive system while being reflected in our everyday use of language. In this sense, language has been taken to serve as a window into how we speak about time but also, and perhaps more importantly, how we conceptualize it. This assumption lies at the core of Cognitive linguistics, stemming from Lakoff and Johnson's seminal book *Metaphors we live by*, and has ever since revolutionized the way we understand time, with far reaching implications that exceed the boundaries of linguistic research.

This line of inquiry is what sets the background for this volume too and can be summarized in the following way: how can linguistics inform our understanding of time in ways that go beyond language while also embracing the multifaceted, at times paradoxical, nature of time? For this purpose, we venture on examining an aspect in time conceptualization that has not been addressed so far in its own right: its creative expression, represented in language but also spanning across non-verbal

modalities, especially vision, cinematography, music, and co-speech gesture. The question we wish to address through the contributions in this volume is the following: how are our mental representations manipulated when it comes to creative manifestations of time, whether linguistic, pictorial, acoustic, or gestural? To take this a step further: what insights, if any, can creativity bring to the fore regarding our mental representations of time? Our assumption, and the motivation behind the present collective volume, is that creativity can serve as a vehicle for understanding the workings of time conceptualization.

Mental representations of time, no matter how established they are (or perhaps because they are well established in the cognitive system), have a creative potential that lends itself to an array of different manifestations. Our view of creativity, which infiltrates the ten chapters that compose this volume, endorses not only the extraordinary instances found in poetry, and the arts (cinema, music, graphic novels, etc.), but also its more ‘mundane’, everyday manifestations that appear in everyday language use, in political discourse, or on TV news. We therefore assume an all-round view of creativity that is not restricted to a single modality or one particular discourse domain but is rather manifested across different modalities, genres, and speech events. This endeavor aims to showcase, on the one hand, the creative possibilities for expressing and conceptualizing time and, on the other, to what extent our mental representations for time are malleable and amenable to creative exploitation. The contributions to this volume demonstrate that creativity draws on existing conceptual patterns only to override them. But we also expect creativity to be constrained by the affordances of the modality (or modalities) used to represent time along with the particular rhetorical goals each and every text (or speech event) is intended to serve. The ten chapters that follow aim to bring to the fore both what motivates and what constrains creativity with regards to the expression of time.

2. From time to creativity (and back)

As already mentioned, the comprehensive account of time and creativity that we set forth to explore in this volume has its roots in the ground-breaking work laid out by cognitive linguists in the last decades. Cognitive linguists were the first to suggest that our conceptualization of time (like that of many other concepts that are not directly accessible to our perceptual-sensory system) draws on spatial cognition, as illustrated in everyday expressions like “*We are coming up on Christmas*” and “*Those sad days are now gone, they are behind us*”. In other words, we perceive times as either destinations towards which we are moving (as is the case with “*Christmas*”

in the former example) or as entities moving along a path past a static observer (as illustrated with the “*sad days*” in the latter example). These patterns refer to two distinct construals for the conceptualization of time, known as the *Ego-moving metaphor of time* and the *Time-moving metaphor*, respectively (Clark 1973; Traugott 1978; Lakoff 1993; Lakoff and Johnson 1980, 1999; Moore 2014). However distinct, both patterns boil down to a common underlying pattern: the *spatialization of time*, a phenomenon that is well motivated in experience and cognition, as noted from early on in the literature (see Guyau 1890/1988; Smart 1949). Our perception of time is experientially intertwined with spatial orientation, hence future events are naturally associated with what lies ahead of us while past events belong with the space behind, as suggested by the examples above (but on a different pattern see Núñez and Sweetser 2006). This cross-domain mapping from the *source domain* of space (broadly construed to also encompass motion) onto the *target domain* of time came to be known under the label of *conceptual metaphor*.

Within Cognitive linguistics, the spatialization of time has taken a new meaning, recast as a metaphorical mapping that is deeply rooted in the cognitive system and thus underpins both language and thought (for a detailed overview see Núñez and Cooperrider 2013). Cross-linguistic studies have revealed that, although the spatialization of time is an almost universal phenomenon (cf. Sinha, Sinha, Zinken and Sampaio 2011), it can take different forms across languages and cultures (cf. Haspelmath 1997; Radden 2003, 2011; Feist and Duffy 2020; Valenzuela and Alcaraz 2020). In addition to linguistic evidence, a robust body of experimental work speaks in favor of the cognitive reality of conceptual metaphors, suggesting that the way speakers talk about time, at least partly, modulates how they *think* about time (see, e.g., Boroditsky 2000; Boroditsky and Ramscar 2002; Casasanto 2008; Casasanto and Boroditsky 2008; Starr and Srinivasan 2018).

Another source of evidence for the mental representations of time has been co-speech gesture, that is, the hand movements that accompany time expressions (Cienki 1998; Cooperrider and Núñez 2009; Casasanto and Jasmin 2012; Alcaraz 2019; Pagán Cánovas et al. 2020; Alcaraz et al. 2020). The motivation under this line of research has been to test to what extent gesture evokes the same conceptual patterns as language. Indeed, it has been found that the mental representations of time cannot be extrapolated on the basis of verbal metaphors alone. Rather, there is a dissociation between language and cognition vis-à-vis time. Gesture suggests a lateral pattern for the representation of events that mirrors writing direction. For instance, English speakers locate past events on the left and future events on the right (Alcaraz et al. 2020), while Hebrew speakers present the opposite pattern (Casasanto 2016). Although in tune with the mental timeline, this pattern is not found accordingly in any documented language. In short, the mental representations

of time are far more perplexed than originally assumed and non-verbal modalities promise to yield important insights on temporal cognition alongside language data and experimental work.

More generally, whether language-oriented or experiment-based, the cognitive linguistic research on the mental representations of time has been largely focused on establishing their spatial underpinnings and the validity of conceptual metaphors not only in language but also, and perhaps more importantly, in cognition. In this light, even the study of poetic metaphor –an instance of linguistic novelty and stylistic diversity that moves away from the standard ways of representing time– has been considered yet another source of evidence for the existence of conceptual metaphors, one that attests to the continuity between conventional and non-conventional metaphorical expressions (Lakoff and Turner 1989).

A paradigm shift occurred when the conceptual structure of time was acknowledged to stand in its own right rather than being reduced to a mere transfer from space onto time. This line of thought builds on the observation, grounded in compelling evidence from philosophy and psychology, that for humans time is a phenomenologically real experience (see Arstila and Lloyd 2014), which is further distilled into the ways time is conceptually structured and represented (Evans 2004). To put it simply, as noted in the beginning, we all have an experience of time even if we are not able to directly perceive it, and such experience may vary among subjects; i.e. the same interval may be felt differently among experiencers, or events may be recalled in memory in ways that again do not match reality (“*It feels like yesterday when I graduated and still 20 years have gone by!*”). In cognitive linguistic terms, this translates into a multiple-space network of conceptual blending along the lines of Conceptual integration theory (Fauconnier and Turner 2002). Such an approach differs in important ways from the standard account of time in terms of conceptual metaphor, the main difference being that the mapping is no longer unidirectional from space onto time; rather, the conceptual structure of time (grounded in the experience of events) is blended with the calendric units that are socially and culturally recruited to measure events and time in a uniform way, i.e. *clock time*. The result is a *generalized conceptual integration network* that accommodates our concept of time and motivates an array of time expressions that may be linguistically and stylistically varied, reflecting the subject’s own experience of time passing, e.g. “*Time slowed down as we were expecting to hear about the missing people*” (Fauconnier and Turner 2008).

This approach has significant strengths. Firstly, it is consistent with time perception as we know it from cognitive psychology and neuroscience, including the experience of *subjective time* (i.e., the experience of time that does not conform to time reckoning as suggested by the clock). Secondly, it acknowledges the asymmetry

between space and time while it does full justice to the experiential reality of time and treats temporal cognition as a by-product of such experience. Last, but not least, such a generalized network, entrenched as it is in cognition and shared among the speech community, is amenable to creative exploitation. Given that conceptual integration is a process of online meaning construction, this framework can account for the varied, often novel meanings that spatio-temporal expressions may afford, which may exceed the boundaries of conceptual mappings and thus yield new, aesthetically powerful representations of time (cf. Pagán Cánovas and Piata 2018; Piata 2018; Piata and Pagán Cánovas 2017). Crucially, such meaning-making processes are found to underlie also multimodal representations of time, as is the case, for instance, in film discourse (for a detailed overview see Gordejuela 2021). Such findings illustrate the flexible and dynamic nature of time conceptualization and its openness to creative processes that manifest themselves as diverse, cross-modal manifestations of temporal meanings.

As already noted, our aim in this volume is to put creativity into the spotlight, considering it as a potentially valuable source for the understanding of time representations. In this respect, we bring together –to the best of our knowledge, for the first time– contributions that approach time from the angle of various text types that cross over different modalities and vary with regards to their perceived level of creativity: poems, graphic novels, films, and music scripts are combined with everyday language, political discourse, and co-speech gesture. Taken together, the ten contributions in this volume show how creative realizations of time metaphors may push the mental representations of time beyond conventional mappings. They specifically suggest that time representations may well exceed the limits of conceptual metaphor while being adjusted to the affordances of the modality used (whether verbal, visual, gestural or other), as well as to each text's rhetorical goals and genre specifications. Which factors enable our potential for creativity and thus allow for its different realizations? This is what the contributions in this volume reveal: our mental representations of time, in the form of underlying conceptual patterns, are recruited together with frame structure (related, e.g., to motion verbs that are more or less conventionally associated with time), grammatical constructions, viewpoint, imagery, political narratives, a distorted sense of temporality (e.g., under the influence of depression), narrative time, cinematic techniques, or even participants' facial expressions and props in the situational context. In this way, we are able to communicate about time in much more flexible, original and at times even unexpected ways.

Be that as it may, one more question is pending: what constrains our ability for creativity vis-à-vis time representations? In view of the insights brought to light through the contributions in this volume, we suggest two factors as key to

understanding time and creativity. The former is our *folk understanding of time*, grounded in the phenomenology of time perception and, more generally, in embodied experience. The latter is *context* in the form of textual, discursive parameters, i.e. genre; the immediate linguistic and extra-linguistic context; and of course the specifications of the modality used. We consider this a thought-provoking finding that is worth further investigation in the future.

In sum, the ten chapters in this volume largely build on the cognitive linguistic research on time, which serves as a starting point and a common ground in terms of the volume's theoretical orientation. But the diversity of the modalities, discourse domains, and methodologies used by the contributors qualify the volume as a truly interdisciplinary platform that may potentially open new ways into the study of time. The volume thus aims to be a toolkit that unveils the potential of time representations for creativity while at the same time showing that creativity is an integral part of discourse and, not least, human cognition.

3. The organization of the volume

The volume is divided in two parts, each one focusing on different modalities of communication: Part I is concerned with time and creativity through the verbal modality while Part II is dedicated to non-verbal, multimodal creative expressions of time, i.e. visual only, audio-visual, musical, and gestural.

The chapters that comprise the first part of the volume show that creativity in the conceptualization of time pertains not only to poetry and literary expression, as traditionally (and rightly) assumed, but rather extends over other discursive domains too, including everyday language use, television news, and political discourse. For this purpose, the four chapters in Part I recruit analytic concepts from Cognitive poetics and Cognitive linguistics but combine them, quite originally, with corpus methods and discourse analysis.

Specifically, the volume opens with a corpus study by Javier Valenzuela and Rosa Illán Castillo on motion expressions of time attested in television news. In this chapter, "A corpus-based look at time metaphors", the authors present a quantitative and qualitative analysis, suggesting that motion verbs that are not conventionally associated with the expression of time, such as *crawl* and *roll*, are actually used alongside the typical ones, i.e. *come* and *go*. Their findings push the boundaries of what is traditionally considered an everyday metaphor of time, providing evidence that language users are far more creative than it has been assumed so far.

A corpus study is also at the core of the next chapter, "Time moves more often in poetry: A comparative corpus study", but this time the focus shifts to the discourse

domain of poetry. Rosa Illán Castillo and Cristóbal Pagán Cánovas draw on English PoetiCog, a specialized corpus of poetic texts, and examine the different motion verbs that are employed in poetry when talking about time measurement units like *days* or *years*. These verbs are found to include rich details about the motion event (e.g., manner or path) and thus necessitate, the authors argue, an elaborate network of multiple spaces along the lines of conceptual integration. This finding is supported with compelling corpus data alongside an in-depth qualitative analysis.

In the next chapter, “What is time? Verbal creativity in copula constructions”, Anna Piata is concerned with a particular type of poetic metaphors that has not received adequate attention with respect to time conceptualization, namely copula constructions that follow the form ‘NP *be* NP’. She specifically examines time equations, also derived from English PoetiCog, and through a qualitative analysis she shows that the novel, often unique meanings these time metaphors give rise to combine conceptual structure and imagery alike. To account for this, the author suggests that the constructional pattern of equations directly evokes the source domain in a way that activates a process of mental simulation as laid out within the framework of embodied semantics.

In Chapter 4, “Working on it: The creation of chronological time in political discourse and the democratic meaning of elections”, Liron Lavi is concerned with political discourse and, more specifically, with two case studies, extracted from the 1949 and the 1988 Israeli elections, and the political narratives found therein. She draws on theories of democracy, time, and meaning to show how creative constructions of time may (or may not) connect the past, the present and the future in ways that shape the democratic meaning of elections (or the lack of it). The upshot of the author’s argument is that a chronological narrative renders a democratic meaning in the election process, whereas such a meaning is challenged once the narrative fails to be chronological.

In Part II, the focus shifts to non-verbal modalities of communication. Humans are able to represent concepts as complex as time using a wide variety of modalities and thus temporal cognition, however creative, goes beyond words. The six contributions in the second part of the volume aim to offer new insights on how time can be represented beyond language, with a particular view on graphic novels, film, music, and co-speech gesture.

In Chapter 5, “Creative visual metaphors of protracted and frozen time in autobiographical comics about depression”, Elisabeth El Refaie presents an analysis of time representations in seven graphic novels, all being concerned with the artist’s experience of depression. Her aim is to reveal the spatial patterns employed in the images to represent a distorted sense of time that differs in important ways from the representations found in language. El Refaie’s analysis suggests that visual

representations of depression convey a sense of time passing slowly, as well as a feeling of being out of sync with external reality.

The next chapter, “Time-creation in film: An embodied cognitive perspective”, moves to a different discourse domain, that of films. Maarten Coëgnarts engages with the question of how embodiment may enable viewers to make sense of narrative time and draws on a range of cinematic techniques, such as camera movement, music, and fixed-frame movement, all commonly employed in both popular Hollywood cinema and fragmented modernist cinema. Through his analysis, Coëgnarts shows how cinematographers use such techniques creatively to spatialize time-based and ego-based temporal relations in the audio-visual modality.

In Chapter 7, “Beyond the limits: Merging past and present in film flashbacks”, Adriana Gordejuela continues the discussion of time in the cinematographic domain, focusing on the multimodal construction of flashbacks. Gordejuela is specifically concerned with creative instances of flashbacks in which the past and the present are rendered simultaneously, suggesting that this temporal merge is reached through the character’s decompression of identity. In this way, these flashbacks represent at once two different perspectives (viewpoint compression) and two separate moments in time (time compression).

In the following chapter, “From ‘slow lettuce’ to ‘striated time’: On Pierre Boulez’s conceptualizations of musical temporality”, José Luis Besada looks into time in the domain of music and composition. His aim is to offer an in-depth analysis of the quite novel conception of musical temporality endorsed by composer and conductor Pierre Boulez. For this purpose, Besada compiles a number of different sources, including Boulez’s essays, compositional sketches, scores, and performances, and examines how different cross-modal features, embodied experience, and image schemas are constitutive of his own conceptualization of musical temporality.

The last two original contributions to the volume are concerned with time gestures. In Chapter 9, “Physical and imaginary landmarks in English time gestures”, Daniel Alcaraz Carrión presents a qualitative analysis of temporal co-speech gestures in English, using data from a television news repository. Even though these types of gestures usually follow a similar pattern, Alcaraz shows how speakers may equally well deviate from these patterns, producing highly creative gesture realizations. His analysis focuses on three different types of gestural creativity: when speakers create *ad hoc* imaginary timelines; when they include physical items in their time construals; and when they combine time gestures with facial expressions. Such gestural creativity, the author argues, aims to convey an emotional and/or pragmatic meaning.

Finally, the discussion of time and gesture continues in Chapter 10, this time in the linguistic and cultural context of Mandarin Chinese and, more specifically,

among Mandarin monolinguals, Mandarin learners of English, and Chinese deaf signers. In “Time in Chinese hands: Gesture and sign”, Yan Gu suggests that, even though the gesticulations speakers produce employ the same axes, their choices are influenced by culture-specific features such as writing direction, time values, linguistic structures, and bodily experience. By analyzing several examples, Gu argues that time representation in co-speech gestures is tied to cultural, linguistic and bodily experience.

The volume concludes with an Epilogue by Alan Cienki, which addresses the role of *perspective* in how we understand, and make sense of, creativity. Specifically, Cienki considers creativity from three different perspectives: that of the producer; of the person paying attention to the expression (the attender) in the same context; and of any attender in a time and place other than the one in which the expression was originally produced. He thus offers an interactional framework in which the various creative manifestations of time analyzed in the volume’s ten chapters are embedded. In light of this, creative expressions of time can be recast as speech events, the context of which is what determines eventually meaning construction. To put it simply, whatever is considered creative is only because it is perceived as such by the speech participants involved.

References

- Alcaraz Carrión, D. (2019). *Time gestures: Time conceptualisation in English with evidence from gestures in a multimodal corpus*. PhD dissertation, Lancaster University, UK. <https://doi.org/10.17635/lancaster/thesis/567>
- Alcaraz Carrión, D., Pagán Cánovas, C. & Valenzuela, J. (2020). Enaction through co-speech gesture: The rhetorical handing of the mental timeline. *Zeitschrift für Anglistik und Amerikanistik*, 68(4), 411–431. <https://doi.org/10.1515/zaa-2020-2020>
- Arstila, V., & Lloyd, D. (Eds.). (2014). *Subjective time: The philosophy, psychology, and neuroscience of temporality*. Cambridge, MA: MIT Press. <https://doi.org/10.7551/mitpress/8516.001.0001>
- Boroditsky, L. (2000). Metaphoric structuring: Understanding time through spatial metaphors. *Cognition*, 75(1), 1–28. [https://doi.org/10.1016/S0010-0277\(99\)00073-6](https://doi.org/10.1016/S0010-0277(99)00073-6)
- Boroditsky, L., & Ramscar, M. (2002). The roles of body and mind in abstract thought. *Psychological Science*, 13(2), 185–189. <https://doi.org/10.1111/1467-9280.00434>
- Casasanto, D. (2008). Similarity and proximity: When does close in space mean close in mind? *Memory & Cognition*, 36(6), 1047–1056. <https://doi.org/10.3758/MC.36.6.1047>
- Casasanto, D. (2016). Temporal language and temporal thinking may not go hand in hand. In B. Lewandowska-Tomaszczyk (Ed.), *Conceptualizations of time* (pp. 169–186). Amsterdam: John Benjamins. <https://doi.org/10.1075/hcp.52.04cas>
- Casasanto, D., & Boroditsky, L. (2008). Time in the mind: Using space to think about time. *Cognition*, 106(2), 579–593. <https://doi.org/10.1016/j.cognition.2007.03.004>
- Casasanto, D., & Jasmin, K. (2012). The hands of time: Temporal gestures in English speakers. *Cognitive Linguistics*, 23(4), 643–674. <https://doi.org/10.1515/cog-2012-0020>

- Cienki, A. J. (1998). Metaphoric gestures and some of their relations to verbal metaphoric expressions. In J. P. Koenig (Ed.), *Discourse and cognition: Bridging the gap* (pp. 189–204). Stanford: CSLI Publications.
- Clark, H. H. (1973). Space, time, semantics, and the child. In T. E. Moore (Ed.), *Cognitive development and acquisition of language* (pp. 27–63). New York: Academic Press.
<https://doi.org/10.1016/B978-0-12-505850-6.50008-6>
- Cooperrider, K., & Núñez, R. (2009). Across time, across the body: Transversal temporal gestures. *Gesture*, 9(2), 181–206. <https://doi.org/10.1075/gest.9.2.02coo>
- Evans, V. (2004). *The structure of time: Language, meaning and temporal cognition*. Amsterdam: John Benjamins. <https://doi.org/10.1075/hcp.12>
- Fauconnier, G., & Turner, M. (2002). *The way we think: Conceptual blending and the mind's hidden complexities*. New York: Basic Books.
- Fauconnier, G., & Turner, M. (2008). Rethinking metaphor. In R. Gibbs (Ed.), *The Cambridge handbook of metaphor and thought* (pp. 57–66). Cambridge: Cambridge University Press.
<https://doi.org/10.1017/CBO9780511816802.005>
- Feist, M. I., & Duffy, S. E. (2020). On the path of time: Temporal motion in typological perspective. *Language and Cognition*, 12(3), 444–467. <https://doi.org/10.1017/langcog.2020.7>
- Gordejuela, A. (2021). *Flashbacks in film: A cognitive and multimodal analysis*. London: Routledge.
<https://doi.org/10.4324/9781003153573>
- Guyau, J. M. (1890/1988). The origin of the idea of time. In J. A. Michon (Ed.), *Guyau and the idea of time* (pp. 37–148). Amsterdam: North-Holland Publishing Company.
- Haspelmath, M. (1997). *From space to time: Temporal adverbials in the world's languages*. Munich: Lincom Europa.
- Lakoff, G. (1993). The contemporary theory of metaphor. In A. Ortony (Ed.), *Metaphor and thought* (pp. 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.
- Lakoff, G., & Johnson, M. (1999). *Philosophy in the flesh*. New York: Basic Books.
- Lakoff, G., & Turner, M. (1989). *More than cool reason: A field guide to poetic metaphor*. Chicago: University of Chicago Press. <https://doi.org/10.7208/chicago/9780226470986.001.0001>
- Moore, K. E. (2014). *The spatial language of time: Metaphor, metonymy, and frames of reference*. Amsterdam: John Benjamins. <https://doi.org/10.1075/hcp.42>
- Núñez, R., & Cooperrider, K. (2013). The tangle of space and time in human cognition. *Trends in Cognitive Sciences*, 17(5), 220–229. <https://doi.org/10.1016/j.tics.2013.03.008>
- Núñez, R., & Sweetser, E. (2006). With the future behind them: Convergent evidence from Aymara language and gesture in the cross-linguistic comparison of spatial construals of time. *Cognitive Science*, 30, 401–450. https://doi.org/10.1207/s15516709cog0000_62
- Pagán Cánovas, C., & Piata, A. (2018). The way time goes by: Conceptual integration and the poetics of time. In S. Csábi (Ed.), *Expressive minds and artistic creations: Studies in cognitive poetics* (pp. 57–78). New York: Oxford University Press.
- Pagán Cánovas, C., Valenzuela, J., Alcaraz Carrión, D., Olza, I., & Ramscar, M. (2020). Quantifying the speech-gesture relation with massive multimodal datasets: Informativity in time expressions. *PLOS ONE*, 15(6), e0233892. <https://doi.org/10.1371/journal.pone.0233892>
- Piata, A. (2018). *The poetics of time: Metaphors and blends in language and literature*. Amsterdam: John Benjamins. <https://doi.org/10.1075/ftl.3>

- Piata, A., & Pagán Cánovas, C. (2017). "Powerful rhyme" and "sluttish time": A cross-linguistic study of time personification in poetic discourse. *Language and Literature*, 26(1), 18–33. <https://doi.org/10.1177/0963947016674142>
- Radden, G. (2003). The metaphor TIME AS SPACE across languages. *Zeitschrift für Interkulturellen Fremdsprachenunterricht*, 8(2/3), 226–239.
- Radden, G. (2011). Spatial time in the West and the East. In M. Brdar, M. Omazic, V. Pavicic Takac, T. Gradecak-Erdeljic & G. Buljan (Eds.), *Space and time in language* (pp. 1–40). Bern: Peter Lang.
- Sinha, C., Sinha, V. S. da, Zinken, J., & Sampaio, W. (2011). When time is not space: The social and linguistic construction of time intervals and temporal event relations in an Amazonian culture. *Language and Cognition*, 3(1), 137–169. <https://doi.org/10.1515/langcog.2011.006>
- Smart, J. J. C. (1949). The river of time. *Mind*, 58, 483–494. <https://doi.org/10.1093/mind/LVIII.232.483>
- Starr, A., & Srinivasan, M. (2018). Spatial metaphor and the development of cross-domain mappings in early childhood. *Developmental Psychology*, 54(10), 1822. <https://doi.org/10.1037/dev0000573>
- Traugott, E. C. (1978). On the expression of spatio-temporal relations in language. In J. H. Greenberg (Ed.), *Universals of human language*, vol. III (pp. 369–400). Stanford: Stanford University Press.
- Valenzuela, J., & Alcaraz Carrión, D. (2020). Temporal expressions in English and Spanish: Influence of typology and metaphorical construal. *Frontiers in Psychology*, 11, 543–933. <https://doi.org/10.3389/fpsyg.2020.543933>

PART I

Time and creativity in language

A corpus-based look at time metaphors

Javier Valenzuela and Rosa Illán Castillo

University of Murcia

Motion-based metaphors of time have been thoroughly discussed in the literature, but some aspects still remain underexplored. The present chapter addresses one of these areas, namely, the lexical richness of the motion verbs found in temporal expressions. We present the findings of a corpus study of motion expressions of time in television news. Using a large set of data, we show that motion verbs that are not conventionally associated with the expression of time, such as *crawl* and *roll*, are used alongside the more typical ones (e.g., *come*, *approach*). The results suggest that language users are in fact far more creative than it has been assumed so far, thus challenging what is typically perceived as an everyday metaphor of time.

Keywords: space-to-time mappings, motion, path-verbs, manner-of-motion verbs

1. Introduction

The fact that humans primarily conceptualize time in terms of space has achieved an overwhelmingly broad consensus across cognitive science at large (Núñez and Cooperrider 2013). An extensive literature has demonstrated that almost any aspect of time can be expressed using spatial metaphors (Clark 1973; Lakoff and Johnson 1980, 1999; Traugott 1978; Alverson 1994; Evans 2004, 2013; Radden 2003; Moore 2006, 2014; Bender and Beller 2014). Though space is three dimensional, the directed and linear characteristics of time tend to use one-dimensional vectorial information, which can be focused along each of the three spatial axes: verticality, laterality and sagittality.¹ One of these axes is not expressed linguistically in any (oral) language of the world, namely, the lateral axis (cf. Radden 2003) and a second

1. We are excluding from our analysis languages that use an absolute reference-frame, e.g., Australian languages such as Pormpuraawan, where time flows from East to West (Boroditsky and Gaby 2010) or Yupno for whose speakers, time flows upriver (Núñez et al. 2012).

one, the vertical axis, is rather restricted (a vast majority of the analyses published on vertical time are centered around one language, Chinese Mandarin, e.g. Scott 1989; Boroditsky et al. 2011; Yu 2012). The third axis, the sagittal, is the most frequently used in language, and the most common choice in most languages of the world, such as English. The typical deployment of time along the sagittal axis places the future in front of the speaker, and the past behind. Now, this is not the only possibility; Núñez and Sweetser (2006) have documented the opposite pattern in Aymara (past in front and future behind); more recently, Sullivan and Bui (2016) have described the same pattern in Vietnamese.²

As some scholars have acknowledged, this research leaves out one factor: the role of the type of motion verb used in the metaphor. Only quite recently have some studies begun to address this question (Feist and Duffy 2020). Extensive research has been conducted on motion verbs (see Cifuentes-Férez 2008 for an overview); however, in this area, the main topic of interest has been to show how the different elements of a motion frame (such as the Figure or Theme -the element that moves-, the Source, Path and Goal of the displacement, or the Manner of motion) are included in the linguistic description of a motion event. A great deal of attention has been given to two of these elements, the Path of motion and the Manner of motion, since, depending on how they are expressed linguistically, two broad language typologies can be distinguished (Talmy 2000): path-conflating languages (that express the path of motion along with the verb) and manner-conflating languages (that typically encode the manner of motion in the verb itself). English belongs to this latter category; there is a wealth of research on how this typological distinction affects attention to details in the description or recall of a motion scene (e.g., Berman and Slobin 1994; Filipović 2011), or even how it affects our eye-movements (Soroli and Hickmann 2011).

This rich area of research of motion, however, has not been carried over to the temporal domain, which tends to discuss a handful of verbs, typically *approach*, *go*, *come*, *pass*, or *move*. What is needed, then, is a closer examination of linguistic usage, which can tell us which motion verbs are really used in real-life examples of temporal metaphors. Ideally, we should be able to use the ever-increasing sophistication of corpus searches to gather a wide empirical base. However, automating searches of temporal expressions associated with motion verbs is not a trivial problem. On the one hand, the domain of motion can be used for many purposes: besides literal, physical motion (*we are approaching my home now*), there is also

2. A recent study by Callizo-Romero et al. (2020) has proposed that what is conceptualized in front of the speaker, past or future, depends on the amount of attention allocated to the past, that is, the degree of traditionality of a given culture.

change-of-state motion (*this has gone from bad to worse*) and temporal motion (*we are approaching the end of the movie*), to name a few. To complicate things further, depending on the intended construal, almost any concept can be included as an element of a temporal event (cf. *the beginning of our friendship can be traced back to that omelette in your house*). So, the task of automating corpus searches and thus finding only the relevant temporal usages of motion events (and not other motion usages), can be a daunting task; Feist and Duffy (2020), for example, decided to select a list of 200 random examples of verbs of motion and search manually for temporal usages.

One possible solution to this conundrum is to restrict the searches to cases that will clearly trigger a temporal reading. In order to achieve this, we have decided to focus on Time-moving metaphors, which depict temporal units as moving through time. We have chosen words that make reference to a given amount of time, such as *seconds, minutes, hours, days, weeks, months, years, and centuries*, which we have termed “Time Measurement Units” (henceforth, TMUs). If a sentence is found in which the subject is a TMU and the verb is a motion verb (e.g., *years passed quickly*), we are unambiguously in the presence of a motion-based temporal metaphorical expression.

In what follows, we show the exact procedure followed for the extraction of a wide number of examples from a corpus, trying to automatize the procedure as much as possible, in order to increase our empirical base and uncover real-world usages of motion-based temporal metaphorical expressions.

1.1 A first caveat: On the problems of deciding what a motion verb is

Though the present study will deal with thousands of examples, we will ultimately pursue a more qualitative than strictly quantitative corpus analysis, due to the fact that the categories we are dealing with are especially fuzzy and permeable. In this respect, the literature has not reached a complete agreement on what can or cannot be considered a motion verb, or what is the exact number of verbs of motion that exist in English. Adding up suggestions found in the literature (e.g., Levin and Rappaport-Hovav 1992; Levin 1993; Morimoto 2001; Snell-Hornby 1983), Cifuentes-Férez (2008) compiled a list with 376 verbs of motion; our own compilation, combining several sources, expands this list to 448 verbs (see the Appendix), which is the list we have used for our study. However, it should be noted that there are cases in which probably context is the only way to decide whether a verb (or a particular usage of that verb) should be included in the list of verbs of motion or not. On top of that, it should be noted that there are other elements apart from the verb which can trigger a motion event construal, namely, constructional

information (Goldberg 1995, 2006). Thus, a sentence such as *he was whistling down the street* does describe a motion event, though the verb *whistle* can hardly be described as a motion event; such information comes from the construction itself (a well-studied similar case is the “Caused-motion construction”; Goldberg 1995). These cases present their own set of challenges for a feasible corpus analysis, and have not been included in the present study.

2. Study: Time measurement units and motion verbs

2.1 Material and methods

2.1.1 *Corpus*

Data for the study were extracted from the NewsScape Library of Television News (<http://newsscape.library.ucla.edu/>), an audiovisual archive developed by the Red Hen Lab, an international consortium for research into multimodal communication (<https://www.redhenlab.org/home>), and hosted by the Library of the University of California Los Angeles. NewsScape has been recording TV programs since 2004, and stores them along with their associated closed captions, a transcription of the audio content. The end result is a textual corpus of around 4 billion words, extracted from over 250,000 hours of television news, mainly in English. Since the subtitles are force-aligned with the video, it is possible to search for a given verbal pattern and find the exact moment in which the expression was uttered, thus greatly facilitating the study of multimodal aspects. While the present work does not examine multimodality, the availability of a full context does offer opportunities for disambiguation beyond the mere concrete sentence. Also, the use of NewsScape provides a highly homogenous, oral text, which includes expressions used by speakers in a spontaneous, real-world context.

The analysis of the textual material was carried out with the tools provided by the CQPweb software (Hardie 2012; see Uhrig 2018 for its extension to NewsScape), which allows complex searches using a version of the corpus with different tags, including part of speech and dependencies.

2.1.2 *Procedure*

We searched the NewsScape corpus, looking for sentences in which the subject is a temporal unit followed by a motion verb. Seven time measurement units (TMUs) were selected for our searches: *minutes*, *hours*, *days*, *weeks*, *months*, *years*, and *centuries*. The word *seconds* was discarded due to its polysemy, which brought about a great number of false hits and noise. As already mentioned, we compiled our own

list of motion verbs with the help of several sources, mainly Levin (1993), Slobin (1996) and Cifuentes-Férez (2008). Our idea was to use a list as large as possible, since our specific corpus search procedure would narrow down the list in a natural way (i.e., all motion verbs that do not appear with one of our TMUs as subjects would be automatically discarded).

The exact procedure we employed is the following:

- A. First, we extracted all the cases in which each of our selected TMUs functioned as the subject of a verb.
- B. These results, which included *all* verbs that were found with the TMUs as subjects, were exported to an Excel file. Using Excel's functions, we selected those verbs that were included in our list and, therefore, had a motion-related meaning.
- C. The final selection was then revised, and false positives were excluded. Though CQPweb detects dependencies such as the subject-verb relation, there are unfortunately many cases in which the system fails to detect the correct subject-verb relationship and selects a false positive instead (e.g. *She was found the next day wandering on the street*, where the verb *wandering* has *she* as a subject, and not *day*). In some other cases, the word selected as a motion verb did not really function as a verb (e.g. *Russia was renewing a 50 year leave for military bases in Syria*) or did not have a motion-related meaning (e.g. *We've only got a few minutes left*). These cases were revised and excluded from the final analysis.

Our analysis was then carried out on this final set of sentences. Let us remind the reader again that even though we are indeed interested in carrying out a corpus study based on a large set of data, our main aim for this chapter is more qualitative than quantitative, due to the caveats listed previously. Our main goal is to show the lexical richness of the motion verbs used in spatiotemporal metaphors, as well as how speakers exploit this richness in creative ways. Our main interest lies in the use of a rich set of real examples from an oral corpus, more than an attempt at precisely quantifying the patterns, let alone providing a complete list of the verbs of motion that can be used in temporal uses.

3. Results and discussion

After the set of procedures described in the previous section, fifty six verbs that could be considered verbs of motion were extracted (see Table 1):

Table 1. List of motion verbs with TMUs as subjects found in NewsScape

advance	approach	arise	arrive	blow	carry
come	crawl	creep	depart	descend	drag
draw	drive	ensue	enter	fall	fly
follow	go	hasten	head	inch	jump
launch	lead	lean	leave	limp	line
linger	march	move	overtake	pass	pop
proceed	progress	race	reach	return	revolve
rise	roll	rush	sail	skip	slide
slip	spin	stampede	strut	swim	unfold
unravel	zoom				

An initial look at this list already tells us unequivocally that the lexical diversity found in real-world usage of temporal metaphors with motion verbs goes well beyond the handful of cases usually mentioned in the literature. This extensive list of verbs makes reference to very different events of motion. Initially, one could think that the verb-type that would prove more useful for temporal metaphor usage would be path-verbs. In the mappings normally mentioned in the literature (Lakoff and Johnson 1980, 1999; see also Núñez and Sweetser 2006), the different elements that structure the act of physical displacement are put into correspondence with parallel elements in a temporal scene. In this way, the Source of the motion becomes the Beginning of the temporal stretch, the Goal of the journey becomes the End; the amount of distance covered is projected onto the amount of time elapsed since the temporal stretch began, and the amount of distance to be covered until the journey ends is projected onto the amount of time until the temporal period ends, among other possibilities (see Figure 1).

When looking at this type of mappings, the verbs that profile these elements (source, path, goal, distance, or direction) belong to the class of path-verbs (Talmy 2000). This is to be expected, since these elements form the “basic motion event” described by Talmy (2000: 215). However, this basic structure is enriched with a ‘Co-event’, which includes the Cause or the Manner of the motion. These additional elements are the ones which are not often mentioned when explaining the mappings between motion and time.

In our list we do find the path verbs typically mentioned in the literature (e.g., *move*, *go*, or *approach*), along with many other path verbs. But we also find a significant number of manner-of-motion verbs. In fact, these classes are almost equally

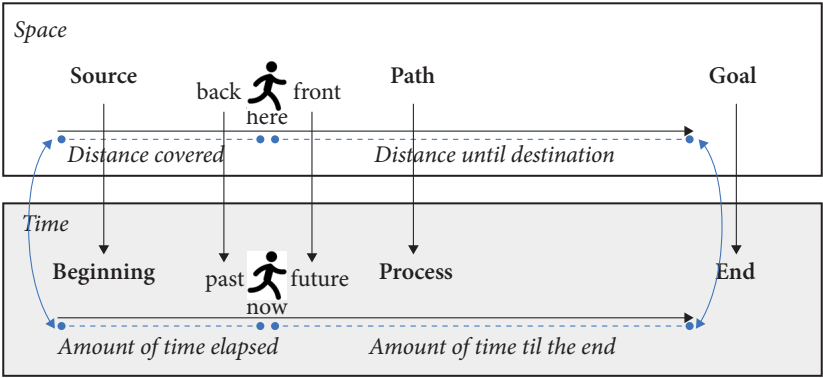


Figure 1. Some mappings between space and time (in an Ego-moving perspective)

distributed: there are 29 types of path-verbs and 27 types of manner verbs. It should be immediately noted that the frequency of these types (i.e., the number of tokens) is very different, and there is a sharp distinction between high-frequency verbs and low-frequency verbs in terms of their ascription to the path or the manner categories. Thus, the 29 path-verb types have 17646 hits (95.7%), while the 27 manner-of-motion verb types have a vastly lower frequency: 785 hits (4.25%). Actually, a small group of merely 11 verbs are actually responsible for 95,1% of the hits found. Out of these 11 extremely frequent motion verbs, 9 of them are Path-verbs (*go, come, pass, progress, arrive, unfold, move,*³ *draw, and approach*). The remaining 46 verbs have a much lower frequency. If we look at the 20 least-frequent verbs (1 to 3 hits), 14 of them are manner verbs. In what follows, we will examine a bit more closely the behavior of these verbs in the temporal realm, starting with path verbs.

3.1 Path verbs and their temporal meanings

We have found 29 verbs that could be considered path-verbs, namely:

Table 2. List of path-verbs found with TMUs as subjects

advance	approach	arise	arrive	carry	come
depart	descend	draw	ensue	enter	fall
follow	go	head	lead	lean	leave
line	move	overtake	pass	proceed	progress
reach	return	rise	unfold	unravel	

3. *Move* is actually often listed as a “neutral” verb, which merely indicates the fact of motion.

These verbs, in the physical motion domain, profile the different elements of the motion event, the Source, the Path or the Goal of the motion. For example, some of them refer to the mere act of physical displacement and motion along the path (*advance, ensue, go, move, pass, proceed, progress, unfold, unravel*); another group, like *arrive* or *reach*, imply finishing the displacement and getting to the Goal; *approach* also involves the Goal (indicating that the distance to the Goal is diminishing), and so does *head*. This information can be enriched; in *come* the Goal coincides with the deictic center (i.e., the position of the speaker); in *enter* the motion towards the Goal is combined with an image-schema (that is, the Goal is the interior of a CONTAINER image-schema) and in *carry*, the Figure is moving some object in the same direction of the mover. Finally, verbs like *leave* or *depart* highlight the initial position of the moving Figure, that is, the Source.

The usage of these verbs in the temporal domain is not completely straightforward, at least not uniformly so. The central group can be found making simple reference to the passage of time, just by mentioning that something is moving along a path. So, we find examples such as:

- (1) After that year **passes**, they turn 20.
- (2) I think as the hours **advance** it will be clearer.
- (3) And then the weeks **go** by and people ignore Syria again.
- (4) As the years **moved** on, Led Zeppelin continued to soar.
- (5) Hopefully you will become more acquainted with the facts as the days **proceed**
- (6) As the hours **unfold**, we 're going to learn a lot more about this.
- (7) Larry, I think as the next few days **unravel**, there will be a general consensus.
- (8) And this is one that Americans will certainly be more and more interested in as the days **ensue**.
- (9) As the months **progressed**, I needed to do something to keep me busy.

Alongside verbs that simply refer to something moving along a path, we find *carry*, that adds some extra information to this basic schema:

- (10) I think Valentine's Day **carries** a lot of pressure, for a lot of people.

As shown in Example (10), *carry* implies the passage of time in the sense of other verbs (*pass, progress, advance...*); however, it has the peculiarity that here the moving Figure (in this case Valentine's Day) includes in its displacement some object that moves along with it; in the temporal case this something is an emotional or affective load. *Carry* is usually employed with specific time periods that have a certain sentimental meaning; some of the examples we found include Valentine's Day (as in Example (10)), Black History Month or Jackie Robinson Day.

In a rather transparent way, path-verbs that inform about having reached the goal (and thus, having finished the journey) are used in the temporal domain to indicate that the temporal stretch has finished; such is the case of *reach* or *arrive*:

- (11) Beckham's Week **reaches** its pinnacle in two nights.
- (12) As the hour **arrives** for Chris and Christie to take the oath.

In both (11) and (12), there is the indication that a given temporal stretch has come to an end, it has finished; the precise moment that marks the end of the temporal period is indicated by a given TMU (an hour, a day, a week, a year...).

The temporal behavior of verbs which make reference to motion towards the Goal is not so transparent. As we mentioned, verbs like *approach* or *draw* refer to the diminishing distance until a goal is reached; their temporal meaning refers to the diminishing amount of time until the end of the process is met. They are therefore typically used as an indication that we are about to end the process; that is why many of the temporal instances could be seen as warnings about the imminence of a given event:

- (13) As the new year **approaches**, so many of us make our resolutions.
- (14) As the hour **draws** near, the prayers get more intense.

A more specific use is found with the verb *to head*, which is most frequently found in TV Weather Reports:

- (15) A beautiful day is **headed** our way.

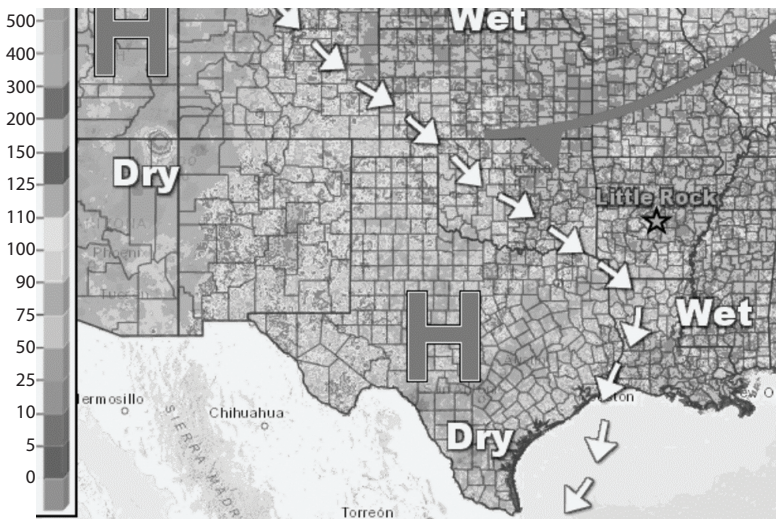


Figure 2. Motion of a high-pressure system

In the most typical setting, the TV meteorologist is reporting which type of weather will be met the following day, and Example (15) is a very natural statement: there is a day *coming* (in time) which will be sunny and perfect. This is caused by the direction that a specific meteorological condition, a high-pressure system, or anticyclonic area (often displayed in weather maps as an H, as in Figure 2), is following; that is, there is an overlap of the physical direction of the atmospheric configuration and the temporal direction of the TMU referred (the next day), which become fused in this way in Example (15).

Another verb that implies getting to the Goal is *come*. Here, the Goal coincides with the deictic center (normally represented by the speaker's position), as in Example (16):

- (16) Unfortunately, at all these airports nationwide it will only get worse as the summer travel months **come**.

In the case of *enter* there is a combination between motion towards a Goal and a CONTAINER image-schema. Here, getting to the Goal implies going inside something (generally another time period). See Example (17):

- (17) As the school year **enters** its final months, many long-term projects are coming to an end.

The temporal meaning of motion verbs that make reference to a Source is harder to explain. Let us consider the following examples, with *leave* and *depart*:

- (18) I was never happier to see a year **leave** before 2010 which was a rough year.
 (19) You marry for love, you are a good husband, children arrive, years **depart**.

In these cases, the situation involves adding information about the deictic center. The deictic center corresponds to a place (here) and a moment (now). So, if a year leaves (or departs), it means that the deictic center (the now) is then a source, and the temporal unit *moves* to get *away* from us.

Another example worthy of mention is the verb *return*, which means roughly "to come or go back to a previous place" (Cambridge Dictionary, n.d.). This may seem confusing at first: years may go and a given year may come, but how can a year return? The answer is following: when used with a temporal unit, *return* means that the characteristics of a certain moment, situation or period of time that has previously happened are experienced again. So, the use of this verb has the peculiarity that it can only be employed to refer to something that has happened before – in the past –, then stopped occurring, and, finally, takes place again:

- (20) When the good years **return** you should be running surpluses in my view.

- (21) Cooler days **return** as we head into the weekend with temperatures dropping into the low 70s.

As shown in Examples (20) and (21), for good years to return it is necessary to have gone through good years before; if *cooler days return*, that necessarily presupposes that we have experienced cooler days previously.

The case of path-verbs that include a vertical component can initially seem more baffling. What could possibly be the meaning of verbs such as *arise*, *rise*, *fall*, and *descend* in a temporal domain? The explanation becomes apparent if we look at the specific Figure which typically appears in these expressions: in most of these cases it corresponds to *day*. What speakers seem to be doing is using their encyclopedic knowledge about *day* and incorporating some of its characteristics to a more creative reference to the start or the end of a day. It should be noted that the word *day* is actually polysemous in English: it can refer to the 24-hour period that the Earth takes in rotation, or it can refer to the part of the day where there is sunlight (and then it is opposed to *night* which corresponds to the other half day in the first 24-hour sense). The day begins when the Sun rises, and finishes when it goes down at sunset. This could explain why we find examples like the following:

- (22) A New Day **rises** in a sport that is continuing to rebuild from years of drought tainted drove.
- (23) We long to see your day **arise**.
- (24) Another dark day **falls** on the city of light.
- (25) Otherwise, the day **descends** and you didn't get back to yourself.

The vast majority of hits (which are nonetheless not very frequent) are found with the TMU *day*, coherent with this special meaning of *day* as 'daylight', which justifies its rising with dawn (start of the day) and its subsequent descent (end of the day).

The verbs *to follow* and *to overtake* are more specific path verbs, which could be said to involve two Figures. *Follow*, by itself, is the most typical way to refer to sequential ordering (e.g., *four is followed by five*). Thus, when referring to the sequential ordering of two temporal landmarks, it is a very natural option (Example (26)):

- (26) And, by the way, yesterday, interesting, was national drink beer day, so is it a coincidence that national coffee day **follows** national drink beer day?

On its part, *overtake* is slightly more complex. When used to talk about time, it combines two of its motion-related meanings: 'to come from behind and move in front of', and 'to happen suddenly and unexpectedly' (Cambridge Dictionary, n.d.).

- (27) And, Peter, we're noticing a lot of empty seats down front. Have Summer hours overtaken the press corps already?

In this case, the direct object (*press corps*) works as a deictic center located at a certain point along a path where a temporal unit (*summer hours*) is progressing. At some point, the temporal unit goes past the deictic center. Therefore, if summer hours overtake you it means that a specific period of time has already gone through you. Furthermore, this verb seems to add some extra subjective meaning of surprise or unawareness.

Finally, the verb *line* refers to the shape of the path, i.e., a layout or arrangement along the source-path-goal scheme (or timeline). It is like placing a TMU in a certain way along the path:

- (28) You got a big Father's Day lined up? Everybody excited about Father's Day?

If you have a day lined up it means that you have already organized or planned what you are going to do during that time period. If a day is made up of a succession of activities, having a day lined up means that you have given some kind of order to those activities. The use of this verb is specially anchored on the idea of a timeline in which different actions take place in a sequential order. This timeline facilitates the understanding of the time-space mappings by presenting temporal relations directly as spatial relations.

3.2 Manner verbs and their temporal meanings

As we mentioned previously, it could be considered strange to find so many verbs that include manner of motion information; what could possibly be the role of this information in a temporal domain? The domains of motion and time are intrinsically very different. While time is abstract, unidimensional and moves forward in just one direction (corresponding to the flow of time, which cannot go back), the domain of physical motion is less constrained: several objects can move at different speeds, the direction is much freer, including changes of course, i.e., several directions in one displacement, and there is a richness of features which are added to the description, such as the cause of the motion and, most notably, its manner (see Cifuentes-Férez 2008 and Bohnemeyer et al. 2007 for a review). Scholars working in the area of manner of motion (e.g. Özçaliskan and Slobin 2003; Slobin et al. 2014) have identified a great number of features which are included in this broad manner-of-motion category. Some of the different features that are mentioned include the type of motor pattern (e.g., different ways of walking, running or jumping), the effort needed to perform the motion (e.g., *drag*), the (possibly hidden) purpose of the motion, i.e. secretive motion (e.g. *crawl*, *creep*, *sneak*); whether the

motion is carried out for pleasure (*hike, trek*) or with no specific aim (*roam, saunter*); whether the motion is smooth (*glide, slide*) or violent (*charge, dash*), whether the motion finds obstacles (*stumble, trip*), or is unsteady (*totter, stagger*), joyful or playful (*scamper, frolic*); information about the rate of motion (*hurry, dash, zoom*), or the physical or psychological state of the Figure (*limp, traipse, stroll, swagger*), etc.

Needless to say, these features are not mutually exclusive. For example, a verb like *limp* activates a complex scene, which involves not only a type of gait (uneven and unsteady), but a (limited) speed, and a physiological state of the Figure. The fact that several of these meanings can be simultaneously present in a given case helps explain some of the motion-to-time mappings found. Actually, many of these verbs activate very rich encyclopedic information. It is well known that single words can sometimes activate a whole frame (take for example, the word *ransom* which activates a very complex scene, involving a Victim taken prisoner by a Kidnapper who demands money (the Ransom) to the family or friends to liberate the Victim, often threatening to hurt him/her if the Police are warned). Thus, the phrase *a limping deer* evokes not only the features of uneven gait, slow progress, and physiological state of the deer, but a sense of vulnerability, since the main survival strategy of deer is quickly running away from predators and a limping deer is seen as an easy prey. As we shall see, some of this encyclopedic knowledge can play a very important role in the usage of a given manner of motion verb, explaining some of the meanings which are activated in the temporal domain. Let us then take a look at the list of 27 verbs of manner of motion found:

Table 3. List of manner-verbs found with TMUs as subjects

blow	crawl	creep	drag	limp	drive	fly
hasten	inch	jump	launch	rush	linger	march
pop	race	revolve	roll	strut	sail	skip
slide	slip	spin	stampede		swim	zoom

A careful examination of the real-world examples found reveals that the main reason to use a manner of motion verb in the domain of time is to express our internal perception of the passing of time. The subjective perception of time is indeed a deep topic, a universal human experience whose study started in the 1800s, and that has interested philosophers, psychologists, neuroscientists, or linguists, to name a few. There are a wide range of explanations for this universal subjective experience of the passage of time. For example, there is an agreement that emotional experience plays a very relevant role: emotions can alter our perception of time, slowing it down (as famously happens with fear, but also awe) or the opposite (e.g. happiness – as the saying goes *time flies when you are having fun*). Another possible cause for the subjective perception of time is age: as we grow old, we tend to experience time as

going faster. The expression of impatience implicit in the question *are we there yet?* will be familiar to anybody who has travelled with children, who tend to perceive the passage of time differently from adults (see Droit-Volet and Meck 2007 for a review). This subjective perception of time passing at different speeds is indeed a universal and powerful experience. Thus, it is not so strange that the main group of manner of motion verbs used to describe time passage should be dedicated to expressing different variations of such an experience. For some reason, more verbs used to express the rapid passage of time (19 types), rather than a slow one (7), have been found.

3.2.1 *Group A: Manner of motion verbs to indicate fast passage of time:*

Rush, hasten, blow, pop, race, drive, fly, swim, march, skip, roll, rush, sail, slide, slip, spin, revolve, stampede, zoom

All these verbs are used to convey the meaning that time is experienced as passing quickly. Most of them can be considered fairly neutral and (arguably) convey mainly the pure subjective experience of time passing quickly:

- (29) It's been a good show. Two hours **fly** by when you're having fun.
- (30) Like as the waves make towards the pebbled shore, so do our minutes **hasten** to their end.
- (31) When he sat by our bed, the days **rushed** like water.
- (32) As the years **zoom** by.
- (33) They were asking the restaurant chef to go ahead and make tea and coffee as the hours **drove** on for those whom they weren't killing.
- (34) I want to thank the president who has been on the phone with us today for his statement released to you a little while ago, as well as the statements he made to me earlier – much earlier today as the hours **raced** by.
- (35) And, as the years **blew** by, as children were born and hair turned gray, Russell Jordan became a distant and fading memory to all but a very few.

These cases of course differ in frequency; the most established of them is *fly*, which is the standard way to make reference to the rapid passing of time, while others (e.g., *zoom*) are much less frequent. The verb *run* is a peculiar case, because even though it is very frequent, its core manner-of-motion meaning has been “bleached out”, and in most of the cases it is used as a way of making reference to the passage of time, with no implication of speed (as in Example (36)); in this sense, it could be listed with other verbs such as *progress* or *proceed*:

- (36) The Fox News reporting hour **runs** tomorrow night at 10:00 p.m. Eastern and then again Sunday.

The rapid rate meaning, however, is there, and can be activated if necessary, as we see in the poem by W. H. Auden, *As I walked out one morning*:

- (37) The years shall **run** like rabbits,
 For in my arms I hold
 The Flower of the Ages,
 And the first love of the world.

Nevertheless, as we have mentioned before, manner-of-motion verbs are complex entities, and in most cases (probably including some of the examples already mentioned) this swiftness feeling is complemented with other meanings. For example, verbs like *slide* or *slip* describe a physical motion in which there is a lack of control (no traction) on the part of the Figure. This translates in the temporal uses as lack of control over the events happening during the time period:

- (38) As the hours **slip** by / It's easy to let the day **slip** away...
 (39) As the days **slide** into one another...

If the day *slides by*, things are happening in a smooth and continuous fashion without our intervention or control; this lack of involvement also translates as lack of awareness (the day passes very quickly almost without us noticing its passage). The use of the verb *blow* (e.g., *And, as the years blew by, as children were born and hair turned gray, Russell Jordan became a distant and fading memory to all but a very few*) indicates a similar lack of control: the day passes very quickly without any control over the events happening.

The type of motion thus adds additional nuances to the interpretation of the verb in the temporal realm beyond the perceived speed of time.

Spin is another example of a verb that indicates quick motion, in this case while turning around:

- (40) As the day **spins** on...

3.2.2 Group B: Manner of motion verbs to indicate slow passage of time:

Crawl, creep, drag, inch, limp, linger

As in the previous case, some of these verbs refer to the subjective perception of time passing slowly in a more "direct" way, as would be the cases of the verbs *inch* or *linger*:

- (41) With election day **inching** closer, Hilary Clinton is bringing all allies together.
 (42) We'll see what happens as the day **lingers** on, but, boy, it's been a tough time on Wall Street for the last couple of weeks or so.

Most of the other verbs in this group add some special meaning; for example, the verb *drag* adds the meaning of tediousness; not only time passes slowly, but nothing much is happening:

- (43) The first full day **dragged** on with no verdict.

Two rather unexpected (i.e., emergent) meanings are found in the verbs *crawl* and *creep*. One of the physical meanings of *creep* is “to move slowly, quietly, and carefully, usually in order to avoid being noticed” (Cambridge Dictionary, n.d.), thus, when *a week creeps up on you*, you suddenly realize that the week has passed with little awareness on your part. A similar explanation can be provided for the verb *pop*, which activates this feeling of surprise, of not having realized that time has passed; however, while this realization is slow in the case of *creep*, it is sudden in the case of *pop*:

- (44) As the days **creep** closer to Thanksgiving itself.

- (45) Valentine’s Day **pops** up and all of a sudden, it’s thundershowers.

The verb *crawl* is another example of additional meanings added to the slow and difficult progress:

- (46) As the day **crawls** on, he meets the array of misfits who inhabit the diner.

The meaning of *crawl* is “to move slowly or with difficulty especially with your body stretched out along the ground or on hand and knees” (Cambridge Dictionary, n.d.). Thus, in an example such as (46) you are invited to imagine the day passing with a number of difficult (and possibly boring) chores.

Finally, as we mentioned in the Introduction, the use of the verb *limp* conveys some special meanings in the temporal domain, which have their origin in the rich encyclopedic information evoked by the scene depicted. Consider example (47):

- (47) That may help as the day **limps** along.

The meaning of this example in the specific context found seems to imply that the experience of the passage of time during this day is not only slow, but also carries along a sense of difficulty and tediousness, evoked possibly from the mental simulation of a person proceeding with difficulties along a given physical terrain.

3.2.3 Other manner-of-motion verbs

Finally, the verb *revolve*, which means “to move in a circle or a curve around a central point” (Cambridge Dictionary, n.d.), uses this physical meaning to describe the main event (or the most important for the speaker) of a specific period of time; this event serves as a central point, activating the IMPORTANT IS CENTRAL metaphor (Sweetser 1995):

- (48) My whole year **revolves** around San Diego COMIC-CON.

Another example of a different manner-of-motion verb is *roll*, which denotes a smooth and continuous motion and so in example (49) we interpret events as happening one after another, with a sense of recursion (as a wheel turning) and a certain inevitability:

- (49) As the campaign day **rolled** on.

A very similar analysis could be applied to the verb *to march*:

- (50) As the 19th century **marched** on, Thomas Jefferson's dream of an America of Yeoman farmers gave way to Hamilton's dream of the power of finance and Factory.

3. A test of true creativity: The *Week* examples

As a final example of the diversity of lexical creativity, we examine a number of examples that push the boundaries of acceptability in manner-of-motion verbs temporal usage. These examples take information from the source domain and exploit it in highly creative ways; thus the manner-of-motion verb in the temporal realm is tinged with meanings from the scene evoked by the physical manner of motion verbs. Our first example can be seen in (51):

- (51) They've had a good time as Fleet Week **sails** out of the city.

The verb *to sail* is one of Levin's "vehicle verbs" (Levin, 1993); it describes motion using a boat as a vehicle, that is motion through water being propelled by wind. The use of such a specific motion verb in a temporal context seems unlikely at first. It is only by its combination with a specific subject, *Fleet Week* that the combination becomes more suitable. The Fleet Week is a US Navy tradition in which active military ships dock in a variety of major cities for one week. Thus, this is an opportunity to refer to the passage of this week with the verb *sail*, which also includes in its meanings "to move quickly, easily, and confidently" (Cambridge Dictionary, n.d.). This verb can also be found with other motion contexts, such as *Fleet Week sails into NY/San Francisco*; in this case, the phrase makes reference to the start of the week; to refer to the passage of the week we can find examples such as *LA Fleet Week sails on with different activities*.

Another similar example of these creative and adaptive cases is found with the verb *swim*. Consider Example (52):

- (52) And now, Discovery's Shark Week **Swims** on.

Shark Week is a TV programming-block, organized by Discovery Channel, in which all the programs shown are related to sharks. Other examples can be found in this context, such as *This year's Discovery Channel's Shark Week swims onto television screens Sunday August 9th* or just *Shark Week swims closer*, meaning that the amount of time left until this TV event happens is getting shorter.

Next, we will examine two examples with *Fashion Week*. Fashion Weeks are events organized by the fashion industry where the main designers showcase their latest creations. There are different fashion weeks in the different capitals of the world (the main ones are New York, Paris, Milan, and London, but there are many other capitals where these events are held). In a typical fashion show, the models walk along a narrow passage, known as *catwalk*; the way in which the models walk is strongly associated to this type of event (it seems that there are in fact four types of runway walks, that is, of different walking styles). That explains the usage found in example (50):

(53) New York Fashion Week **struts** its stuff in the big apple.

The definition of *strut* is “to walk in a proud way trying to look important” (Cambridge Dictionary, n.d.). Though of course it is not equivalent, it is easy to see that the walking style of fashion models is not so far away from this definition. It is thus not so strange that we can use this motion verb to refer somewhat ironically to the start of the New York Fashion Week in Example (53). As we saw before, more possible examples can be found in Google, such as *New York Fashion Week struts on*.

A slightly quirkier way of referring to the same event has been found with the use of the verb *stampede*, as seen in Example (54):

(54) Fashion Week **stampeded** through New York City where the world's top designers set the trends for everything you'll want to wear next year.

The definition of *stampede* obviously includes information that is not helpful in this situation: according to a dictionary definition, when animals or people stampede, they all move quickly in the same direction, often because they are frightened. Example (54) can thus be considered as a comical or ironic depiction of the event happening; what we understand is that the week has already passed, and it did so in a forceful and energetic way (a meaning which is not temporal).

This type of creative usage is in fact very extended, and some of the verbs we have listed with more standard meanings (referring to the subjective perception of the passage of time) can sometimes be found with these contextual, adaptive meanings. Such is the case of the verb *blow* whose usage in Example (55) makes opportunistic use of the atmospheric sense of the sentence it is inserted in:

(55) The New Year **blew** into the west coast with a fury. Snow so heavy, it sank boats and collapsed roofs in North Idaho.

4. Conclusion

Throughout this chapter we have addressed the lexical richness of the motion verbs used in the conceptualization of time. Our results show that the few verbs mentioned in the literature (*approach, come, go, pass*) do not pay justice to the great wealth of lexical choices used by speakers. Language users are far more creative than it has been assumed so far. The inclusion of rich spatial knowledge in temporal expressions triggers rich emergent meanings that are often difficult to predict by current metaphorical models.

We found 57 different motion verbs (29 indicate path and 27 indicate manner) that refer to very different events of motion. Even though path verbs often describe the basic structure of motion events and reflect (more or less) easily direct time-space mappings, throughout this chapter we have shown that manner verbs are quite recurrent and extremely productive, especially with the purpose of expressing our subjective experience of the passing of time. In fact, most of the times that a manner verb is used with a temporal expression, its main role is to display this subjectivity. All of the 28 different manner verbs that we have found provide rich details about the speaker's internal perception of time, often being linked to a specific situation.

The fact that, when used with temporal units, motion verbs activate new semantic information that generates emergent meanings proves that time has conceptual structure of its own that cannot be derived solely from the domain of space. This implies that the relation between both domains is not unidirectional (from space to time) but dynamic and opportunistic. Which theory is better suited to deal with these emergent meanings is a matter of debate. It seems that it would be much easier for a flexible network model to account for these opportunistic emergent meanings than for a transfer model based on fixed metaphorical projections, but this discussion is beyond the goals of this study, which has been more centered on describing a wealth of facts that had gone unexamined so far.

The creative nature of this type of constructions shows the great difficulty involved in establishing a closed list of the different motion verbs used in time-space metaphors. This is, as we have seen, an open-ended matter; there is no clear limit to what motion verbs can be used in a temporal domain. There is a rich world out there which speakers can exploit influenced by external factors such as the communicative context, genre, etc.

The present chapter opens up a new window for new upcoming studies. Future research could be carried out to examine more closely how these emergent meanings are understood by speakers by means of different experimental techniques, or examine the possible differences among the different temporal units (e.g. whether minutes behave or move in different ways as compared to months or years, etc.),

or to deepen in the multimodal information in which these constructions are embedded.

There are indeed still many details to be covered; this has been a very quick review, just scratching the surface to the full meaning triggered by these verbs. To start with, the meanings discussed in this paper are to be taken as (we would hope “well-informed”) suggestions on the part of the authors. As suggested in the previous paragraph, further empirical work would be needed for confirmatory purposes, in which, for example, a representative group of native speakers are asked about the emergent meanings proposed herein to find out about their level of agreement as well as the relative relevance of their presence. Then, there are many other interesting topics that need to be addressed. To provide but one example, the verb *to roll* has been found in combination with a great variety of prepositions in these temporal usages: a day can *roll at 4:00* or *roll by*, *roll around*, *roll on*, *roll under*, *roll in*, *roll on*, *roll through*... Surely, these combinations are not arbitrary and each of them activates a slightly different simulation. The same has been noticed for many other verbs found in our search. Many of these meaning variants could also be captured in terms of frame semantics, given the encyclopedic richness inherent in frame-semantic knowledge.

The present chapter is one of the first corpus-based approaches to the study of the spatial conceptualization of time. The great variety of verbs found shows the intricacies associated with the conceptualization of abstract concepts such as time. In this study we show, with the help of big data tools, that meaning construction proves to be much more complex than it was previously assumed, with sensorimotor and non-perceptual information interacting in dynamic ways. There is still a long way to go before the integration processes that give rise to the many emergent meanings that opportunistically arise from this type of metaphorical constructions can finally be unraveled; this study should be considered as a first step in that journey.

Funding

This work was supported by the Spanish Ministerio de Ciencia, Innovación y Universidades, Agencia Estatal de Investigación and FEDER/UE funds (grant number PGC2018-1551 097658-B-100) and the Fundación Séneca, Región de Murcia (Spain) (grant number 20743/FPI/18).

References

- Alverson, H. (1994). *Semantics and experience: Universal metaphors of time in English, Mandarin, Hindi, and Sesotho*. Baltimore: Johns Hopkins University Press.
- Bender, A., & Beller, S. (2014). Mapping spatial frames of reference onto time: a review of theoretical accounts and empirical findings. *Cognition*, 132, 342–382. <https://doi.org/10.1016/j.cognition.2014.03.016>
- Berman, R., & Slobin, D. (1994). *Relating events in narrative: A crosslinguistic developmental study*. Mahwah: Lawrence Erlbaum.
- Bohnenmeyer, J., Enfield, N., Essegbey, J., Ibarretxe-Antunano, I., Kita, S., Lüpke, F. & Ameka, F. (2007). Principles of event segmentation: The case of motion events. *Language*, 83(3), 495–532. <https://doi.org/10.1353/lan.2007.0116>
- Boroditsky, L., Fuhrman, O., & McCormick, K. (2011). Do English and Mandarin speakers think about time differently? *Cognition*, 118(1), 123–129. <https://doi.org/10.1016/j.cognition.2010.09.010>
- Boroditsky, L., & Gaby, A. (2010). Remembrances of times East: Absolute spatial representations of time in an Australian Aboriginal community. *Psychological Science*, 21(11), 1635–1639. <https://doi.org/10.1177/0956797610386621>
- Callizo-Romero, C., Tutnjević, S., Pandza, M., Ouellet, M., Kranjec, A., Ilić, S., Gu, Y., Göksun, T., Chahboun, S., Casasanto, D., & Santiago, J. (2020). Temporal focus and time spatialization across cultures. *Psychonomic Bulletin & Review*, 27, 1247–1258.
- Cifuentes-Férez, P. (2008). Motion in English and Spanish: A perspective from cognitive linguistics, typology and psycholinguistics. PhD dissertation, University of Murcia, Spain.
- Clark, H. H. (1973). Space, time, semantics, and the child. In T. E. Moore (Ed.), *Cognitive development and the acquisition of language* (pp. 28–63). New York: Academic Press.
- Cambridge Dictionary. (n.d.). Crawl. In *dictionary.cambridge.org*. Retrieved December 4, 2020, from <https://dictionary.cambridge.org/dictionary/english/crawl>
- Cambridge Dictionary. (n.d.). Creep. In *dictionary.cambridge.org*. Retrieved December 4, 2020, from <https://dictionary.cambridge.org/dictionary/english/creep>
- Cambridge Dictionary. (n.d.). Overtake. In *dictionary.cambridge.org*. Retrieved December 4, 2020, from <https://dictionary.cambridge.org/dictionary/english/overtake>
- Cambridge Dictionary. (n.d.). Revolve. In *dictionary.cambridge.org*. Retrieved December 4, 2020, from <https://dictionary.cambridge.org/dictionary/english/revolve>
- Cambridge Dictionary. (n.d.). Sail. In *dictionary.cambridge.org*. Retrieved December 4, 2020, from <https://dictionary.cambridge.org/dictionary/english/sail>
- Cambridge Dictionary. (n.d.). Strut. In *dictionary.cambridge.org*. Retrieved December 4, 2020, from <https://dictionary.cambridge.org/dictionary/english/strut>
- Droit-Volet, S., & Meck, W. H. (2007). How emotions colour our perception of time. *Trends in Cognitive Sciences*, 11, 504–513. <https://doi.org/10.1016/j.tics.2007.09.008>
- Evans, V. (2004). *The structure of time*. Amsterdam: John Benjamins. <https://doi.org/10.1075/hcp.12>
- Evans, V. (2013). *Language and time: A cognitive linguistics approach*. Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9781107340626>
- Feist, M. I., & Duffy, S. (2020). On the path of time: Temporal motion in typological perspective. *Language and Cognition*, 12(3), 444–467. <https://doi.org/10.1017/langcog.2020.7>
- Filipovic, L. (2011). Speaking and remembering in one or two languages: Bilingual vs. monolingual lexicalization and memory for motion events. *International Journal of Bilingualism*, 15(4), 466–485. <https://doi.org/10.1177/1367006911403062>

- Goldberg, A. (1995). *Constructions: A construction grammar approach to argument structure*. Chicago: University of Chicago Press.
- Goldberg, A. (2006). *Constructions at work: The nature of generalization in language*. Oxford: Oxford University Press.
- Hardie, A. (2012). CQPweb – combining power, flexibility and usability in a corpus analysis tool. *International Journal of Corpus Linguistics*, 17(3), 380–409. <https://doi.org/10.1075/ijcl.17.3.04har>
- Lakoff, G., & Johnson, M. (1980). *Metaphors we live by*. Chicago: Chicago University Press.
- Lakoff, G., & Johnson, M. (1999). *Philosophy in the flesh: The embodied mind and its challenge to Western thought*. New York: Basic Books.
- Levin, B., & Rappaport, M. (1992). The lexical semantics of verbs of motion: the perspective from unaccusativity. In I. M. Roca (Ed.), *Thematic structure: Its role in grammar* (pp. 247–269). Berlin: Mouton de Gruyter. <https://doi.org/10.1515/9783110872613.247>
- Levin, B. (1993). *English verb classes and alternations: A preliminary study*. Chicago: University of Chicago Press.
- Moore, K. (2006). Space-to-time mappings and temporal concepts. *Cognitive Linguistics*, 17, 199–244. <https://doi.org/10.1515/COG.2006.005>
- Moore, K. (2014). *The spatial language of time: Metaphor, metonymy and frames of reference*. Amsterdam: John Benjamins. <https://doi.org/10.1075/hcp.42>
- Morimoto, Y. (2001). *Los verbos de movimiento*. Madrid: Visor.
- Núñez, R., & Cooperrider, K. (2013). The tangle of space and time in human cognition. *Trends in cognitive sciences*, 17(5), 220–229. <https://doi.org/10.1016/j.tics.2013.03.008>
- Núñez, R., Cooperrider, K., Doan, D., & Wassmann, J. (2012). Contours of time: Topographic construals of past, present, and future in the Yupno Valley of Papua New Guinea. *Cognition*, 124(1), 25–35. <https://doi.org/10.1016/j.cognition.2012.03.007>
- Núñez, R., & Sweetser, E. (2006). With the future behind them: Convergent evidence from Aymara language and gesture in the crosslinguistic comparison of spatial construals of time. *Cognitive Science*, 30(3), 401–450. https://doi.org/10.1207/s15516709cog0000_62
- Özçalışkan, Ş., & Slobin, D. (2003). Codability effects on the expression of manner of motion in Turkish and English. In S. Özsoy, D. Akar, M. Nakipoğlu-Demiralp, E. Erguvanlı-Taylan & A. Aksu-Koç (Eds.), *Studies in Turkish linguistics* (pp. 259–270). Istanbul: Boğaziçi University Press.
- Radden, G. (2003). The metaphor TIME AS SPACE across languages. *Zeitschrift für Interkulturellen Fremdsprachenunterricht*, 8(2/3), 226–239.
- “Revolve”. N.D. *Cambridge Dictionary*. Cambridge University Press. <https://dictionary.cambridge.org/dictionary/english/revolve> Accessed 4 Dec 2020.
- “Sail”. N.D. *Cambridge Dictionary*. Cambridge University Press. <https://dictionary.cambridge.org/dictionary/english/sail> Accessed 4 Dec 2020.
- Scott, A. (1989). The vertical dimension and time in Mandarin. *Australian Journal of Linguistics*, 9, 295–314. <https://doi.org/10.1080/07268608908599424>
- Slobin, D. (1996). Two ways to travel: Verbs of motion in English and Spanish. In M. Shibatani & M. A. Thompson (Eds.), *Grammatical constructions: Their form and meaning* (pp. 195–233). Oxford: Clarendon Press.
- Slobin, D., Ibarretxe-Antuñano, I., Kopecka, A., & Majid, A. (2014). Manners of human gait: A crosslinguistic event-naming study. *Cognitive Linguistics*, 25(4), 701–741. <https://doi.org/10.1515/cog-2014-0061>

- Snell-Hornby, M. (1983). *Verb-descriptivity in German and English: A contrastive study in semantic fields*. Heidelberg: Carl Winter Universitätsverlag.
- Soroli, E., & Hickmann, M. (2011). Language and spatial representations in French and in English: Evidence from eye-movements. In G. Marotta, A. Lenci, L. Meini & F. Rovai (Eds.), *Space in language* (pp. 581–597). Pisa: Editrice Testi Scientifici.
- Sullivan, K., & Bui, L. T. (2016). With the future coming up behind them: Evidence that time approaches from behind in Vietnamese. *Cognitive Linguistics*, 27(2), 205–233. <https://doi.org/10.1515/cog-2015-0066>
- Sweetser, E. (1995). Coalignment in metaphorical systems. Paper presented at the *4th International Cognitive Linguistics Conference*, UNM-Albuquerque.
- Talmy, L. (2000). *Toward a cognitive semantics, vol. I: Concept structuring systems*. Cambridge, MA: MIT Press.
- Talmy, L. (2000). *Toward a cognitive semantics, vol. II: Typology and process in concept structuring*. Cambridge, MA: MIT Press.
- Traugott, E. C. (1978). On the expression of spatio-temporal relations in language. In J. H. Greenberg, C. A. Ferguson & E. A. Moravcsik (Eds.), *Universals of human language III* (pp. 369–400). Stanford: Stanford University Press.
- Uhrig, P. (2018). NewsScape and the Distributed Little Red Hen Lab – A digital infrastructure for the large-scale analysis of TV broadcasts. In A. J. Zwierlein, J. Petzold, K. Böhm & M. Decker (Eds.), *Anglistentag 2017 in Regensburg: Proceedings. Proceedings of the Conference of the German Association of University Teachers of English* (pp. 99–114). Trier: Wissenschaftlicher Verlag Trier.
- Yu, N. (2012). The metaphorical orientation of time in Chinese. *Journal of Pragmatics*, 44, 1335–1354. <https://doi.org/10.1016/j.pragma.2012.06.002>

Appendix. List of motion verbs

1. Translational motion

1.1 General motion

Abandon	Accelerate	Access	Accompany	Address	Advance	Amble
Appear	Approach	Arise	Arrive	Ascend	Back	Backpack
Blow	Bob	Bolt	Boogie	Bounce	Bound	Bowl
Bump	Burst	Buzz	Caper	Capriole	Careen	Career
Carom	Carry	Cavort	Charge	Chase	Circle	Circuit
Circulate	Clamber	Climb	Clip along	Clump	Coggle	Collapse
Come	Conduct	Convoy	Crash	Crawl	Creep	Cross
Cruise	Dance	Dart	Dash	Dawdle	Decamp	Decelerate
Deliver	Depart	Descend	Desert	Dive	Divert	Dodder
Dodge	Drag	Draw	Dribble	Drift	Drop	Eddy
Edge	Emigrate	Ensue	Enter	Erupt	Escape	Escort
Exit	Fall	Fidget	File	Flee	Flit	Float
Flounder	Fly	Follow	Ford	Frisk	Frolic	Gambol

Gimp	Glide	Go	Goosestep	Guide	Gyrate	Hare
Hasten	Head	Heave	Hide	Hike	Hobble	Hop
Hound	Hover	Huddle	Hurdle	Hurry	Hurtle	Immerse
Immigrate	Inch	Jiggle	Jog	Join	Journey	Jump
Lapse	Launch	Lead	Leap	Leap-frog	Leave	Lift
Limp	Line	Linger	Loiter	Lollop	Lope	Lumber
Lunge	Lurch	March	Meander	Mince	Mope	Mosey
Motor	Mount	Move	Nip	Outrun	Overreach	Overtake
Pace	Pad	Parade	Pass	Penetrate	Perambulate	Pirouette
Plod	Plummet	Plunge	Pop	Pounce	Prance	Proceed
Progress	Promenade	Prowl	Pursue	Race	Ramble	Recede
Recoil	Reemerge	Resurge	Retire	Retreat	Return	Revolve
Rip	Rise	Roam	Roar by	Rocket	Roll	Romp
Rotate	Rove	Row	Run	Rush	Sashay	Saunter
Scale	Scamper	Scatter	Scoot	Scram	Scramble	Scud
Scurry	Scutter	Scuttle	Shadow	Shamble	Shepherd	Ship
Shoot	Shove	Shuffle	Shuttle	Sidle	Sink	Skedaddle
Skim	Skip	Skitter	Skulk	Sleepwalk	Slide	Slink
Slip	Slog	Slouch	Sneak	Soar	Somersault	Somnambulate
Speed	Spin	Splash	Spring	Sprint	Squirm	Stagger
Stalk	Stamp	Stampede	Step	Stir	Stomp	Storm off/out
Stray	Streak	Stride	Stroll	Strut	Stumble	Stump
Surpass	Surround	Swagger	Sweep	Swerve	Swim	Swirl
Swoop	Tack	Tail	Take	Tear	Thunder	Tip
Tiptoe	Tittup	Toddle	Topple	Totter	Tour	Track
Trail	Traipse	Tramp	Trample	Transfer	Travel	Traverse
Tread	Trek	Trespass	Trip	Troop	Trudge	Trundle
Tumble	Turn	Twine	Twirl	Twist	Vanish	Vault
Waddle	Wade	Waft	Walk	Wander	Whirl	Whisk
Whiz	Wind	Wriggle	Zigzag	Zoom		

1.2 *Animal motion*

Buck	Canter	Curvet	Gallop	Pronk	Slither	Trot
------	--------	--------	--------	-------	---------	------

1.3 *Vehicle motion*

Alight	Boat	Bobsled	Bobsleigh	Bus	Bicycle	Cab
Canoe	Caravan	Chariot	Coach	Coast	Cycle	Derail
Disembark	Dogsled	Drive	Embark	Ferry	Gondola	Helicopter
Jeep	Jet	Kayak	Keel	Land	Motorbike	Motorcycle
Oar	Paddle	Parachute	Pedal	Punt	Raft	Rickshaw
Ride	Rollerblade	Sail	Skate	Skateboard	Ski	Skid
Skydive	Sled	Sledge	Sleigh	Taxi	Toboggan	Tram
Trolley	Truck	Wheel	Yacht			

1.4 *Dance*

Bop	Cancan	Clog	Conga	Foxtrot	Jig	Jitterbug
Jive	Moonwalk	Polka	Quickstep	Rumba	Samba	Squaredance
Tango	Tapdance	Waltz				

2. Static motion

Balloon	Bend	Bow	Capsize	Coil	Crouch	Cuddle
Decrease	Dwindle	Expand	Extend	Flap	Flip	Flutter
Grovel	Hurl	Kick	Kneel	Lean	Nod	Oscillate
Overturn	Pulsate	Push	Quake	Quiver	Reach	Recline
Reel	Rock	Seesaw	Shake	Shiver	Shrink	Shudder
Squat	Stand	Stoop	Stretch	Sway	Swing	Teeter
Throb	Throw	Thrust	Tremble	Twitch	Undulate	Unfold
Unravel	Vibrate	Wag	Waggle	Wane	Wave	Waver
Wiggle	Wobble	Wrap	Writhe			

Time moves more often in poetry

A comparative corpus study

Rosa Illán Castillo and Cristóbal Pagán Cánovas

University of Murcia

It is assumed that humans use spatial concepts to think and speak about time. In this chapter we analyze the spatialization of time in five different literary and non-literary corpora by looking at the frequency with which time units (minutes, hours, days, weeks, months, years, and centuries) appear as the subject of a motion verb. The results reveal that there is a tendency to spatialize time more often in literature – especially in lyric poetry – than in other non-literary linguistic contexts. This supports the idea that meaning construction cannot be reduced to a direct transfer-based model, but rather requires an elaborate network of conceptual integration that opportunistically – and creatively – adjusts mappings and integrations to goals.

Keywords: time units, conceptual integration, quantitative literary studies, time spatialization

1. Introduction

The construction of complex or abstract concepts, such as time, is a central problem in cognitive science. Multiple studies have shown that there is a relation between non-perceptual thought and sensorimotor experience, which is often referred to as *embodiment* (Maturana and Varela 1987; Lakoff and Núñez 2000; Gibbs 2006; Wittmann and van Wassenhove 2009; Anderson, Richardson and Chemero 2012). Many of these approaches propose that the relation is one of scaffolding or transfer: knowledge from sensorimotor experience structures more complex concepts through unidirectional projections that are fixed in the cognitive system (Lakoff and Johnson 1980; Gentner 1983; Johnson 1987). For example, time and its associated concepts (duration, aging, biography, sequence, perceptions of temporality and their associated emotions) require substantial cultural work to be built, a considerable cognitive development to be learned, and adequate

representations to be transmitted. All these processes are facilitated by the support of perceptually-grounded knowledge, such as basic spatial cognition of motion events (three days *passed*, Sunday is *approaching*) or familiar interactive frames involving the manipulation of objects and substances (we are *running out* of time, *give me three minutes*).

While embodied or situated cognition indeed provides a necessary basis to understand how human beings – or any other organism – build the fundamental structures of their cognitive system, it tells us little about the ways in which they manipulate those structures to achieve their goals. And this is precisely what distinguishes human beings: their unparalleled capacity to integrate disparate mental networks to suit specific purposes, adjusting both networks and goals as they go. This capacity has been termed, among other names, *bisociation* (Koestler 1964), *cognitive fluidity* (Mithen 1999), or *combinational creativity* (Boden 2009), although the most detailed theoretical framework is that of Blending theory (Fauconnier and Turner 2002).

Any approach to integration in human cognition needs to address its central characteristics: dynamicity, goal-orientedness, and creativity. A mere statement of the embodied nature of mental connections, in language or in other domains, captures very little of what humans are actually accomplishing. This becomes particularly apparent when we look at data from the most creative activities from the arts and sciences. In this case, we show how aesthetic goals and opportunities for creating affective expressions influence choices in figurative language beyond their grounding on sensorimotor experience.

For this we use the spatialization of time, a classical case study for research into mappings, metaphor, and embodiment (Casasanto and Boroditsky 2008; Casasanto 2009), to explore the hypothesis that the construction of meaning is driven by flexible, opportunistic network integration. This integrative process adapts and recombines different mental structures (Turner 2014; Boden 2009), modifies its own blending patterns by learning from usage (Pagán Cánovas and Turner 2016), and shifts between bottom-up and top-down mappings (Pagán Cánovas 2016), with sensorimotor and non-perceptual knowledge interacting in dynamic ways (Barsalou, Dutriaux and Scheepers 2018). In such a model, based on integration rather than on the mere transfer of structure from the concrete to the abstract, a more complex view of embodiment arises. Perceptual information still provides the basis that gets conceptual work started (Mandler 1988; Turner 1996; Mandler 2004; Mandler and Pagán Cánovas 2014), but perceptual structures, such as the SOURCE-PATH-GOAL schema that is so often used in time spatialization, are modified to optimize their integration with non-perceptual materials, always seeking to suit specific goals in context (Pagán Cánovas, Valenzuela and Santiago 2015). Here we present evidence that counters the hypothesis that the use of spatial cognition for

structuring time is bound to an embodied transfer of information. We rather show that it is intimately connected to the varying purposes of different discourse types.

The connections between the domain of time and the domain of space are known since antiquity (e.g., Guyau 1890) and have developed throughout history (e.g., Clark 1973; Traugott 1978). Over the past forty years, the study of time spatialization has flourished in both Cognitive linguistics and psycholinguistics as a test bed for the grounding of abstract thought in sensorimotor experience (Lakoff and Johnson 1980, Lakoff 1993, Boroditsky 2000, Casasanto and Boroditsky 2008; Ishihara et al. 2008; Ulrich et al. 2010). Most of the empirical studies have been carried out in laboratories, with a series of stimuli that were highly selected for experimental design, which means that the number of linguistic expressions studied is quite small and does not account for their lexical variety in real language use. This leads to a need for corpus-based studies that may assess the full complexity of spatialized time expressions.

Within the spatial representation of time, time units can move following different perspectives (Clark 1973; Lakoff and Johnson 1980, 1999; Gentner, Imai and Boroditsky 2002). This leads to three types of expressions: (a) Time-moving metaphors, e.g. *The hour has come*, (b) Ego-moving metaphors, e.g. *We are approaching the end of the year*, (c) External viewpoint, e.g. *The lecture will be followed by a reception*. In this chapter we address the first group, Time-moving metaphorical expressions, in which time units act as entities that move in relation to an observer that behaves as a static point of reference.

The emphasis on the idea of unidirectional projections from space onto time (Lakoff and Johnson 1980, 1999; Lakoff 1993) has perhaps diverted the attention from the creative possibilities that spatialized time offers. Rather than simply importing general knowledge from the domain of space, spatialized time gives rise to an *ad hoc*, very specific kind of motion event, where the goals (producing relevant inferences about temporality) push for the selection of a set of properties that are not commonly found in our experience of motion: motion is one-directional and non-reversible, all the observers are on the same spot, objects cannot overtake one another, arrive at the same time or from different directions, and so forth (Fauconnier and Turner 2008).

Crucially, manipulating almost any aspects of the motion in this conceptual integration network provides opportunities for detailed meaning construction, which can be exploited for accuracy in time measurement (clocks, timelines, chronographies, and so forth, all based on these spatial properties) as well as for affective representations of temporality: speed or manner of motion for subjective time perception (e.g., *The day limps slowly for me*, *The hours raced by as she waited for a call*), viewpoint and other spatial parameters for expressing attitudes (*Finals week creeps up on us*), and so forth. All these opportunities offered by spatialized time should

clearly favor the goals of certain types of scientific and literary discourse, interested in very precise time representations or in conveying emotions about temporality.

What traces could then be left in the data? To find them, we need an appropriate quantitative perspective. In this study we sought to begin a quantitative enquiry into this matter by examining the spatial representation of time across different discourse types. Spatialized time is, as we have seen, a classic case of embodied metaphor, but also one that has been contested as presenting meaning patterns that cannot be explained through transfer (Fauconnier and Turner 2008; Pagán Cánovas, Valenzuela and Santiago 2015; Pagán Cánovas 2019). We wanted to know whether the use of figurative language that spatializes time can significantly vary across poetic texts and more conventional, non-literary texts, with their considerable differences in goals, context, and proclivity for creativity and innovation. Especially, we hypothesize that poetic discourse will be more motivated to exploit the opportunities for meaning construction offered by spatialized time. Creative time metaphors – in the sense of being unusual and imaginative, pursuing aesthetic goals beyond mere representation of temporal meanings – are very recurrent in poetic texts, where the manipulation of elements involved in the mappings is a quite common procedure for achieving aesthetic and emotional effects (Pagán Cánovas and Jensen 2013; Coulson and Pagán Cánovas 2013; Pagán Cánovas and Piata 2018; Piata 2018; Pagán Cánovas 2019). We sought to measure whether these characteristics of poetic discourse can affect the frequency of time spatialization, regardless of how basic this mapping might seem in terms of embodied cognition. As a proxy to detect differences of time spatialization across corpora, we analyzed the rate at which the most frequent time units function as the subject of a motion verb, and compared this measure across literary and non-literary corpora. In this chapter we use the term *time unit* to refer specifically to those expressions that make reference to a precise amount of time. In particular, we focus on *seconds*, *minutes*, *hours*, *days*, *weeks*, *months*, *years*, and *centuries*. Literature, and especially lyric poetry, showed a significantly higher time spatialization rate than non-literary language use.

2. An indicator of cognitive differences in time spatialization

In this study, our proxy for measuring differences in the spatialization of time across corpora will be the frequency with which a time unit appeared as the subject of a motion verb. This is certainly not an accurate measure for the general use of spatial time metaphors, nor is it meant to be. Indeed, time can be spatialized and integrated into a motion scene in many other ways: Ego-moving metaphors (*We are **approaching** the summer*), motion-related adjectives (*These **slow** hours really kill me*), or using temporal nouns other than time units as the subject of a motion verb

(*Time passes slowly here, The moment flew away, My childhood was gone*), among many other possibilities. Moreover, in many cases a time unit acting as the subject of a non-motion verb can also indicate a spatial metaphor that involves motion: *Those hours seemed as fast as minutes*.

However, it is also true that a time unit acting as the subject of a motion verb signals that a particular sentence is an example of spatial figurative language of time, in practically all cases: e.g., *The hours passed by, Those days will never come back, The years are running away from me*. Therefore, *time-unit-as-motion-verb-subject* is a reliable indicator showing that a particular sentence – or poetic line – does involve time spatialization, and that the spatial metaphor in question expresses the passage of time as units of measurement that move with respect to the observer. This makes our proxy useful for present purposes, since we were not after measuring time spatialization in general terms, or even after a more or less accurate comparison of time spatialization across language uses. Instead, we wanted an indicator that could reinforce or reject the hypothesis that the use of spatial expressions of time is closely linked to communicative goals, rather than being merely based on structural connections dictated by our embodied experience.

A transfer model, based on experientially motivated, fixed metaphorical projections, would have no reason to hypothesize any substantial differences in the distribution of sentences with *time-unit-as-motion-verb-subject* across corpora. In this view of meaning construction, time units become objects that move – or that the observer moves towards, in the ego-moving version of the metaphor – as a result of projecting the properties of moving objects on the domain of time. If time is conceived in terms of space because of the general cognitive scaffolding triggered by embodied experience, the process should then be all-pervasive and cognitively basic, and therefore not driven by *ad hoc* purposes, at least not in substantial ways that could lead to significant statistical differences for this indicator.

For a transfer model, the prevalence of the time-as-space mapping should ensure a certain probability, quite likely a high one, of a motion verb appearing whenever a time unit is functioning as subject, regardless of register, genre, authorship, or other such factors. At most, specific purposes could perhaps increase the frequency with which time is referred to in a particular set of texts with a very specific goal. Talking more about time itself, or about time measures, or about the arrangement of events, or about feelings of temporality, could lead to a higher frequency of words for time units, in subject position as well as in any other. But, if the spatialization of time is a basic, experiential, ontological mapping, it should be all pervasive and no relevant differences should be expected across multiple different texts, from different authors, and from different historical periods, expressing a great variety of temporal meanings, and where references to time vary considerably in number and style. If anything, a transfer model would predict a relatively high frequency

of *time-unit-as-motion-verb-subject* collocations, given that they confirm the presence of a spatial metaphor in a time expression, practically with 100% certainty. When the time unit is the subject of a non-motion verb, the sentence can still contain a spatial expression of time, but the likelihood of this happening decreases considerably.

For an approach based on the idea of integration instead of transfer, things are not so simple. In this view, time-as-space does not represent an experiential pattern that *causes* linguistic metaphors. Instead, spatialized time *results* from a dynamic process of meaning construction that is constantly bringing together networks of mental elements and blending them selectively, weighing the advantages and disadvantages of different possible integrations, and opportunistically adjusting mappings and integrations to goals. In this scenario, causality is reversed. Sentences with a *time-unit-as-motion-verb-subject*, or any other linguistic pattern for that matter, do not appear because there is a previously-stored space-to-time projection, but because they have been found effective to point at relevant aspects of, in this case, an imaginary scene of temporal motion that the mind has repeatedly found useful in connection with a range of expressive goals.

The “recipe” for assembling such a scene, or parts of it, alongside the network of connections that make it meaningful, is not a set of binary, unidirectional projections fixed by sensorimotor knowledge (A is B, C is D... – e.g. TIME UNITS ARE OBJECTS IN MOTION, PATH IS DURATION, and so forth) but a loose set of instructions based on statistical generalizations from previous thoughts or actions, for instance: if we fuse X (objects) and Y (events, time measurements) into Z, and then give Z quality x from X – e.g. *speed* – then we can connect Z_x to some other element O in the network – e.g. feelings about time or about certain events – so that manipulating x in Z_x will point to O through emergent properties of Z_xO , which were not available from either X or Y. Thus in the example “Time goes by really slowly. At the same time, it goes by really fast” (CNN, said by a man waiting for word on an American named “Michael” missing in the bomb detonations in London in July, 2005) a *time* + *object* entity (Z) can even have two very different speeds (x) simultaneously (Z_{x1} , Z_{x2}) both dependent on the feelings of the observer (O) and therefore emergent from the network (Fauconnier and Turner 2008). All these properties ($Z_{x1}O$, $Z_{x2}O$) are absent from, and even contradictory with, our knowledge about the motion of objects through space or about the objective measurement of time. The idea of objects moving at two speeds that are modulated by the observer’s emotions is clearly in conflict with everything experience has taught us about motion. But that is precisely what human beings can do through network integration: go beyond what can be learned by sensorimotor experience.

In this view, there is still an experiential basis underlying the use of the motion schema: we tend to use motion along paths, more frequently than, for example,

objects suspended in a fluid, because of our embodied experience. Moreover, we tend to map structure from motion along a path for a number of well-known purposes that are related to the sensorimotor or interactive qualities afforded by PATH-GOAL MOTION: giving spatial structure to non-spatial events (e.g., *As he went through the lecture his points gradually became clearer, especially in the second half*), articulating changes of state (*The company went from success to bankruptcy in a year*), connecting “parts” of an event to delimit durations (*The film was great from beginning to end*), linking events in causality chains (*That decision brought Europe very close to war*), and so forth. Indeed, there is probably an experiential basis underlying everything human beings think or do. But that is just the beginning: what really matters is the end, and a lot more that is not related to basic experiential projections always happens along the way. Therefore, whatever we want to say or do with a particular conceptualization will have far more influence on the final result than any initial projections dictated by embodiment. Embodiment will serve integration, not the other way round. In this case, pressure for coming up with a sentence containing a *time-unit-as-motion-verb-subject* will not come from a pre-existing time-as-space metaphor, but from the opportunities that this particular expression offers, from what can be done with it. It is then reasonable to suppose that the interest for exploiting those opportunities will be closely related to the general goals of a text.

Literary texts are much more focused on the personal experience of temporality than any other texts. When a “time unit in motion” appears in a literary text, the chances that some aspects of the motion (manner, speed, and so forth) will be used creatively are higher than in any other text, because the passage of time in itself is particularly relevant to the observer(s), who tend(s) to be emotionally involved. This tendency can be expected to be particularly strong in the case of lyric poetry, where high density of figurative language and explicit reflection on temporality or on any other vital aspect of human life are generally expected. In other types of texts, time can indeed be mentioned very frequently as well, but the metaphorical language of temporality is usually much less developed. In examples of argumentative, medical, journalistic, scholarly... and so many other types of texts, there is generally a much lower pressure for acting creatively on the imaginative opportunities provided by *time-unit-as-motion-verb-subject*. There will be exceptions, but overall, across a great variety of cases, the interest on temporality will lie elsewhere. *Three years have passed and we are in the same situation* is more typical in, say, a political text, than *The years keep flying away from us and leaving us in this desolate place*. The latter takes advantage of the opportunities for expressing a manner of motion that may be linked to subjective time perception, for connecting the motion with the observer in personal terms, for qualifying the location of the observer with affective properties, and so forth. These would rather be expected from a poetic

text. If the use of these linguistic expressions reflects an opportunistic rather than a predetermined cognitive strategy, then poetic texts should favor temporal motion more than other types of texts.

Therefore, our *time-unit-as-motion-verb-subject* proxy will help us evaluate two hypotheses: (1) expressions of time, perhaps also of any other concept, depend more on context and goals than on the dictates of experiential projections, and, of no less importance, (2) what we call “poetic” is not only defined by differentiated form-meaning strategies in the language, but also by differences in cognitive preferences at a deeper level. The fact that the author is writing poetry rather than a political chronicle may be making her modify her conceptual patterns in deep, intricate ways, which may result in preferences for linguistic structures that provide certain expressive opportunities, in this case for being creative about how time units move.

3. Measuring the frequency of *time-unit-as-motion-verb-subject*

We analyzed the frequency of the seven most frequent time units as motion-verb subject: *minutes*, *hours*, *days*, *weeks*, *months*, *years*, and *centuries*. Following this frequency criterion, the word *second* should have been included, but we did not select it for this initial study, in order to avoid overlap with sequential meanings that do not refer to the time unit. We compiled our own list of motion verbs with the help of already available inventories (Levin 1993; Slobin 1996; Cifuentes Férez 2008), also including some additional verbs that we found in previous corpus searches. Our final list includes 447 different motion verbs (see Appendix 1).

We used the Sketch Engine corpus tools (<https://www.sketchengine.eu>) to extract our data from five different corpora: the *British National Corpus* (BNC: 96,134,547 words), *English Web 2013* (*enTenTen 2013*: 19,685,733,337 words), *Europarl7 English* (53,837,625 words), *Project Gutenberg English* (443,471,071 words), and *PoetiCog English* (814,496 words). All of these corpora have divergent compositions that represent different styles, genres, and registers of the English language.

The lyric-poetry data were gathered from a corpus that we have built ourselves: *PoetiCog*. At present, *PoetiCog* includes electronic versions of poetic texts in three different languages: English, Spanish, and Modern Greek. We extracted our data from the English version, which contains lyric poetry by 42 different authors from various periods (see Appendix 2 for list of authors). *PoetiCog* is stored in Sketch Engine. Although the size of *PoetiCog English* is small in comparison with the other corpora that we used (just over 800,000 words), it is of considerable size for a corpus of lyric poetry, which generally contain much shorter compositions and a higher density of linguistic innovations than prose corpora. To include a wider

variety of literary texts, we also analyzed *Project Gutenberg English*, a compilation of all English e-books available in the Project Gutenberg online Library (http://www.gutenberg.org/wiki/Main_Page) by October 2014. It includes literary texts (mostly in prose) alongside miscellaneous works: cookbooks, specialized magazines, treatises on mathematics, psychology, photography, music, and so forth.

The other corpora that we analyzed contained no literary texts. They included varied samples of conventional language from different registers. The BNC and *enTenTen 2013* corpora are general, synchronic (contemporary) collections not restricted to any particular subject. The BNC has a mixed composition, containing samples of both written and spoken language. Of these, the written component accounts for, approximately, 90% of its total while the spoken component represents the remaining 10%. The written section comprises samples of text belonging to newspapers, academic books, essays, and so forth. The oral dataset includes recordings of informal conversations, radio shows, and other sources. The *enTenTen 2013* contains exclusively written content drawn from the Web by using specific techniques for collecting only linguistically valuable content (duplicated and unwanted material is avoided). *Europarl* is a parallel corpus extracted from the European Parliament Proceedings. It includes texts from January 2007 to November 2011. It incorporates 21 European languages. We have worked with its English section: *Europarl7, English*. The selection of this corpus aimed to provide a more restricted and specific linguistic sample, where a restrained style is predominant.

Of the Sketch Engine tools for corpus analysis, we employed the CQL (*Corpus Query Language*) search option, which is included within the advanced tab of “Concordance.” We had to develop two different commands since some corpora required slight changes in the search formulation, but the final result was the same in both of them. Once we got the total number of hits that stated how many times each of the time units was the subject of a motion verb, we searched for the absolute frequency with which each time unit appeared as the subject of any kind of verb, without semantic restrictions. For this we employed the tool “Word Sketch,” in order to analyze the frequency rates of each time unit.

Among the results found in the searches there were false positives. In some cases, the software showed examples in which the time unit at hand did not act as the subject of one of our sought-after verbs (“In hills and plains, women and children spend *hours travelling* long distances to collect fuel” [BNC]). In other cases, the word selected as a motion verb did not work as a verb (“Everything’s a *one minute walk* away” [enTenTen13]), or behaved as an auxiliary verb (“Hitting your local drugstore *last minute isn’t going to win* you the title of ‘best gift giver ever!’” [enTenTen13]). Such morphosyntactic errors in the search software were filtered out manually for the *PoetiCog* data, but not for the rest of the corpora, because their size prevented it.

4. Results

The individual and overall rates found (Table 1) are very similar for the two heterogeneous corpora mainly containing conventional language: BNC and *enTenTen13*. The *Europarl7* corpus, which represents a more specific, but also non-poetic type of language, shows slightly lower spatialization percentages, quite close to those of the other two. Finally, in *Project Gutenberg* and *PoetiCog* –the two corpora that include language samples developed in highly creative contexts– the data reveals a considerable increase in the *motion-verb-subject* rate that becomes especially evident in the corpus that consists exclusively of lyric poetry.

Table 1. Distribution of motion-verb-subject rates for individual units across corpora

	Europarl7		enTenTen13		BNC		Project Gutenberg		PoetiCog	
	Subj-V	Subj-MV (Subj-MV Rate)	Subj-V	Subj-MV (Subj-MV Rate)	Subj-V	Subj-MV (Subj-MV Rate)	Subj-V	Subj-MV (Subj-MV Rate)	Subj-V	Subj-MV (Subj-MV Rate)
Minutes	259	25 (9.65%)	294963	88571 (30.02%)	1423	433 (30.42%)	5923	1563 (26.38%)	18	11 (61.11%)
Hours	404	32 (7.92%)	518240	83844 (16.17%)	2119	333 (15.71%)	16070	4220 (26.26%)	73	40 (54.79%)
Days	1303	215 (16.50%)	1989213	314192 (15.79%)	7116	1128 (15.85%)	62047	12107 (19.51%)	217	100 (46.08%)
Weeks	1101	112 (10.17%)	771851	111835 (14.48%)	3244	500 (15.41%)	6847	1789 (26.12%)	2	2 (100%)
Months	1289	197 (15.28%)	562178	87422 (15.55%)	2486	411 (16.53%)	7665	1727 (22.53%)	10	5 (50%)
Years	6088	693 (11.38%)	2241273	278324 (12.41%)	11889	1332 (11.20%)	35732	6053 (16.93%)	83	62 (74.69%)
Centuries	362	22 (6.07%)	167908	14962 (8.91%)	2421	201 (8.30%)	8089	824 (10.18%)	9	6 (66.66%)
Total	10806	1296 (11.99%)	6545626	979150 (14.95%)	30698	4338 (14.13%)	142373	28283 (19.86%)	412	226 (54.85%)

To compare the relation between *motion-verb-subject* and *verb-subject* across corpora, we built linear regression models interrelating the total gross number of instances per time unit for each of the two categories in each corpus using R (<https://www.r-project.org/>). Since, for every category and every corpus, 0 cases of time units as subject of any verb will naturally render 0 instances of time units as subject of a motion verb, we eliminated the constant. This adjusted the estimates and significance to facilitate comparison, allowing us to build a visualization (Figure 1) where all lines start at 0. Each line represents the estimate for one of the corpora. As expected, the variable ‘verb subject’ is extremely significant to account for

motion-verb-subject, but this relation also shows great differences across corpora. The estimates confirmed or enhanced the tendency indicated by the percentages in Table 1. In the graph in Figure 1, we compare the estimates for all five corpora along a 1–10 scale. For every 10 new random data entries that we could potentially add to the sample, the model predicting their likelihood of being assigned to a particular corpus renders values of slightly over 5 (0.50274 for every next new data entry) for PoetiCog, very close to 2 (0.192580) for Project Gutenberg, and between 1.1 and 1.4 for the rest (Europarl7: 0.11676, BNC: 0.12808, enTenTen13: 0.141726).

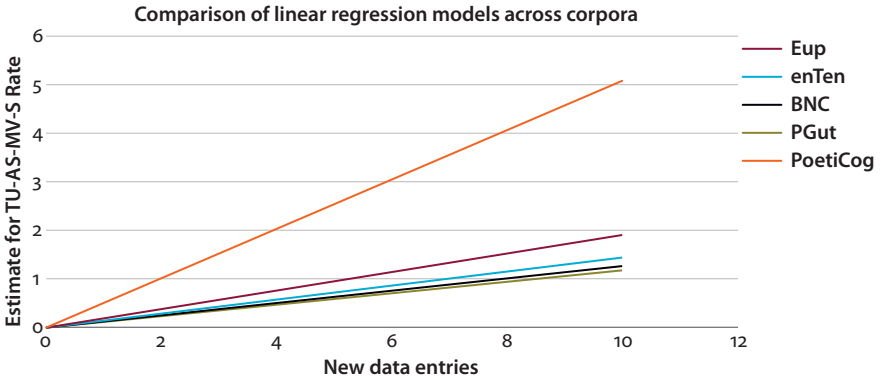


Figure 1. Comparison of linear regression models of motion-verb-subject ~ verb-subject across corpora

5. Discussion

First of all, we need to give some consideration to the lower rates of *time-unit-as-motion-verb-subject* found outside the PoetiCog corpus. Given the allegedly basic nature of space-to-time projections, as well as their centrality in research on metaphor processing and concept formation, relatively high frequencies may have been expected. However, Project Gutenberg’s partially-literary corpus registered slightly over 80% of non-motion verbs when a time unit was the subject, and the three non-literary corpora, all of them quite sizeable, scored between 85% and 89% of non-motion verbs, making the metaphorical use of time units as moving objects almost exceptional. Indeed, as we explained, this is not a reliable proxy for time spatialization in general, nor is it meant to be. It could well be argued that many of the sentences where a non-motion verb appeared with a time unit in subject position could still contain a spatial expression of time, and that the rates of time spatialization could still be high for the many other possible cases of time expressions, where time units do not appear as subject or simply do not appear at all.

While we do not still have the data to evaluate those objections, we do have a finding that puts the argument for cognitively basic and all-pervasive space-to-time mappings in a difficult position: the 54.85% rate of *time-unit-as-motion-verb-subject* found in PoetiCog. This result definitely shows that, at least for some corpora, the collocation searched can be the norm rather than the exception. How can this difference be explained within a transfer model? As discussed, it may be possible to claim that, despite the low rates registered across conventional corpora for this indicator, time-as-space must still be highly frequent because of its experiential nature, and that this will show when we examine the whole array of time expressions across the data. However, that argument is at odds with the fact that our proxy can also render a positive result for more than half the cases in a corpus restricted to a specific discourse genre. This rather shows, for that poetic corpus, and with no need to speculate about data that may or may not fall out of our observation, that the majority of the sentences in which a time unit is in subject position contain a spatial expression of time. Why should this high frequency not be found across discourse types, especially since we have looked at a great variety of them?

Without the PoetiCog results, the rates found in the conventional corpora may perhaps have been argued to still support a high frequency of time spatialization for those corpora, or at least to be compatible with it, if we suppose that the remaining instances of spatial time metaphors are hidden in the remaining data, and therefore that they have not been captured by our search. But the 11%–15% rates compared to PoetiCog's almost 55% leave no doubt that those corpora score comparatively low in this indicator. This is confirmed by the linear regressions that we performed. It would be challenging, at the very least, to integrate this finding into a transfer model in which linguistic expressions are instantiations of experientially-based metaphorical projections. In that case, they would somehow turn out to be more fundamental for poetry than for the other types of discourse. On the other hand, the hypothesis that time spatialization is opportunistic and goal-oriented, rather than hard-wired and cognitively basic, predicts our results unproblematically.

The regression models confirm the relation between time spatialization, as measured by the rate of *time-unit-as-motion-verb-subject*, and usage preferences in a particular corpus, the one with poetic or aesthetic goals. First of all, we see that the probability remains pretty much the same across the three non-literary corpora. We practically need to reach point 8 in the 1–10 scale to see their lines clearly split, and then again their values still remain very close. In contrast, the PoetiCog value quickly becomes equivalent to that of the other four corpora combined. At point 2 of the scale, PoetiCog already scores above 1, almost exactly like the sum of all other four corpora, including Project Gutenberg: 1.00548 PoetiCog vs 1.158292 all other corpora (0.38516 PGut + 0.283452 enTen + 0.25616 BNC + 0.23352 Eup).

The combined value of the three non-literary corpora at this point (0,773132) is already quite below that of PoetiCog.

The behavior of Project Gutenberg's hybrid corpus confirms the relation between higher time spatialization and poetic goals. Despite the fact that Project Gutenberg includes only a part of literary texts, in which prose texts considerably outweigh lyric poetry, this proves enough to establish a differentiated tendency with respect to the three non-literary ones. Since its percentage of lyric texts, or of texts explicitly expressing feelings or personal perceptions about temporality, is much lower than that of PoetiCog, Project Gutenberg needs to approach point 14 of the scale to score a value of 1 higher than Europarl7, the corpus with the lower estimate: 2.69612 PGut vs 1.63464 Eup (1.06148 difference) at point 14. But the differentiated tendency can be clearly seen in the graph of Figure 1 almost from the start, with Project Gutenberg's trajectory separating from the other three corpora more than they are separated among themselves, already from point 2 in the scale.

These results point at a connection between poetic discourse and a more frequent use of time spatialization, supporting our hypothesis that templates for concept mapping, no matter how basic and experientially grounded they may seem, are highly dependent on a dynamic, integrative process that uses cognitive recipes in flexible ways, to suit specific goals and contexts. As we argued, literature, and especially lyric poetry, deals with temporality from a much more personal or individual perspective. In the generally condensed expression of the lyric genre, the conceptual template where time units move with respect to an observer becomes particularly valuable, since it offers more opportunities for constructing temporality-related meanings that will have an immediate rhetorical or emotional effect, with no need for long narrative developments.

This predisposition of poetic texts to manipulate the relations in the TIME-SPACE conceptual integration network leads to the appearance of constructions that create powerful aesthetic effects. To achieve this purpose, several procedures can take place. New emotional meanings can be activated within the metaphorical construction in a narrow sense; for example, by using unexpected motion verbs (*The day creeps down* [Wallace Stevens, "The Man on the Dump"]; *Slow tramp the centuries* [Emily Dickinson, "Called Back"]; *We felt the minutes crawl* [Oscar Wilde, "The Ballad of Reading Gaol"]). But they can also be activated, in a wider sense, by the context in which a rather common spatiotemporal metaphor is embedded; for example, by using unexpected complements (i.e. adjectives, adverbs, etc.) or making similes and comparisons: *Days pass like papers from a press* [Wallace Stevens, "The Man on the Dump"]; *The hours go silently over our lifted faces* [Conrad Aiken, "The House of Dust"]; *And all the years fall down from us like leaves* [Conrad Aiken, "White Nocturne"]. All the examples that we have just quoted –retrieved from

PoetiCog– are addressing the passing of time. However, at the same time, each of them implies a reflection that carries a deep emotional load. This ability to express complex ideas in a few words plays a key role in poetry. That is why spatiotemporal metaphors prove to be quite profitable in these contexts.

As opposed to this, the expressions usually found in other everyday forms of oral and written communication tend to represent time in a more practical and less thoughtful way. Here are some examples retrieved from our searches in the aforementioned corpora: *Five years have passed, we are discussing another flood and there is still no hydrogeological map* (Europarl7); *Many hours went by, and then I saw your ship* (BNC); *So the day has come to show your house to prospective buyers* (enTenTen13). Even though in these contexts more creative constructions can also be found, examples such as those shown above tend to predominate.

This does not imply that there is a sharp divide between poetic and non-poetic discourse. If we look at the phenomenon from the point of view of linguistic pragmatics, poetic texts may simply be including many more cases of intimate reflections on temporality. We could perhaps find a similar effect if we looked into corpora of life stories, autobiographical reflections, maybe conversations taking place in settings such as funerals or anniversaries, and so forth. To this we add the motivation that we have just described: the motion frame offers various slots, roles, and relations that can be exploited creatively; it is also extremely familiar and (initially) grounded in embodied experience. All these make it easier to create emotionally-loaded expressions with a strong, quite immediate communicative effect on the reader. Experiential transfer alone is quite insufficient to account for all these complex interactions of mapping procedures, specific purposes, and the quest for effective stylistic solutions. This not only tells us about the general processes for concept formation, but also sheds some light on the specific expressive strategies that contribute to make a discourse poetic. Maybe the poetic emerges more as an opportunistic re-use of linguistic resources than as a systematic departure of everyday language, while at the same time this re-use can lead to impactful cognitive manipulations, through the reframing of such important conceptual domains as time. It would be interesting to see whether there might be peculiarities in the way in which people who are frequently engaged with poetry think about time.

6. Conclusion

The construction of meaning related to abstract concepts, such as time, seems to involve complex processes that go beyond unidirectional projections based on sensorimotor experience. Although perceptual information is still on the basis of abstract thought, it is modified throughout integrative operations that adapt and

recombine different mental structures in order to achieve specific goals in context. Our results show that there is a tendency to spatialize time more often in lyric poetry than in other non-literary linguistic contexts. These differences in time spatialization across corpora seem to be indicating that meaning construction is not only grounded in embodied experience but it is also driven by flexible, opportunistic integration networks that give rise to *ad hoc* emergent meanings. Due to its creative nature, the poetic sphere meets the necessary conditions for the manipulation of spatiotemporal constructions capable of creating powerful aesthetic effects. Further research would be needed to systematize the formal procedures through which these emergent meanings are built.

References

- Anderson, M. L., Richardson, M. J., & Chemero, A. (2012). Eroding the boundaries of cognition: Implications of embodiment. *Topics in Cognitive Science*, 4(4), 717–730.
<https://doi.org/10.1111/j.1756-8765.2012.01211.x>
- Barsalou, L. W., Dutriaux, L., & Scheepers, C. (2018). Moving beyond the distinction between concrete and abstract concepts. *Phil. Trans. R. Soc. B*, 373(1752), 20170144.
<https://doi.org/10.1098/rstb.2017.0144>
- Boden, M. A. (2009). Computer models of creativity. *AI Magazine*, 30(3), 23–34.
<https://doi.org/10.1609/aimag.v30i3.2254>
- Boroditsky, L. (2000). Metaphoric structuring: Understanding time through spatial metaphors. *Cognition*, 75, 1–28. [https://doi.org/10.1016/S0010-0277\(99\)00073-6](https://doi.org/10.1016/S0010-0277(99)00073-6)
- Casasanto, D. (2009). When is a linguistic metaphor a conceptual metaphor? In V. Evans & S. Pourcel (Eds.), *New directions in cognitive linguistics* (pp. 127–145). Amsterdam: John Benjamins.
<https://doi.org/10.1075/hcp.24.11cas>
- Casasanto, D., & Boroditsky, L. (2008). Time in the mind: Using space to think about time. *Cognition*, 106(2), 579–593. <https://doi.org/10.1016/j.cognition.2007.03.004>
- Cifuentes-Férez, P. (2008). Motion in English and Spanish: A perspective from cognitive linguistics, typology and psycholinguistics. PhD dissertation, University of Murcia, Spain.
- Clark, H. H. (1973). Space, time, semantics, and the child. In T. Moore (Ed.), *Cognitive development and the acquisition of language* (pp. 27–63). New York: Academic Press.
<https://doi.org/10.1016/B978-0-12-505850-6.50008-6>
- Coulson, S., & Pagán Cánovas, C. (2013). Understanding timelines: Conceptual metaphor and conceptual integration. *Cognitive Semiotics*, 5(1–2), 198–219.
<https://doi.org/10.1515/cogsem.2013.5.12.198>
- Fauconnier, G., & Turner, M. (2002). *The way we think: Conceptual blending and the mind's hidden complexities*. New York: Basic Books.
- Fauconnier, G., & Turner, M. (2008). Rethinking metaphor. In R. Gibbs (Ed.), *The Cambridge handbook of metaphor and thought* (pp. 57–66). Cambridge: Cambridge University Press.
<https://doi.org/10.1017/CBO9780511816802.005>
- Gentner, D. (1983). Structure-mapping: A theoretical framework for analogy. *Cognitive Science*, 7, 155–170. https://doi.org/10.1207/s15516709cog0702_3

- Gentner, D., Imai, M., & Boroditsky, L. (2002). As time goes by: Evidence for two systems in processing space-time metaphors. *Language and Cognitive Processes*, 17(5), 537–565. <https://doi.org/10.1080/01690960143000317>
- Gibbs, R. (2006). *Embodiment and cognitive science*. Cambridge: Cambridge University Press.
- Guyau, J. M. (1890/1988). The origin of the idea of time. In J. A. Michon, V. Pouthas & J. L. Jackson (Eds.), *Guyau and the idea of time* (pp. 37–90). Amsterdam: North-Holland.
- Ishihara, M., Keller, P. E., Rossetti, Y., & Prinz, W. (2008). Horizontal spatial representations of time: Evidence for the STEARC effect. *Cortex*, 44(4), 454–461. <https://doi.org/10.1016/j.cortex.2007.08.010>
- Johnson, M. (1987). *The body in the mind: The bodily basis of meaning, imagination, and reason*. Chicago: University of Chicago Press. <https://doi.org/10.7208/chicago/9780226177847.001.0001>
- Koestler, A. (1964). *The act of creation*. New York: Macmillan.
- Lakoff, G. (1993). The contemporary theory of metaphor. In A. Ortony (Ed.), *Metaphor and thought* (pp. 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.
- Lakoff, G., & Johnson, M. (1999). *Philosophy in the flesh*. New York: Basic Books.
- Lakoff, G., & Núñez, R. (2000). *Where mathematics comes from: How the embodied mind brings mathematics into being*. New York: Basic Books
- Levin, B. (1993). *English verb classes and alternations: A preliminary study*. Chicago: University of Chicago Press
- Mandler, J. M. (1988). How to build a baby: On the development of an accessible representational system. *Cognitive Development*, 3(2), 113–136. [https://doi.org/10.1016/0885-2014\(88\)90015-9](https://doi.org/10.1016/0885-2014(88)90015-9)
- Mandler, J. M. (2004). *The foundations of mind: Origins of conceptual thought*. Oxford: Oxford University Press.
- Mandler, J. M., & Pagán Cánovas, C. (2014). On defining image schemas. *Language and Cognition*, 6(4), 510–532. <https://doi.org/10.1017/langcog.2014.14>
- Maturana, H. R., & Varela, F. (1987). *The tree of knowledge*. Boston & London: Shambhala.
- Mithen, S. J. (1999). *Problem-solving and the evolution of human culture*. London: Institute for Cultural Research.
- Pagán Cánovas, C. (2016). Rethinking image schemas: Containment and emotion in Greek poetry. *Journal of Literary Semantics*, 45(2), 117–139. <https://doi.org/10.1515/jls-2016-0008>
- Pagán Cánovas, C. (2019). More haste less speed: Cognition, creativity, and culture in temporal paradox. *Time & Society*, 28(4), 1695–1715. <https://doi.org/10.1177/0961463X18783358>
- Pagán Cánovas, C., & Jensen, M. (2013). Anchoring time-space mappings and their emotions: The timeline blend in poetic metaphors. *Language and Literature*, 22(1), 45–59. <https://doi.org/10.1177/0963947012469751>
- Pagán Cánovas, C., & Piata, A. (2018). The way time goes by: Conceptual integration and the poetics of time. In S. Csábi (Ed.), *Expressive minds and artistic creations: Studies in cognitive poetics* (pp. 57–78). New York: Oxford University Press.
- Pagán Cánovas, C., & Turner, M. (2016). Generic integration templates for fictive communication. In E. Pascual & S. Sandler (Eds.), *The conversation frame: Forms and functions of fictive interaction* (pp. 45–62). Amsterdam: John Benjamins. <https://doi.org/10.1075/hcp.55.03pag>
- Pagán Cánovas, C., Valenzuela, J., & Santiago, J. (2015). Like the machete the snake: Integration of topic and vehicle in poetry comprehension reveals meaning construction processes. *Psychology of Aesthetics, Creativity, and the Arts*, 9(4), 385–393. <https://doi.org/10.1037/aca0000024>

- Piata, A. (2018). *The poetics of time: Metaphors and blends in language and literature*. Amsterdam: John Benjamins. <https://doi.org/10.1075/ftl.3>
- Slobin, D. (1996). Two ways to travel: Verbs of motion in English and Spanish. In M. Shibatani & M. A. Thompson (Eds.), *Grammatical constructions: Their form and meaning* (pp. 195–233). Oxford: Clarendon Press.
- Traugott, E. C. (1978). On the expression of spatio-temporal relations in language. In J. H. Greenberg, C. A. Ferguson & E. A. Moravcsik (Eds.), *Universals of human language*, vol. III: *Word structure* (pp. 371–400). Stanford: Stanford University Press.
- Turner, M. (1996). *The literary mind*. New York: Oxford University Press.
- Turner, M. (2014). *The origin of ideas: Blending, creativity, and the human spark*. New York: Oxford University Press.
- Ulrich, R., & Maienborn, C. (2010). Left–right coding of past and future in language: The mental timeline during sentence processing. *Cognition*, 117(2), 126–138. <https://doi.org/10.1016/j.cognition.2010.08.001>
- Wittmann, M., & Wassenhove, V. (2009). The experience of time: Neural mechanisms and the interplay of emotion, cognition, and embodiment. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 364(1525), 1809–1813. <https://doi.org/10.1098/rstb.2009.0025>

Appendix 1. List of motion verbs

Abandon	Accelerate	Access	Accompany	Address	Advance	Alight
Amble	Appear	Approach	Arise	Arrive	Ascend	Back
Backpack	Balloon	Bend	Bloom	Blow	Boat	Bob
Bobsled	Bobsleigh	Bolt	Boogie	Bop	Bounce	Bound
Bow	Bowl	Buck	Bump	Burst	Bus	Buzz
Bicycle	Cab	Cancan	Canoe	Canter	Caper	Capriole
Capsize	Caravan	Careen	Career	Carom	Carry	Cavort
Charge	Chariot	Chase	Circle	Circuit	Circulate	Clamber
Climb	Clip	Clog	Clump	Coach	Coast	Coggle
Coil	Collapse	Come	Conduct	Conga	Convoy	Corrode
Crash	Crawl	Creep	Cross	Crouch	Cruise	Cuddle
Curvet	Cycle	Dance	Dart	Dash	Dawdle	Decamp
Decelerate	Decrease	Deliver	Depart	Derail	Descend	Desert
Disembark	Dive	Divert	Dodder	Dodge	Dogsled	Drag
Draw	Dribble	Drift	Drive	Drop	Dump	Dwindle
Eddy	Edge	Embark	Emigrate	Ensnue	Enter	Erupt
Escape	Escort	Exit	Expand	Extend	Fade	Fall
Ferry	Fidget	File	Flap	Flee	Flick	Flip
Flit	Float	Flounder	Flutter	Fly	Follow	Ford
Foxtrot	Frisk	Frolic	Gallop	Gambol	Gimp	Glide
Go	Gondola	Goosestep	Grovel	Guide	Gyrate	Hare
Hasten	Head	Heave	Helicopter	Hide	Hike	Hobble

Hop	Hound	Hover	Huddle	Hurdle	Hurl	Hurry
Hurtle	Immerse	Immigrate	Incarcerate	Inch	Jeep	Jerk
Jet	Jig	Jiggle	Jitterbug	Jive	Jog	Joggle
Join	Journey	Jump	Kayak	Keel	Kick	Kneel
Land	Lapse	Launch	Lead	Lean	Leap	Leap-frog
Leave	Lift	Limp	Line	Linger	Log	Loiter
Lollop	Lope	Lumber	Lunge	Lurch	March	Meander
Mince	Moonwalk	Mope	Mosey	Motor	Motorbike	Motorcycle
Mount	Move	Nip	Nod	Oar	Oscillate	Outrun
Overreach	Overtake	Overturn	Pace	Pad	Paddle	Parachute
Parade	Pass	Pedal	Penetrate	Perambulate	Pirouette	Plod
Plummet	Plunge	Polka	Pop	Pounce	Prance	Proceed
Progress	Promenade	Pronk	Prowl	Pulsate	Punt	Pursue
Push	Quake	Quickstep	Quiver	Race	Raft	Ramble
Reach	Recede	Recline	Recoil	Reel	Reemerge	Resurge
Retire	Retreat	Return	Revolve	Rickshaw	Ride	Rip
Rise	Roam	Roar	Rock	Rocket	Roll	Rollerblade
Romp	Rotate	Rove	Row	Rumba	Run	Rush
Sail	Samba	Sashay	Saunter	Scale	Scamper	Scatter
Scoot	Scram	Scramble	Scrawl	Scud	Scurry	Scutter
Scuttle	Seesaw	Shadow	Shake	Shamble	Shepherd	Ship
Shiver	Shoot	Shove	Shrink	Shudder	Shuffle	Shuttle
Sidle	Sink	Skate	Skateboard	Skedaddle	Ski	Skid
Skim	Skip	Skitter	Skulk	Skydive	Sled	Sledge
Sleepwalk	Sleigh	Slide	Slink	Slip	Slither	Slog
Slouch	Sneak	Soar	Somersault	Somnambulate	Speed	Spin
Splash	Spring	Sprint	Squaredance	Squat	Squirm	Stagger
Stalk	Stamp	Stampede	Stand	Step	Stir	Stomp
Stoop	Storm	Stray	Streak	Stretch	Stride	Stroll
Strut	Stumble	Stump	Surpass	Surround	Swagger	Sway
Sweep	Swerve	Swim	Swing	Swirl	Swoop	Tack
Tail	Take	Tango	Tapdance	Taxi	Tear	Teeter
Thrive	Throb	Throw	Thrust	Thunder	Tip	Tiptoe
Tittup	Toboggan	Toddle	Topple	Totter	Tour	Track
Trail	Traipse	Tram	Tramp	Trample	Transfer	Travel
Traverse	Tread	Trek	Tremble	Trespass	Trip	Trolley
Troop	Trot	Truck	Trudge	Trundle	Tumble	Turn
Twine	Twirl	Twist	Twitch	Undulate	Unfold	Unravel
Vanish	Vault	Vibrate	Waddle	Wade	Waft	Wag
Waggle	Walk	Waltz	Wander	Wane	Wave	Waver
Wheel	Whirl	Whisk	Whiz	Wiggle	Wind	Wobble
Wrap	Wriggle	Writhe	Yacht	Zigzag	Zoom	

Appendix 2. Authors included in the *PoetiCog* database

Author	No. words	Author	No. words
Conrad Aiken	22407	Philip Larkin	2196
Maya Angelou	5187	D. H. Lawrence	14935
John Ashbery	21292	Robert Lowell	7286
W.H. Auden	16274	Marianne Moore	17083
Julian Bell	1261	Frank O'Hara	11018
Elizabeth Bishop	19029	Sylvia Plath	10460
William Blake	10036	Edgar A. Poe	10154
Samuel T. Coleridge	84324	Ezra Pound	12107
E. E. Cummings	2007	Anne Sexton	52109
Emily Dickinson	11853	W. Shakespeare	20772
Hilda Doolittle	5115	Stephen Spender	5732
T. S. Eliot	9750	Gertrude Stein	10519
Robert Frost	18049	Wallace Stevens	17315
Allen Ginsberg	30224	Marion Strobel	1687
Thomas Hardy	17360	Dylan Thomas	29037
Michael S. Harper	4477	Derek Walcott	14356
Seamus Heaney	8254	Walt Whitman	122411
Susan Howe	3810	Oscar Wilde	36125
Langston Hughes	5374	W. C. Williams	15945
Aldous Huxley	4321	W. Wordsworth	49466
John Keats	37169	W. B. Yeats	16210

Appendix 3. Statistics

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Eurol7

Residuals:

Min	1Q	Median	3Q	Max
-20.27	-17.21	-15.17	20.62	62.85

Coefficients:

Estimate Std. Error t value Pr(>|t|)
0.11676 0.00541 21.59 0.000000645 ***

Residual standard error: 35.06 on 6 degrees of freedom

Multiple R-squared: 0.9873, Adjusted R-squared: 0.9852

F-statistic: 465.9 on 1 and 6 DF, p-value: 0.0000006454

EnTenTen13

Residuals:

Min	1Q	Median	3Q	Max
-39322	-3195	7747	21333	46767

Coefficients:

Estimate Std. Error t value Pr(>|t|)
0.141726 0.009029 15.7 0.00000424 ***
Residual standard error: 28940 on 6 degrees of freedom
Multiple R-squared: 0.9762, Adjusted R-squared: 0.9723
F-statistic: 246.4 on 1 and 6 DF, p-value: 0.000004238

BNC

Residuals:

Min	1Q	Median	3Q	Max
-190.80	-23.75	84.49	154.56	250.74

Coefficients:

Estimate Std. Error t value Pr(>|t|)
0.12808 0.01157 11.07 0.0000324 ***
Residual standard error: 172 on 6 degrees of freedom
Multiple R-squared: 0.9533, Adjusted R-squared: 0.9455
F-statistic: 122.5 on 1 and 6 DF, p-value: 0.00003235

Project Gutenberg

Residuals:

Min	1Q	Median	3Q	Max
-828.3	-287.9	250.9	446.4	1125.2

Coefficients:

Estimate Std. Error t value Pr(>|t|)
0.192580 0.009422 20.44 0.000000892 ***
Residual standard error: 704.5 on 6 degrees of freedom
Multiple R-squared: 0.9858, Adjusted R-squared: 0.9835
F-statistic: 417.7 on 1 and 6 DF, p-value: 0.0000008919

PoetiCog

Residuals:

Min	1Q	Median	3Q	Max
-9.0950	0.4835	1.4753	2.6253	20.2724

Coefficients:

Estimate Std. Error t value Pr(>|t|)
0.50274 0.03775 13.32 0.0000111 ***
Residual standard error: 9.234 on 6 degrees of freedom
Multiple R-squared: 0.9673, Adjusted R-squared: 0.9618
F-statistic: 177.3 on 1 and 6 DF, p-value: 0.00001109

CHAPTER 3

What is time?

Verbal creativity in copula constructions

Anna Piata

University of Neuchâtel / National and Kapodistrian University of Athens

The focus of this chapter is on poetic metaphors of time that appear in so-called equations, that is, copula constructions of the form ‘NP *be* NP’. While metaphorical creativity of time has been extensively and thoroughly studied, research on such metaphors is rather limited and mostly associated with image metaphors. Based on data from the English PoetiCog corpus, this chapter demonstrates that these metaphors activate mental imagery (as previously assumed) but due to the constructional pattern of equations they also directly evoke the source of the metaphorical mapping. This posits a challenge for their understanding, which I argue to tap into a process of mental simulation along the lines of embodied semantics.

Keywords: embodied semantics, equations, imagery, poetic metaphor

*Time is the substance I am made of.
Time is a river which sweeps me along, but I am the river;
it is a tiger which destroys me, but I am the tiger;
it is a fire which consumes me, but I am the fire*

Jorge Luis Borges, “Labyrinths: Selected stories and other writing”

1. Introduction

What is time? This has been a puzzling question for an array of disciplines as diverse as physics, philosophy, psychology, and anthropology. Meanwhile, how time is expressed verbally but also through other modalities has been a central object of inquiry in linguistics and beyond. Although language can be hardly considered a source for defining *what* is time, in the recent years it has served as a window onto understanding *how* time is conceptualized.

More specifically, a prolific body of research in Cognitive linguistics has brought to the limelight a pervasive cross-linguistic pattern attesting to the so-called *spatialization of time* (Clark 1973; Traugott 1978; Evans 2003; Fauconnier and Turner 2008; Núñez 1999; Lakoff 1993; Lakoff and Johnson 1980, 1999; Moore 2006, 2014; Núñez and Sweetser 2006; for an overview see Núñez and Cooperrider 2013). The upshot in this line of research is that time is metaphorically structured in terms of space and motion. The metaphorical structure of time comes in two variants that are interrelated, yet distinct: the *Ego-moving metaphor of time* and the *Time-moving metaphor*, respectively. The former conceptualizes Ego as moving in time (which is thereby construed as a landscape of events-as-locations), whereas the latter represents time and events as moving past a stationary observer. In essence, such conceptual metaphors assign motion either to the experiencer of time (henceforth Ego) or to time; cf. “*We are approaching Christmas*” and “*Christmas is approaching*”. Both patterns have been attested in typologically different language (see, e.g., Haspelmath 1997; Radden 2003, 2011), while experimental evidence supports the psychological validity of the language-based claims (see, e.g., Boroditsky 2000; Weger and Pratt 2008; Casasanto and Boroditsky 2008; Casasanto, Fotakopoulou and Boroditsky 2010).

In this spirit, the study of figurative expressions of time, found predominantly, although not exclusively, in poetry, was also recruited to corroborate the underlying role of metaphor in temporal cognition. Building on Conceptual metaphor theory, Lakoff and Turner (1989) studied how pre-existing conceptual mappings underlie a great deal of verbal creativity. Poetic metaphors of time were thus shown to extend, elaborate, challenge, or combine pre-existing conceptual mappings. Although this account was not meant to be exhaustive (aiming to explain *all* poetic metaphors), it was aligned with the more general assumptions of Conceptual metaphor theory regarding the metaphorical underpinnings of time conceptualization. The aim was to stress the *continuity* between conventional and creative metaphor, thus advancing a comprehensive account of temporal cognition in terms of space. This approach, however, was not without its critics. Pagán Cánovas and Piata (2018) revoked, in empirical grounds, the explanatory power of spatio-temporal metaphors vis-à-vis verbal creativity. They showed that poetic metaphors of time give rise to meanings that are far more diverse and varied and therefore require a ‘cognitive recipe’ that is accordingly versatile and amenable to creative manipulation, such as a conceptual integration network (Fauconnier and Turner 2002). The latter can still afford a uniform model for temporal cognition but without the rigid constraints of conceptual metaphors.

Some attempts to approach the ‘poetics of time’ beyond its conceptual pairing with space were primarily concerned with the limitations of CMT. This is the case, for instance, with personification metaphors (e.g., “*time heals all wounds*”) that do

not fit into spatial patterns for time conceptualization (Piata and Pagán Cánovas 2017), as well as with time expressions that extend figurativity beyond metaphor (e.g., “*those moments felt like a century*”) (see Piata 2018). There is only one category that has not attracted attention with regard to time conceptualization: that of so-called *equations*, namely copula constructions of the form ‘NP *be* NP’ (Sullivan 2007; see also Sullivan 2009, 2013). Such expressions involve a noun phrase (NP) that predicates a copula-linked referent to the subject; e.g., “*time is money*”. Unlike other types of metaphorical constructions, in equations both the source and the target domain are explicitly communicated: the target domain is usually the noun that precedes the copular clause while the source domain is expressed through the copula-linked element. Interestingly, metaphorical expressions that appear in this type of construction are the ones that have traditionally been treated as genuine metaphors (for more detail see Section 2).

These poetic metaphors of time, expressed through equations, constitute the focus of this chapter. In this sense, this chapter aims to address the question of “what is time?” in a non-conventional way: through the lens of verbal creativity. Evidently such an endeavor does not aspire to be definitional (let alone definitive) and does not aim to compete with the long-standing inquiry into time in the abovementioned disciplines. It only attempts to explore how poets *express* (and therefore *represent*) what time is. The data to be examined are derived from PoetiCog English, a corpus of texts that span over different authors and periods in contemporary English poetry (see Section 3). In the light of this evidence, I show that poetic metaphors of time in copula constructions exploit concrete domains of experience but, contrary to what has been suggested (Sullivan 2007), they afford conceptualizations that exceed imagery. The chapter’s aim therefore is to explore the creative possibilities offered by the copula construction and the implications that follow for figurative language understanding.

Finally, it is worth noting that this endeavor is not concerned with personification metaphors, although, syntactically speaking, these may also exploit copula constructions. I consider personification metaphors to differ from equation metaphors in that they can be rendered into predicate-argument constructions. To illustrate, consider that expressions like, e.g., “*time is a destroyer/a thief/a devourer/a healer, etc.*” can be paraphrased as VPs: “*time destroys/ steals/ devours/ heals, etc.*” The result of such metaphors is an agentive construal of time, that is, time as causing something to happen in accordance with the TIME IS A CHANGER conceptual metaphor (see Piata and Pagán Cánovas 2017). In contrast, the time metaphors that are examined in this chapter evoke an existential, so to speak, construal of time.

2. Copula constructions: From everyday speech to poetic discourse

According to Sullivan (2007: 141–142), equations constitute “the most common and the most varied of the copula constructions”. Other types of copula constructions include metaphorical expressions of the form ‘NP *be* AP’ (“he was utterly *allergic* to the suggestion”) and ‘NP *be* PP’ (“ever since she had met him she had been *on a roller-coaster*”) (ibid. 136). Across all metaphorical copula constructions, the target-domain NP is followed by the copular clause with the source-domain element, whether this is NP, AP or PP. In constructional terms, this means that the target domain is expressed through the conceptually autonomous element (i.e., the head) whereas the source domain by the conceptually dependent element (i.e., the copula-linked element)¹ (see Figure 1). However, unlike other types of metaphorical constructions, in equations the source domain is directly evoked rather than being inferred (e.g., “last night had been *a glorious voyage of discovery*”).

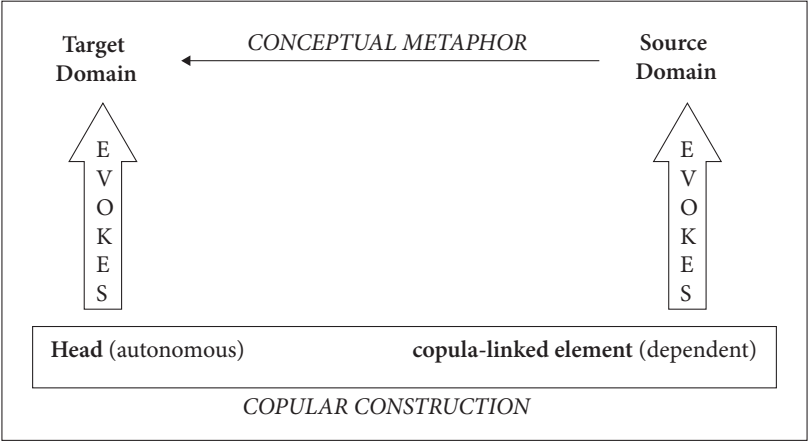


Figure 1. Copula constructions according to Sullivan (2007: 136)

1. Conceptual autonomy and conceptual dependence are semantic concepts, not tied to syntactic dependency, which explain the structure of constructions (Langacker 1987; Croft 2003). According to Langacker (2002: 122), “when two component structures combine (via a grammatical construction), normally an asymmetry exists between them... One structure is said to be dependent on another to the extent that it presupposes it as part of its own internal structure”. For example, in the phrase ‘obese cat’ *obese* is dependent and *cat* is autonomous because the meaning of *obese* depends on the conceptualization of a cat (or any other animal or human that could fill in this slot). Sullivan (2007) shows in detail how conceptual metaphor interacts with constructional meaning, explained in terms of conceptual autonomy and conceptual dependence.

The time metaphors that are the object of this study belong with so-called predicational equations because they assign a value or quality to the referent ‘time’ (Sullivan 2007: 138). This type of equations is the one to be expected in written metaphoric language, together with specificational equations that denote a role and its filler and are attested to a lesser extent; “pace is *the key to success*”. According to Sullivan (2007: 138–139) and in line with Sakahara’s analysis (1996), predicational equations do not allow for switching the two NPs; should that be the case, the result is not an acceptable sentence (*“a glorious voyage of discovery was last night”), unlike specificational equations that can be permuted (“the key to success is pace”).²

Sullivan (2007: 142) observes that “equations (like all copula constructions) are rare compared to other metaphorically used constructions” but are more common in the context of poetry. She admits that equations lack the communicative advantages of other predicating constructions (“your morals *reek*”) and domain constructions (“mental *exercise*”). Because they directly evoke both domains of the metaphorical mapping, they have a generality that renders them suitable for the labels of conceptual metaphors. It is worth noting, finally, that the empirical observation regarding the limited frequency of equations stands in stark contrast to a long-standing tradition in philosophy, linguistics, and pragmatics, which views equations as the prime example of metaphor. To illustrate this, consider the classic examples of metaphor cited, and analyzed, in Gricean and post-Gricean pragmatics, such as “You are *the cream in my coffee*” and “Sally is *a gem*”. It would not be an exaggeration to say that traditionally such direct metaphors have been considered to constitute metaphors proper.

However, as noted by Sullivan, equations excel at two things. Firstly, they qualify for the expression of so-called image metaphors (“her eyes were *sapphire*”), which map imagistic qualities onto domains of experience that are also concrete, or at least perceived as such (see Gibbs and Bogdonovich 1999). Traditionally, image metaphors have been considered as not entertaining any complex mappings or nuanced inferencing. Secondly, equations tend to appear in combination with other types of metaphorical constructions such as domain metaphors, as is the case with, e.g., “educational *edifice*” in the specificational equation “The University is *the apex of the educational edifice*”.

Last, but not least, the category of equations includes constructions with other copular verbs (e.g., *become*), as well as those constructions that are hedged with *like* and *as* and are usually described as similes: “Time is *like money*”. For Sullivan,

2. For a detailed account of equations see Langacker (1991).

similes are not conceptually distinct from metaphors,³ the only difference being that the hedges emphasize the partial nature of the metaphoric mappings, namely that it is not the whole source domain that is activated in the cross-domain mapping but instead only some aspects of it are foregrounded. This can perhaps explain why similes are particularly suited for image metaphors (e.g., “Her eyes are *like sapphire*”).

The fact that equations are rarely used in metaphorical expressions of time (except for the proverbial expression “*time is money*” mentioned above) promises a rather underexplored territory of verbal creativity. Such an endeavor allows to address anew the metaphorical structure of time while at the same time putting into perspective the theoretical debates that inhere in the study of time conceptualization.

3. The data

For the purposes of this study the corpus of PoetiCog English has been used (see also Castillo and Pagán Cánovas, this volume). PoetiCog English is a database of poetic texts from different authors and periods, compiled as a corpus and stored on Sketch Engine (<https://www.sketchengine.eu/>). Although rather small in size (it contains 814,496 words), PoetiCog is, to the best of our knowledge, the only specialized corpus of poetic discourse that is currently available. Moreover, the fact that it can be accessed through Sketch Engine, with all the possibilities offered by this software (concordancer, Word Sketch, thesaurus, etc.), makes PoetiCog English a valuable resource for the linguistic study of poetry. It is hoped that in the future the corpus will be enriched with more texts not only in English but also in Spanish and Modern Greek, which are the two other languages in which it is currently available.

For the needs of this study, the searches were focused on the English version of PoetiCog and were enabled by the concordancer function of Sketch Engine. The aim was to track down metaphorical expressions of the type ‘*time is* + NP’. For this reason, the ‘Context’ option of the concordancer was activated, in particular, the ‘lemma’ version of it. This allowed searching for the key word *time* followed by the copular verb *to be*. This search rendered a total of 143 results, which were then manually examined in order to filter out any irrelevant results (e.g., “*We live beneath/ Time’s wasting sovereignty*”), as well as personification metaphors (e.g., “*You cannot face it steadily, but this thing is sure, that Time is no healer/ the*

3. For a different view on the distinction between metaphor and simile see Carston and Wearing (2011).

patient is no longer here”). This leaves us with 7 metaphorical equations about time. However small, this sample is amenable to a qualitative analysis, as shown in the next section.

4. What is time?: Evidence from poetry

In this section, I offer an analysis of the copula metaphors of time found in the corpus. For this purpose, I examine the metaphorical expression of time (highlighted in bold) together with the immediate linguistic context in which it is found.

The first metaphor appears in the poem “Old man”, the first out of the three parts of the poetic synthesis “Doors, doors, doors” by Anne Sexton. In this poem, the poet is addressing an old man, living alone since his wife died, in what seems to be a “dingy” apartment whose quietness is occasionally disrupted by a neighbor meeting with a girl. At the end of the poem, the old man is addressed as a “castaway” within the “flat sea” of time:

- (1) *Old man, you are their father holding court
in the dingy hall until their alarm clock
rings and unwinds them. You unstopper the quart
of brandy you've saved, examining the small print
in the telephone book. The phone in your lap is all
that's left of your family name. Like a Romanoff prince
you stay the same in your small alcove off the hall.
Castaway, your time is a flat sea that doesn't stop,
with no new land to make for and no new stories to swap.*

Anne Sexton, “Old man”

Clearly, the copula construction in (1) offers a metaphorical conceptualization of time as sea. This conceptualization seems to be well motivated in experiential terms: the infiniteness of time resembles the unboundedness of the sea (since perceptually the sea does not have any boundaries). Moreover, the ceaseless flow of sea waters lends itself to an analogy with what is perceived as the endless passage of time. The fact that the sea is modified by “flat” alludes to a regular sense of time passing, one that features no significant fluctuations. What makes this metaphor particularly creative is the way it is elaborated by the poet. Time appears as a sea only to offer a conceptualization of the old man as a “castaway”, being left with no hope of rescue, no future to anticipate (“with no new land to make for and no new stories to swap”). Not accidentally, the passage does not refer to time in general but to the time disposed by the old man: “your time”. Therefore, this particular construal of time pertains to himself rather than to any experiencer or time at large.

The question that follows naturally is this one: does this expression qualify as an image metaphor? As already noted, predication equations are ideal for expressing image metaphors, which map a gestalt, usually of shape, line, or other visual qualities (Sullivan 2007: 144). At first glance, this could also be the case in (1). Upon closer inspection, it becomes clear that the metaphor involves frame evocation, as different elements of the frame of SEA are recruited and mapped onto our understanding of time: being flat, unbounded, unstoppable, adjacent to land. This is further enriched with the presence of a castaway, identified as the old man figuring in the poem. This, of course, does not preclude imagery from the metaphor; it is likely that imagistic qualities related to our perception of the sea are also evoked. However, they do not suffice for a full understanding of the metaphor in (1). Finally, the time-as-sea metaphor in (1) does not qualify as an image metaphor for one more reason: image metaphors differ from conceptual metaphors in that they map one concrete sensory image onto another concrete image (e.g., “*my wife’s waist is an hourglass*”). However, what could be the image of time? One could hardly think of a concrete representation of time, except perhaps for a clock metonymically standing for time, but this does not seem to be the case here. Instead, the metaphor in (1) seems to involve complex domain mappings, giving rise also to further inferencing: with the castaway having nothing new to anticipate or hope for in the ever-flowing passage of time the metaphor is clearly negatively valenced, carrying over a sense of pessimism.

If this is neither an image nor a conceptual metaphor (since it cannot be assumed to be part of our conceptual system for representing time), what is the status of this metaphor? In other words, how can it be categorized within existing metaphorical categories? In order to tackle this question, let’s consider yet another example, cited in (2) below:

- (2) *It is time that beats in the breast and it is time
That batters against the mind, silent and proud,
The mind that knows it is destroyed by time.*

*Time is a horse that runs in the heart, a horse
Without a rider on a road at night.*
The mind sits listening and hears it pass.

Wallace Stevens, “The pure good theory”

Another predication equation figures in this poem, this time representing time as a horse. It is worth noting that this metaphor appears in a context in which time is the prominent theme (“*It is time that beats in the breast and it is time/ That batters against the mind...*”). This representation, however novel, is on a par with our folk understanding of time as a race, in which the experiencer is running against time as if in a competition. That said, it could be that the metaphor in (2) represents in

an imagistic way a conceptualization of time that is already available. While this conceptualization is likely to be activated, it soon becomes clear that the metaphor is elaborated in a much more original way: time is a horse that runs “*without a rider on a road at night*”. We see therefore that different elements related to horse riding are evoked. What is especially noteworthy is the absence of a horse rider: we may thus infer that, while the time-horse runs, the experiencer of time has gone missing (departed? dead?). In this sense, the metaphor in (2) challenges, rather than confirms, the conceptualization of time as a race: there is no competitor in this horse ride. The subject is an observer rather than an experiencer and, in particular, a disembodied one: “*the mind sits listening and hears it pass*”.

In other words, the metaphor in (2) is imagistic and conceptual alike. Its creativity resides in combining the image of a horse with conceptual elements associated with both horses and time passing: running, a rider/experiencer, a road. However, in the time-as-horse metaphor time is rendered audible; such a conceptualization can only be emergent (in a conceptual blending fashion) since time itself cannot be heard. This reinforces the claim made in this chapter that predicational metaphors of time involve domain mappings and give rise to conceptual structure, which can invite further inferences: in the absence of a rider, the ride is likely to head to no specific destination (note that it takes place at night). The fact that the horse runs “*in the heart*” only suggests that the time ride is an emotional one and is therefore clearly contrasted with the “*mind*” that is merely observing the passage of time. The duality between the heart and the mind seems to be at the core, even more so because the mind is said to be “*destroyed by time*”, as suggested earlier in the poem.

It seems that the predicational metaphors of time show a preference for elements in nature, be it the sea or an animal like the horse. A similar pattern is also attested in (3), which conceptualizes time as a tree, with life being one of its leaves:

- (3) *worms are the words but joy's the voice
down shall go which and up come who
breasts will be breasts thighs will be thighs
deeds cannot dream what dreams can do
–time is a tree(this life one leaf)
but love is the sky and i [sic] am for you
just so long and long enough*

e.e. cummings, “[as freedom is a breakfastfood]”

The tree and the leaf are related metonymically through PART IS A WHOLE, the leaf only being a part of the tree. This metonymy forms the basis of the metaphor: life (in particular, “*this life*”) is just one (small) part of the tree of time. We therefore observe again that the predicational metaphor in (3) is far richer than an imagistic representation of time. The choice of the tree as a source for the metaphorical

conceptualization of time is well motivated (note also the phonological parallelism in the metaphorically linked elements: ‘time/tree’ and ‘life/leaf’). Life-as-leaf grows, blossoms, and goes away only to give way to new leaves (and lives). In contrast, time-as-tree is there to sustain the leaves, allowing them to grow and blossom while also generating new ones once they wither. Even without the leaves, though, the tree will continue to exist. Clearly, the construal of time communicated in (3) is a positive one. Although the metaphor here is not extensively elaborated as it was the case in the previous two examples, it still affords at once rich conceptual structure and imagery, thus enabling pragmatic inferencing.

Finally, the metaphor of time-as-tree is contrasted to love metaphorically represented as the sky (“*but love is the sky*”). In other words, love is over and above time: it stands higher compared to the tree of time, which is thus subsumed under the unboundedness of love. This suggests that the time metaphor is motivated not only by a perceived part-whole resemblance between the pairs of time/life and tree/leaf, but also in discursive terms: the analogy between time and tree is designed to serve the rhetorical purpose of praising love’s overarching power that infiltrates the poem. This construal includes also the experiencer, identified with the poetic voice: “*i [sic] am for you/ just so long and long enough*”.

In a similar vein, the poem in (4) below exemplifies a representation of time as an orchard:

(4) *Flowers are a tiresome pastime.*

*One has a wish to shake them from their pots
root and stem, for the sun to gnaw.*

*Walk out again into the cold and saunter home
to the fire. This day has blossomed long enough.*

*I have wiped out the red night and lit a blaze
instead which will at least warm our hands
and stir up the talk.*

I think we have kept fair time.

Time is a green orchard.

William Carlos William, “A celebration”

Once again, the poem in (4) attests to a poetic metaphor of time inspired by nature; here in the form of an orchard, i.e. an area of land where fruit trees grow. The frame of ORCHARD is activated and, while being mapped onto time, it is further specified as “green”. In other words, time is construed as blossoming. The metaphor itself is not elaborated; no other frame elements related to ORCHARD are, at least explicitly, mapped onto time. This, of course, does not preclude possible inferences: to what (or whom) do they correspond the fruit trees that are blossoming in the orchard of time? In other words, what does the orchard stand for? An orchard can be taken to resemble time in that it clearly signals the alternation of the seasons. It is well

known that the recurrence of natural phenomena reflects the circularity of time, which also formed the basis for the development, at least cognitively, of mechanical time (see Fauconnier and Turner 2008). But here time is not equated with any orchard but with a “green” one.

Unlike the previous examples, I consider the predication metaphor in (4) to be primarily imagistic. Here, imagistic qualities related to green orchards enable the understanding of the time metaphor: a setting of blossoming nature, colorful, enchanting, stimulating the senses while also promising to bear fruit. This does not mean, however, that frame structure is not involved in the understanding of the metaphor. Frame elements associated with ORCHARDS are found earlier in the poem, although they are not (at least explicitly) associated with time: flowers are described as “a tiresome pastime” and this particular day is construed as having “blossomed long enough”. It rests upon the reader to make their own meaningful associations and arrive at a plausible interpretation of the metaphor; the green orchard may signal ever-flowing time, it may allude to beauty, prosperity, calmness, etc. At the same time, the metaphor of time as an orchard may be contrasted to the “blaze” that the poetic voice appears to lit in order to “warm our hands/ and stir up the talk”. In short, the construal of time profiled by this metaphor is one that carries over positively valence.

The following time metaphor is also an example in which the reader is expected to work out the interpretative effect:

- (5) *Better, you said, to stay cowering
Like this in the early lessons, since the promise of learning
Is a delusion, and I agreed, adding that
Tomorrow would alter the sense of what had already been learned,
That the learning process is extended in this way, so that from this standpoint
None of us ever graduates from college,
For time is an emulsion, and probably thinking not to grow up
Is the brightest kind of maturity for us, right now at any rate.*
John Ashbery, “Soonest mended”

An emulsion is a mixture that is produced when blending two liquids that are not dissolved; for example, mixing oil and vinegar will yield an emulsion. What does an emulsion stand for when used to represent time? It is likely that in this case the metaphor is much more open-ended and amenable to subjective readings. One possible interpretation is that time is fluid *like* an emulsion, therefore it is mutable, not static and fixed (note that such an interpretation is consistent with the conceptualization of time passing as a flow). But the interpretation can be more complex than that; time may be seen as a blend of things that cannot be reconciled. A closer examination of this poetic extract reveals the relevance of time to a process

of growing, learning, and maturing: “*Tomorrow would alter the sense of what had already been learned*”. In this light, time could be a blend of what has been learned and what remains to be learnt; the two, however, are not amenable to a complete fusion. This perhaps explains why learning is only a “*delusion*” and, therefore, “*none of us ever graduates from college*”.

This predication metaphor is certainly different from the previous ones, and much less transparent; it does not evoke an element of nature nor does it clearly allude to a pre-existing pattern for conceptualizing time or to any relevant imagery. It is discursively, rather than experientially, motivated, in the sense that the metaphorical meaning is enabled through the particular context of its occurrence. However novel and original, the metaphor in (5) is nevertheless grounded in our folk understanding of time. The emergent construal is not stripped of further inferences: is maturity a feasible or even a desirable objective? Is it worth giving a try? Are we doomed to be ignorant?

Next, let us consider an extract from T. S. Eliot’s well-known poem “The four quartets”, attesting to a more complex instance of a copula construction denoting time:

- (6) *For our own past is covered by the currents of action,
But the torment of others remains an experience
Unqualified, unworn by subsequent attrition.
People change, and smile: but the agony abides.
Time the destroyer is time the preserver,
Like the river with its cargo of dead negroes, cows and chicken coops,
The bitter apple, and the bite in the apple.* T. S. Eliot, “The four quartets”

This metaphor suggests a paradox in that it conceptualizes time in two opposing ways: “*time the destroyer is time the preserver*”. Unlike the previous examples, here both the subject and the copula refer to time, each one evoking a different personification of time. The result is an oxymoron: how can time be regarded as a destroyer and at once a preserver?

The metaphor in (6) is interesting also from a constructional perspective. It evokes the two personifications of time through apposition, a syntactic pattern that, according to Sullivan (2007: 419), serves the same function as equation (“*time the destroyer*”, “*time the preserver*”). Apposition is rarely found in informal and/or conversational discourse domains and is more likely to occur in literary contexts. Here it serves to evoke the two conceptualizations of time that are brought together through the copula construction. Another interesting observation relates to the metaphor being a predication, rather than a specificational, equation. This follows from the fact that the interpretation of the metaphor varies depending on the

syntactic order of the subject and the copula: reversing the order (“*time the preserver is time the destroyer*”) would yield an entirely different interpretation.

So what is the meaning conveyed through this metaphor? On the one hand, time has a well-known destructive power: all animate beings perish through the passage of time and ultimately die; over time natural elements rot; and material entities decay.⁴ This, of course, affects primarily humans. But, on the other hand, certain things can resist attrition and override the ravages of time. In a sense they can be regarded timeless: “*People change, and smile: but the agony abides*”. To put it simply, while time destroys certain things it preserves others. This construal carries over a subtle sense of optimism, even if it applies to agony: not everything will go. Here, imagery does not seem to be relevant to the understanding of the metaphor. Instead, conceptual structure is recruited and combined, although in this case it applies solely to time itself.

Finally, the last poem to be discussed contains two metaphorical equations of time that appear in successive lines at the poem’s end:

- (7) *Each minute bursts in the burning room,
The great globe reels in the solar fire,
Spinning the trivial and unique away.
(How all things flash! How all things flare!)
What am I now that I was then?
May memory restore again and again
The smallest color of the smallest day:
Time is the school in which we learn,
Time is the fire in which we burn.*

Delmore Schwartz, “Calmly we walk through this April’s day”

These lines conceptualize time as “*the school in which we learn*” and “*the fire in which we burn*”. Taken together, the two time metaphors evoke a more elaborate conceptualization of time. Both metaphors are linguistically and conceptually novel, since they do not seem to hinge on any pre-existing conceptualization of time. Nevertheless, what they do is simply to describe a very fundamental aspect of our experience of/in time: overtime we grow and learn but we are ultimately consumed by time. This can invite further inferences, related to the transformative power of time, the meaning of life, the ultimate end, etc., all being strongly valenced in a clearly negative way; e.g., no matter what lesson we learn over time our life is doomed to come to an end. In any case, a pessimistic reading is clearly underway.

4. The construal of a destroyer and/or an enemy has been found to infiltrate the personification patterns for time in poetry (Piata and Pagán Cánovas 2017).

In this example, the frames of *SCHOOL* and *FIRE*, elaborated also through “*learn*” and “*burn*”, seem to serve as triggers for activating any relevant aspects of time experience: time is what allows us to grow and mature but it is not unlimited and one day it will be used up. Both lexemes’ basic meaning, related to educational establishments and a process of combustion with particular chemical reaction products respectively, is not fully retained in the metaphor but only what is relevant to the understanding of time conceptualization: learning and burning, which, perhaps not accidentally, are iconically linked through rhyme (/lɜ:n/ and /bɜ:n/). Phonological parallelism adds to syntactic parallelism that appears with the repetition of the same copula construction in two successive lines and which is also utilized to build a link between the two time metaphors. These stylistic features enable the reader to infer a meaningful association between the two time metaphors and thus arrive at their own interpretation of the conceptualization of time in (7). This conceptualization seems here, more than in any other of the poems examined, to tap into how humans experience time and what this experience implicates. Finally, it is likely that fire enables some imagery, especially with regard to the funereal practice of cremation.

In this section, I have aimed to show how copula constructions that metaphorically conceptualize time evoke conceptual structure and imagery alike. As Gibbs and Bogdonovich (1999: 43) have pointed out, “theories of metaphor must distinguish between different kinds of conceptual mappings in explaining the aesthetic qualities of metaphorical statements”. In the following, and last, section of this chapter, I attempt to tackle the implications of these expressions for figurative language understanding.

5. Discussion and conclusions

Time has been extensively and thoroughly studied in relation to different types of expressions that span across varying degrees of (non-)conventionality. Nevertheless, copula constructions used to express time in creative ways have been rather overlooked. This chapter ventured on exploring the poetics of time afforded by metaphorical equations (“*time is* + NP”), thus aiming to fill in this gap while also contributing to the on-going and cross-disciplinary study of time. However limited in number, copula constructions related to time proved a rich and varied domain of creativity.

It would not be an exaggeration to say that the copula constructions of time attest to creativity at its best. Time is manifested in metaphorical expressions that move away from the routine ways of representing time; the very use of the copula construction already indicates a departure from conventionality since it is not

commonly used for time conceptualization in everyday language. These time metaphors pick out concrete domains of experience, often derived from the natural world. While some source domains can be taken to bear a perceived similarity with time and its representations (i.e., sea taps into the unboundedness of time, a horse alludes to time as a race), others seem to be enabled by the particular context in which they occur (e.g., “*time is an emulsion*”) or utilize a pre-existing conceptualization of time (such as a destroyer). While all metaphors directly evoke the source domain (due to the ‘NP *be* NP’ form of the construction), at times they can further elaborate its conceptual structure; consider the castaway in (1) and the absent horse rider in (2). But this is not always the case: in poem (5), in which time is conceptualized as an emulsion, the conceptual mapping is not, at least explicitly elaborated, whereas in (4) representing time as an orchard hinges more on imagery associated with orchards rather than on conceptual structure. In all, even in this small dataset metaphorical equations seem to be quite diverse, thereby reinforcing the idea that they afford *ad hoc* creativity.

In the light of the above, the claim that, when used in poetry, copula constructions give rise to image metaphors does not seem to hold on firm ground. As already noted, the data examined here range from highly imagistic metaphors (“*Time is a green orchard*”) to cases that cannot be regarded as bearing any imagistic qualities whatsoever (“*but time is an emulsion*”) with other metaphors lying somewhere in between. This does not mean, however, that copula constructions cannot lend themselves to image metaphors; I think that a better way to put it would be to say that image metaphors are likely to be expressed with copula constructions. The latter can equally well enable conceptual structure, although this can be accompanied with imagery as well. This observation, taken together with the limited dataset that has been examined, does not allow for any established conclusions. But it is quite safe to assume that, especially when it comes to an abstract concept like time, imagery alone can be hardly considered the driving force of metaphorical creativity.

But if both conceptual structure and imagery are, more or less, involved in these time metaphors how are they expected to be interpreted? In other words, how can these metaphors fit into our existing theories of metaphors? Given that they do not rely on pre-existing cross-domain mappings, they fall outside the scope of Conceptual metaphor theory. Conceptual integration theory could offer an alternative solution through its multiple-space model that integrates conceptual structure from two (or more) inputs. It could thus explain those metaphors that are motivated by embodiment but also those that are discursively induced in their context of use. Also, it can account for novelty and conventionality alike. What cannot be fully captured in this framework, however, is the role of imagery: where does imagery fit in enabling metaphor understanding *together with* conceptual structure?

A possible answer, I argue, comes from so-called embodied, or simulation semantics (Bergen 2005, 2016). Along these lines, language understanding involves a mental simulation, based on previous action and perception in the world but also on our ability to imagine entities, actions, and sensations that we have not experienced before. This is what forms the basis for propagating inferences, thus enabling communication. The gist of this argument is that mental simulation is essential to understanding both literal and figurative language processing. With regard to metaphor, in particular, Gibbs (2006: 435) points out that “[m]any aspects of metaphoric language appear to arise from, and continue to be grounded in, patterns of embodied experience and may be understood via cognitive simulations that are also fundamentally embodied”. This assumption forms part of the view that cognition is largely embodied, including perception, memory, mental imagery, problem-solving, and concepts, and, as a result, this also enables language processing (for a review see Gibbs and Macedo 2010). Its premises therefore are very much in tune with the embodied view of meaning and can complement central notions in cognitive linguistics, such as image schemas, frames, metonymy, and conceptual metaphors.

How can embodied semantics help us explain the meaning of the time metaphors examined in the previous section? Forming a mental simulation of, e.g., a horse with no horse rider (even if one has never mounted a horse) enables making sense of the metaphor of time-as-horse, as outlined earlier: time runs but with no destination and, more importantly, with the experiencer not being part of the ride. Clearly, any further inferences that may follow are the upshot of the simulated scene of the horse ride and of any meaningful connections we can make with our experience of time. This can also explain why different readers may arrive at different interpretations; not all readers simulate the scene in identical, or even similar, ways. Mental simulation is equally relevant to the understanding of a time metaphor that has prominent imagistic qualities; e.g., “*time is an orchard*”. Being able to imagine an orchard with its verdure, colors, and smells that alter through the seasons may evoke the circularity of time but, more importantly, it triggers how the view of an orchard impacts on our senses. In all, our ability to simulate real and imagined worlds, on the basis of experience but also by virtue of our imagination, seems to be a key to the understanding of time metaphors –at least those that cannot be subsumed under any other pre-existing schematic representation. In short, mental simulation forges a link between conceptual structure and imagery, thus enabling the understanding of these metaphors. This, of course, does not preclude frame evocation, as suggested by those metaphors that elaborate the frame evoked by the metaphor. How frames interact with mental simulation is an issue that is open for future research.

Still, of course, the question of “what is time?” remains open, as expected. The answers provided by poets are by necessity metaphorical. The present study has shown that, however creative, these time metaphors are subject to certain constraints, related to the constructional pattern of predicational equations: *time* is the head in the copula construction, which evokes the target domain, whereas the copula-linked noun contains the source domain. The target-domain item (*time*) precedes the copular clause and this order cannot be reversed; should that be the case, the result would be either uninterpretable (“*an orchard is time*”) or a completely different construal of time (as in “*time the preserver is time the destroyer*”). This leads to one more constraint, this time related to figurative expressions of time across the board: time metaphors resonate, one way or another, with our experience of time. In as much our experience of time is varied, its expression cannot but be equally varied. The present study has aimed to tackle only a small part of it.

References

- Bergen, B. (2005). Mental simulation in literal and figurative language. In S. Coulson & B. Lewandowska-Tomaszczyk (Eds.), *The literal and non-literal in language and thought* (pp. 255–280). Bern: Peter Lang.
- Bergen, B. K. (2016). Embodiment, simulation, and meaning. In N. Riemer (Ed.), *The Routledge handbook of semantics* (pp. 142–157). London: Routledge.
- Boroditsky, L. (2000). Metaphoric structuring: Understanding time through spatial metaphors. *Cognition*, 75(1), 1–28. [https://doi.org/10.1016/S0010-0277\(99\)00073-6](https://doi.org/10.1016/S0010-0277(99)00073-6)
- Carston, R., & Wearing, C. (2011). Metaphor, hyperbole and simile: A pragmatic approach. *Language and Cognition*, 3(2), 283–312. <https://doi.org/10.1515/langcog.2011.010>
- Casasanto, D., & Boroditsky, L. (2008). Time in the mind: Using space to think about time. *Cognition*, 106, 579–593. <https://doi.org/10.1016/j.cognition.2007.03.004>
- Casasanto, D., Fotakopoulou, O., & Boroditsky, L. (2010). Space and time in the child’s mind: Evidence for a cross-dimensional asymmetry. *Cognitive Science*, 34, 387–405. <https://doi.org/10.1111/j.1551-6709.2010.01094.x>
- Clark, H. H. (1973). Space, time, semantics, and the child. In T. E. Moore (Ed.), *Cognitive development and the acquisition of language* (pp. 28–63). New York: Academic Press.
- Croft, W. (2003). The role of domains in the interpretation of metaphors and metonymies. In R. Dirven & R. Pörings (Eds.), *Metaphor and metonymy in comparison and contrast* (pp. 161–206). Berlin: Mouton de Gruyter.
- Evans, V. (2003). *The structure of time: Language, meaning and temporal cognition*. Amsterdam: John Benjamins. <https://doi.org/10.1075/hcp.12>
- Fauconnier, G., & Turner, M. (2002). *The way we think: Conceptual blending and the mind’s hidden complexities*. New York: Basic Books.
- Fauconnier, G., & Turner, M. (2008). Rethinking metaphor. In R. Gibbs (Ed.), *The Cambridge handbook of metaphor and thought* (pp. 53–66). Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9780511816802.005>

- Gibbs, R. (2006). Metaphor interpretation as embodied simulation. *Mind & Language*, 21, 434–458. <https://doi.org/10.1111/j.1468-0017.2006.00285.x>
- Gibbs, R., & Bogdonovich, J. (1999). Mental imagery in interpreting poetic metaphor. *Metaphor & Symbol*, 14, 37–44. https://doi.org/10.1207/s15327868ms1401_4
- Gibbs, R., & Macedo Pelosi, A. (2010). Metaphor and embodied cognition. *Revista de Documentacao de Estudos em Linguistica Teorica e Aplicada*, 26, 679–700. <https://doi.org/10.1590/S0102-44502010000300014>
- Haspelmath, M. (1997). *From space to time: Temporal adverbials in the world's languages*. Munich: Lincom Europa.
- Lakoff, G. (1993). The contemporary theory of metaphor. In A. Ortony (Ed.), *Metaphor and thought* (pp. 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.
- Lakoff, G., & Johnson, M. (1999). *Philosophy in the flesh*. New York: Basic Books.
- Lakoff, G., & Turner, M. (1989). *More than cool reason: A field guide to poetic metaphor*. Chicago: University of Chicago Press. <https://doi.org/10.7208/chicago/9780226470986.001.0001>
- Langacker, R. W. (1987). *Foundations of Cognitive grammar*, vol. I. Stanford: Stanford University Press.
- Langacker, R. W. (1991). *Foundations of Cognitive grammar*, vol. II. Stanford: Stanford University Press.
- Langacker, R. W. (2002). *Concept, image and symbol: The cognitive basis of grammar*. Berlin: Mouton de Gruyter.
- Moore, K. E. (2006). Space-to-time mappings and temporal concepts. *Cognitive Linguistics*, 17(2), 199–244. <https://doi.org/10.1515/COG.2006.005>
- Moore, K. E. (2014). *The spatial language of time: Metaphor, metonymy, and frames of reference*. Amsterdam: John Benjamins. <https://doi.org/10.1075/hcp.42>
- Núñez, R. (1999). Could the future taste purple? In R. Núñez & W. Freeman (Eds.), *Reclaiming cognition: The primacy of action, intention, and emotion* (pp. 41–60). Thorverton, UK: Imprint Academic.
- Núñez, R., & Cooperrider, K. (2013). The tangle of space and time in human cognition. *Trends in Cognitive Sciences*, 17(5), 220–229. <https://doi.org/10.1016/j.tics.2013.03.008>
- Núñez, R., & Sweetser, E. (2006). With the future behind them: Convergent evidence from Aymara language and gesture in the cross-linguistic comparison of spatial construals of time. *Cognitive Science*, 30, 401–450. https://doi.org/10.1207/s15516709cog0000_62
- Pagán Cánovas, C., & Piata, A. (2018). The way time goes by: Generic integration templates and the poetics of time. In S. Csábi (Ed.), *Expressive minds and artistic creations: Studies in Cognitive poetics* (pp. 57–78). Oxford: Oxford University Press.
- Piata, A. (2018). *The poetics of time: Metaphors and blends in language and literature*. Amsterdam: John Benjamins. <https://doi.org/10.1075/ftl.3>
- Piata, A., & Pagán Cánovas, C. (2017). “Powerful rhyme” and “sluttish time”: A cross-linguistic study of time personification in poetic discourse. *Language and Literature*, 26(1), 18–33. <https://doi.org/10.1177/0963947016674142>
- Radden, G. (2003). The metaphor TIME AS SPACE across languages. *Zeitschrift für Interkulturellen Fremdsprachenunterricht*, 8(2/3), 226–239.
- Radden, G. (2011). Spatial time in the West and the East. In M. Brdar, M. Omazic, V. P. Takac, T. Gradecak-Erdeljic & G. Buljan (Eds.), *Space and time in language* (pp. 1–40). Bern: Peter Lang.

- Sakahara, S. (1996). Roles and identificational copular sentences. In G. Fauconnier & E. Sweetser (Eds.), *Spaces, worlds, and grammar* (pp. 262–289). Chicago: University of Chicago Press.
- Sullivan, K. (2007). Grammar in metaphor: A Construction Grammar account of metaphoric language. PhD dissertation, University of California at Berkeley, US.
- Sullivan, K. (2009). Grammatical constructions in metaphoric language. In B. Lewandowska-Tomaszczyk & K. Dziwirek (Eds.), *Studies in cognitive corpus linguistics* (pp. 57–80). Bern: Peter Lang.
- Sullivan, K. (2013). *Frames and constructions in metaphoric language*. Amsterdam: John Benjamins. <https://doi.org/10.1075/cal.14>
- Traugott, E. C. (1978). On the expression of spatio-temporal relations in language. In J. H. Greenberg (Ed.), *Universals of human language, vol. III* (pp. 369–400). Stanford: Stanford University Press.
- Weger, U. W., & Pratt, J. (2008). Time flies like an arrow: Space-time compatibility effects suggest the use of a mental timeline. *Psychonomic Bulletin & Review*, 15(2), 426–430. <https://doi.org/10.3758/PBR.15.2.426>

Working on it

The creation of chronological time in political discourse and the democratic meaning of elections

Liron Lavi

Bar Ilan University

Following elections, processes of interpretation in the political discourse shape the meaning of elections. I draw from theories of democracy, time, and meaning to posit the concept of *chrono-work*, and suggest that creative construction of connections between past, present, and future horizons shape the meaning of an election, and that this process is critical for the democratic meaning of elections. With a qualitative analysis of media discourse in two case studies – the 1949 and the 1988 Israeli elections – I show that when these connections form a chronological narrative, an election obtains a democratic meaning, whereas when the narrative is non-chronological, an election's democratic meaning is challenged. I discuss the implications for the role of creative time for the democratic role of elections.

Keywords: chrono-work, election interpretation, Israel, narrative

1. Introduction

Elections are like football, wrote political scientist Adam Przeworski, “parties compete, someone wins, someone loses, and even if their chances are unequal, no one knows how the game will end” (Przeworski 2016: 1). Indeed, during elections, we focus on the ‘horse race’ – political strategies, campaign maneuvers, and who is ahead in the polls. Yet, one prominent difference between elections and football games is what happens once the game ends. In football, when the final whistle is blown the results determine who won and who lost – the game ends. In elections, however, the results are only the first step. The hours, days, and sometimes even the weeks following the election, bring about a process of *election interpretation* that shape the meaning of the election – what it was about, who won, who lost, and what it means for the political system and the nation as a whole (Grossback

et al. 2006; Hershey 1992; Mendelsohn 1998; J. Shamir et al. 2015; M. Shamir and Shamir 2008).

In this chapter, I draw from theories of time and meaning to contend that the interpretation and the meaning of an election after it takes place are shaped by the creative construction of past, present, and future horizons into a chronological temporal structure, and that this creative process and its outcomes are critical for the democratic meaning of elections. Developing a theoretical framework and conducting discourse analysis of two Israeli elections, I posit the term *chrono-work*, a temporal mechanism through which events, experiences, and expectations in the political discourse are narrated into a meaningful and comprehensible chronological story. This mechanism, I suggest, shapes the post-election interpretation process and affects the democratic meaning of elections.

In what follows, I first lay out a theoretical framework of *chrono-work*, conceptualizing chronological time as a result of dynamic connections created in the public discourse between past, present, and future events. Then, I discuss the role of chronology in democracy and the role of *chrono-work* in elections. Following a background and methodological notes on the case studies, I analyze the manifestations of *chrono-work* in the media discourse after two Israeli elections and the implications on their democratic meaning. I conclude with a discussion on the role of creative time in political discourse, elections, and democracy.

2. Chrono-work: A theoretical framework

Inspired by Cronos (Χρόνος), the God of Time in Greek mythology, the modern perception of time as chronological is represented by the progressive arrow of time. Replacing pre-modern perceptions of time – natural cycles, genesis, doomsday, and salvation – modern time was conceptualized as moving perpetually in a linear direction, without a beginning or an end, from the past, through the present, and into the future (Melucci 1996). The centrality of chronology in modernity accorded this perception of time a special role: chronology is not only objective time, entailed in the cosmological movements of celestial elements, but rather a social construction, underlying social and political sense-making processes (Elias 1993; Zerubavel 1989).

As such, I argue, chronology is a temporal social construct, or to use Paul Ricoeur's term, an "illusion of sequence" (Ricoeur 1980: 169), created as a collective image of time as linear by social artifacts, conventions, and interactions such as clocks, calendars, and schedules. This social perception of time as chronological is not given but rather requires *work* that will connect past, present, and future horizons into a linear sequence. The concept of *chrono-work* comes to describe

the temporal mechanism behind the process in which discontinuous events are transformed into a meaningful chronological narrative in the public discourse. Events in the present gain meaning insofar as historical and daily events from the past are connected to the future horizon(s) and imagination(s), and a chronological sequence is created. To create chronology is thus to determine causal relations, set rationales for legitimacy, construct collective identities, and interpret controversial events.

Chronology is, therefore, neither neutral, nor stems from nature, but is rather socially created in a repetitive process of sense-making. Ricoeur stresses that this process is the art of narrating: “The initial narrative schema is that of a sequence, and the art of narrating consists in restoring the succession of events” (Ricoeur 1985: 79). He argues that while a story has a beginning, middle, and end, in story-telling and story-reading we read “the ending in the beginning and the beginning in the ending, we ... read time backwards” (Ricoeur 1984: 67). For Ricoeur, this is a ‘narrative work’ that brings the plot into the “sphere of meaning” (Ricoeur 1984: 83).

In conceptualizing chronology as work, time does not move from the past, through the present, and into the future. Rather, chronology is created in the present, the time of narration, as past and future horizons meet and form a (new) chronological sequence. Nietzsche (1997, 2006) posits that the past and the future are joined and distributed at each moment of the present. In this dynamic structure of tension and release, chronology is never fully determined because it is modified as the moment passes. Since time does not flow but occurs in each moment, for Nietzsche’s prophet-hero Zarathustra chronological time is not an arrow – it is a gateway:

“See this gateway, dwarf!” I continued. “It has two faces. Two paths come together here; no one has yet walked them to the end. This long lane back: it lasts an eternity. And that long lane outward – that is another eternity. They contradict each other, these paths; they blatantly offend each other – and here at this gateway is where they come together. The name of the gateway is inscribed at the top: ‘Moment.’”
[...] “See this moment!” I continued (Nietzsche 2006: 125–126)

The present is thus the moment in which new relations between the past and the future are formed, a new chronological sequence is created, and a new meaning is assigned to the present. This is not to suggest that the creation of chronological time takes place in each and every moment. Rather, chrono-work takes place when we face occurrences, events, or experiences that pose a need to construct meaning. Hannah Arendt finds that “the location of the thinking ego in time would be the in-between of past and future, the present, this mysterious and slippery now, a mere gap in time, towards which nevertheless the more solid tenses of past and future are directed” (Arendt 1981: 208). Thinking, meaning, and understanding, therefore,

take place in the ‘timeless time’ of the present, the time in which time is (re)created (Arendt 1981: 211). Thus, a present that calls for explanation and reflection generates chrono-work that will arrange past and future events in relation to one another – as simultaneous, repetitive, consecutive, progressing, or regressing – and so will make sense of the bewildering present. Elections, I show in the next section, are such a present, generating a process of political and democratic sense-making through chrono-work.

3. Is chronology democratic?: Chrono-work and the democratic meaning of elections

Modern democracy is embedded in the time of its era. Democratic theorists have weighed in on the role of modern time – chronology – in democracy. Some scholars argue that the modern arrow of time is the basis for the modern version of democracy (Hassan 2009; Santiso 1998; Scheuerman 2001, 2004; Schmitter and Santiso 1998; Thompson 2004, 2008). Scheuerman (2004) identifies modern time components in the operation of democracy and stresses that “the traditional liberal democratic ideas about the separation of powers rest on crucial, albeit neglected, temporal presuppositions” (p. xvi). That is, distinct functions of the democratic mechanism presuppose different temporal horizons: legislation is prospective (future-oriented), the judiciary is retrospective (past-oriented), and the executive is contemporaneous (present-oriented). Modern clock time, argues Robert Hassan (2009), has shaped the politics of liberal democracy as a modern phenomenon. The politics of liberal democracy, its routines, procedures, and institutions were all coordinated by the linear and measurable clock time that transferred time from a subjective mode of experience into an abstract and public form of communication.

Other scholars stress that the modern chronological time undermines the fundamental principles of democracy (Brown 2005; Chambers 2003). The homogeneous linear time fosters social and political hierarchies, undermining pluralism and the inclusion of different groups. Political theorist William Connolly (2002) puts forward the notion of time as a fork “in which time flows into a future neither fully determined by a discernible past nor fixed in its place in a cycle of eternal return ... free time” (p. 143). This rift in time, he argues, generates anxiety as new narratives and explanations emerge, but also renders politics possible.

Indeed, there is nothing particularly democratic about chronological time. Following Connolly (*ibid.*), I argue that the role of chronology in democracy should be understood in light of the temporal rift created by the elections, the one that makes democracy a regime “pro tempore” (Locke 1962: 108). In democracy, the

linear time of governance is punctuated by intense, non-linear periods of elections. The combination of these temporalities – the movement from the linear time of governance to the non-linear time of elections and, perhaps more importantly, the movement back to the linear time of governance – sets the rhythm of democracy.

In this sense, elections are a democratic and temporal crisis, a repeated revolution, as de Tocqueville so vividly described in his visit to America:

As the election approaches, intrigues become more active; agitation, more intense, and more widespread. ... The entire nation falls into a feverish state; the election is then the daily story of the public papers, the subject of individual conversations, the goal of all moves, the object of all thoughts, the sole interest of the moment. It is true that as soon as fortune has decided, this ardor dissipates; everything becomes calm, and the river, once overflowing, retreats peacefully to its bed. But shouldn't we be astonished that the storm could arise?

(de Tocqueville 2010: 224)

The intense and rapid activity of elections interrupts the flow of “the gears of government” so that there is no future but only present (de Tocqueville 2010: 213). A dual-based temporality of democracy emerges from de Tocqueville's account of the dynamics between the “feverish state of elections” and the peaceful river of politics. As election approaches, ‘governance time’ becomes ‘election time’ but after the feverish period of the election, the ‘regular’ rhythm of political time is restored. The repetition of elections, therefore, sets in motion a dynamic temporality of ‘governance time’ and ‘election time’, of stability and instability, continuity and disturbance that is a fundamental of, and a challenge for, democracy (Thompson 2008).

I suggest that the recovery from the crisis, the movement from election-time back to governance-time is achieved through chrono-work in the interpretation process that takes place after an election. In the hours, days, and weeks following an election, politicians, journalists, experts, and citizens engage in an interpretation process on ‘what the election was about’. This process creates a climate of opinion on the meaning of the election in terms of issues, winners, losers, explanations, and political consequences (J. Shamir et al. 2015). Underlying these post-election narratives are dynamic connections between the present of the election, past events, and future projections that adjoin the various election narratives into an overall perception about the election and its meaning. The chrono-work that connects the temporal components of the post-election narratives may construct a coherent interpretation of the election or rather many, contradicting interpretations that do not integrate into a consistent meaning of the election. Furthermore, these temporal connections may entail different perceptions of the post-election political reality as a continuity or discontinuity, perpetuation or change with regard to the pre-election context.

This post-election interpretation process is a dynamic one and so is the chrono-work underlying it. Past events are brought back into the public political imagination; past elections, their results and consequences, or historical events gain new meanings in light of the present election. This is not a simple return to past events but rather a deliberate move, one that brings up those parts of the past that can be joined in the present to create a political meaning. This 'quasi-circular', semicyclical movement is not a naïve return to the past but a renewed point of intersection between the present and specific points in the past (Chowers 2012: 36). This return to the past is part of the process of chrono-work insofar as the quasi-circular movement that returns to key points in the past is aimed at creating a political meaning to the present events (i.e., the elections).

In the same vein, in the process of chrono-work, the public discourse after the election projects into the future. The imagined future can be open or closed and even deterministic. Phrases such as *change*, *hope*, and even *everything stays the same* indicate the form the future takes with regard to the elections. This future might be conceptualized as a continuation of the past and the present, or rather as marking a shift or change; it can be imagined as stretching far into the horizon or rather as a short period of time. Chrono-work turns our attention to the connection between the present and the future: is the act of elections in the present perceived as influencing the future? What is the form the future takes due to this present act?

The connections between the election in the present, the past, and the future load the elections with democratic meaning. These temporal connections, the weaving of the present elections, past events, and future prospects into a meaningful story with a beginning, middle, and end, is vital to the democratic meaning of the election (Lavi 2020). Elections that clearly stem from the past and create a strong connection between the act (in the present) and the future consequences, reaffirm their democratic qualities. However, when such connections are obscured, the reasons for the election and its results are equivocal and the ability of the people to determine their future through the election is challenged. In such cases, the enactment of democracy through elections is weaker, and the democratic structure is exposed to instability.

However, a post-election chronological narrative is not democratic in and of itself. Rather, if we follow de Tocqueville's conceptualization of elections as a crisis, the renewed connections between the past, the present, and the future after the election are essential to link the pre-election politics with the post-election one, restore the flow of governance, and thus overcome the "crisis" of elections. What continues, then, when a chronological narrative is created after an election is democracy itself.

Chronological time in post-election narratives is also not deterministic nor guaranteed. As mentioned above, the post-election temporal structure may vary in its length, its depth, and the coherence of the narrative stemming from it. In

other words, the temporal elements can create one or many chronological orders, partial sequences, or even no sequence at all, facilitating different meanings of the elections. To the extent that after the elections chrono-work succeeds, the chronological sequence establishes a political story that makes sense of elections and constructs the 'we' as a self-sovereign entity. In this way, it reassures the beliefs and expectations associated with democracy as 'the rule of the people' and thus enhances democratic legitimacy. When, however, the construction of a chronological sequence after the election fails, it becomes harder to understand how previous events led to the present election and to imagine how the current act of voting will influence the future. Such discontinuities might undermine the role of elections as expressing the *vox populi* and so they might have negative implications on the democratic legitimacy.

How does chrono-work look like? And how does it affect the democratic meaning of elections? In the second part of this chapter, I offer an analysis of the temporal discourse in the 1949 and the 1988 Israeli elections. The first encompasses a case of chrono-work that resulted in a post-election chronological narrative that facilitated the democratic meaning of the election. The second mirrors this process – showcasing what happens when the post-election narrative is not chronological and what may be the consequences for the democratic meaning of the election.

4. Background and methodology

Established as a Jewish and democratic state in 1948, Israel sustains democratic institutions and procedures alongside significant deviations from the liberal model of Western democracy.¹ As a parliamentary democracy with a multi-party system and coalition governments, Israel holds national parliamentary elections to the Knesset (the Israeli parliament) under a system of proportional representation. The Knesset is elected for a four-year term, but early elections have occurred frequently, with 25 elections in 74 years (see also Asher Arian and Shamir 2001; Hazan 1996; Korn 1998; Rahat and Sheaffer 2007; Shapiro 1980).

1. Ongoing internal and external tensions in Israel have led some to claim that Israel is a flawed liberal democracy or an ethnic democracy (Smootha 2002, 2005) at best, and perhaps should be considered as an ethnocracy and not as a democracy at all (Yiftachel 2006). While this study does not ignore these critical voices, it follows the assumption that Israel, in its self-determination, reputation, procedures, and institutions, is a democracy. Flawed as it may be, Israeli democracy is usually viewed from the inside, by its citizens and elites, and from the outside, by other countries and international organizations, as a democracy.

In this study, I focus on the first Israeli election, that took place on January 25th, 1949, and the 12th election, that took place on February 23rd, 1988. The 1949 election was held in the newly independent state of Israel and was an important test for pre-State democratic foundations and political institutions. A total of 12 parties entered the Knesset, and the dominant left-wing party Mapai, led by David Ben Gurion, had won 46 Knesset seats, fortifying its pre-state political power. It formed a wide coalition that enjoyed the support of 73 Members of Knesset from 5 different parties. The context of the 1988 election was strikingly different, following a four-year term of a national unity government. This government had recovered Israel from an economic crisis and stabilized the security situation at Israel's border with Lebanon, but the political system seemed to be at a deadlock, as the two large parties – the Ma'arach (the Alignment) and the Likud – were unable to agree and undertake policies. The first Palestinian Intifada, a series of protests and violent riots against the Israeli occupation of the West Bank and Gaza, that started in December 1987 has shaped the election, calling Israelis to decide between the hawkish Likud, headed by Yitzhak Shamir, and the dovish Alignment, headed by Shimon Peres. Nevertheless, both parties lost some of their Knesset seats in the election, forcing the two parties to renew the national unity government (Alan Arian and Shamir 1990; Chazan 2016; Katz and Levinsohn 1989).

The analysis of chrono-work in these elections is based on a qualitative discourse analysis of articles published three days after each election in two widely read daily national newspapers in Israel, *Yediot Ahronot* and *Ha'aretz*. These are two different types of newspapers, with different styles, different political affiliations, and different audience (*Ha'aretz* being a more leftist and elitist newspaper, and *Yediot Ahronot* being more popular and more politically central), and thus offer a broad outlook on the Israeli (temporal) public discourse. I focus the analysis on the three days following the elections, as this timeframe is known as the critical timing for the consolidation of elections' meaning (M. Shamir et al. 2008).

The analysis follows Gee's stages for discourse analysis from the single word, phrase, or sentence, through thematic analysis, to the validation of the findings (Gee 2011: 121–126). For each election, all news articles, editorials, and op-ed pieces that appeared in *Yediot Ahronot* and *Ha'aretz* three days after the elections were analyzed. All items covering the elections were reviewed and analyzed according to temporal phrases as they arose in the articles. These phrases may include explicit references to time (e.g., *early morning hours*, *next week*), references to events (e.g., the establishment of the state, the previous election), and lexical items (e.g., *in the future*). For example, in the 1988 election one article included the sentence "the '88 election, just like the election four years ago, ended with indecisive results", referring to time directly (four years ago) and through events (the '88 election).

All in all, 63% of the articles (26 of 41) in 1949 and 39% (86 of 220) of the articles in 1988 contained temporal phrases. The various phrases were then integrated into common themes, such as past, present, future, repetition, and rhythm. This sentence from the 1988 election, for example, referring to the previous and the current elections, would be included in the past theme and the present theme. The future theme would include both the sentence “the path to a coalition government remains open” from the 1949 election and the sentence “the people have said to the two parties: figure it out and continue to walk together in the future” from the 1988 election. The process of data-gathering and analysis was designed to ensure that a theme is robust, beyond specific election, newspaper, author, topic, or analyst.

The analysis process contained three stages: first, an exhaustive reading of the articles relating to the elections was conducted for each election in the two newspapers for three days following the elections. Second, all relevant quotations (that are related to time and temporality) were copied, with details about the date, the page number, the author’s name, the newspaper, and the source of the quotation documented. Finally, the quotations were collected under common temporal themes. Based on this thematic sorting, an account of chrono-work, its temporal elements (past, present, and future), and the construction of democratic meaning was formulated.

5. Findings

5.1 The 1949 Israeli election

The media discourse following the 1949 Israeli election demonstrates how the creation of a chronological narrative after an election facilitates democratic meaning of an election. First, I show that Election Day is distinguished from other days and that past and future horizons are connected to this present. Then, I analyze how the chronological structure fostered a democratic meaning of this election.

In the 1949 election, 19% of the items with temporal phrases related to Election Day as *Yom Hag*, a holiday: “flags flying since early morning on Netanya City Hall and the statutory holiday in the city made Election Day feel like a national holiday”.² And: “the Israeli government declared Election Day a holiday to give the first Election Day in the independent state a special appearance”.³ The present of

2. “Summarizing the general process: maturity, responsibility, order, a festive feeling” *Ha’aretz* 26.1.49 (author unknown)

3. *ibid.*

the election is thus distilled in the festivities that distinguish Election Day from all other days in the young state.

This distinction of Election Day from other days gives rise to a differentiation between 'election time' and 'governance time', as one commentator states: "the 'holiday' of election is over and it is time to start the practical duties awaiting us".⁴ As 'governance time' stretches after the 'holiday' of the election, past and future horizons are connected to the present, creating a chronological narrative:

The public's attitude confirms that it is proud of the country's achievements, that this Election Day is one of them, but not the least of them. Each and every individual felt that he is part of, and a citizen of this people, that established a state, defended it in a bloody war, and arranged a democratic election in just eight months.⁵

In the first part of the quotation, Election Day (the present) is tightly connected to the establishment of the state and the War of Independence. Together they create a series of events that define the meaning of election as creating a new people in a new state. It thus continues:

Recognition in a unified destiny and unified actions exists underneath the artificial divide. This is the encouraging lesson of Election Day. This is why each and every citizen went to the ballot box with decisiveness but without hatred to others. ... [W]e are one people, with one destiny, true partners in the great story of the State of Israel.⁶

Here the divisiveness of the election is depicted as only superficial, as a future horizon of a shared and unified path is cast, and 'the people' is constructed as a political agency, writing its own story through collective participation in the election.

This notion of the demos in the first election is not only political but also national. It relies on a past horizon that stretches back 2000 years: "in this historical day ... Jews went, after a 2,000-year break, to vote in their homeland...";⁷ it continues through the more recent pre-state Zionist history: "the results are clear: the people trusted the state founders ... the foundations established 40 years ago did not disappoint and [the people of] Israel came back to its land";⁸ and to the past year, in which the Declaration of Independence, the establishment of the state and the 1948 War took place: "A miracle happened to us, because we are barely a nine-month-old state, and we did it instantly, during a war and while making the initial arrangements

4. "From day to day". *Ha'aretz*, 28.1.49

5. "From day to day". *Ha'aretz* 26.1.49 (author unknown)

6. *ibid.*

7. A. Sviram. "Snap shots". *Yediot Ahronot* 28.1.49

8. "First reactions to the elections results", *Yediot Ahronot*, 27.1.49 (author unknown)

for the new state. We proved our responsibility”.⁹ And: “We can interpret the results as the voter’s verdict on the government’s policy over the past year. And this is a positive verdict”.¹⁰ This timeline corresponds to an overarching, hegemonic Zionist (the Jewish national movement) narrative (Lavi 2013), harmonizing the national, political, and democratic narratives into the meaning of the election.

In addition to this meaningful past horizon, the discourse also posits a meaningful future horizon. First, a connection is being made between the election and the near future: “Now, that the guesses and prophecies regarding the election have ended, we face a new affair: the establishment of a permanent government”.¹¹ And: “Mapai hopes to form the first regular government on a ‘narrow’ basis”.¹² Furthermore, the future horizon depicted after the 1949 election is the horizon of entering a new national and democratic era: “the important thing is that no turbulence occurred in our life. The underground resistance movements began walking the path of parliamentary life”.¹³ The future horizon is depicted as a direct outcome of the act of ‘the people’ in the present of the election: “the election had a clear say: the people trusted the founders, the war leaders, the persons who led the people to the beginning of redemption”.¹⁴

The connection of past and future horizons in the present of Election Day facilitates the meaning of the election as a democratic, national, and political event: “the election brings stability to the country. The small parties failed. Mapai marches ahead, and it also had the decisive opinion in the past”.¹⁵ Consequently, ‘the people’ is constructed as the sovereign body:

Indeed, it was a holiday. ‘The Hebraic people’ felt that this is a historical time, the time of choosing the first parliament in an independent state. They felt the meaning of this day, in which they played the leading role. And they did it with loyalty and self-confidence without a superficial excitement. They went to the ballot boxes as if they knew what their duty is and how to fulfill it.¹⁶

9. S. Svislitzky. “The miracle of elections”. *Yediot Ahronot*, 28.1.49

10. “From day to day”. *Ha’aretz*, 27.1.49

11. “The negotiation on the government formation already begun”. *Yediot Ahronot*, 27.1.49 (author unknown)

12. “Mapai will form a government with Mapam and the religious parties”. *Ha’aretz*, 27.1.49 (author unknown)

13. S. Svislitzky. “The miracle of elections”. *Yediot Ahronot*, 28.1.49

14. “Preliminary responses to the elections results”. *Yediot Ahronot*, 27.1.49 (author unknown)

15. “Evening conversations”. *Yediot Ahronot*, 26.1.49 (author unknown)

16. “From day to day”. *Ha’aretz* 26.1.49 (author unknown)

And:

The people showed everyone their right place and demarcated the boundaries for expansion, and the people did not want experiments. The voter gave credit to those who proved their ability and stability in the different spheres of life. After the immigrants' journey to the European civilization and after the journey of the Hebrew army against seven Arab countries, so came the science of democracy and was established in the Middle East. We are talking about genuine democracy.¹⁷

The creation of a chronological narrative through chrono-work after the 1949 election in Israel thus connected a 2000-year past horizon with a future horizon of political mandate and a shared destiny. This connection facilitates 'the people' as a political agency that faced the test of democracy, achieving a "genuine democracy". Next, I show that when chrono-work results in an Election Day that is not distinguished as a present and loose connections between the past and future horizons, the absence of a chronological narrative fosters challenges to the democratic meaning of the election.

5.2 The 1988 Israeli election

The media discourse of the 1988 Israeli election is in many respects a mirror-image to the chrono-work and the construction of democratic meaning of the 1949 election. In this election, the present of the election is indistinct from other days, the past and future horizons are short and sparsely connected, and as a result, the construction of the democratic meaning of this election is challenged. First, the election is depicted as a point in which a political decision should have been made:

The '88 election was conducted in painful maturity and focused on the security issue. ... In November '88 the voter had to choose between two alternatives ... This is the first time the Israeli public had to make such a decision ... In the coming four years people will not be able to say they did not know.¹⁸

However, as the results indicated a renewed political deadlock, Election Night ends up being an anti-climactic moment:

10 pm is approaching and the tension rises. I wait for Haim Yavin [a famous television anchor – L.L.] as if he was *Deus ex Machina*. ... The television proves itself on such occasions and does a professional and even an excellent job. The dramatic

17. S. Svislitzki. "The miracle of elections". *Yediot Ahronot*, 28.1.49

18. D. Margalit. "Unequivocal national decision". *Ha'aretz*, 3.11.88

opening: images from the past four years. ... And then the results ... anti-climax. I feel that there will be no drama tonight. But there will be a dead-end; familiar situations will repeat themselves. ... There is no decision and there is no basis for a stable government.¹⁹

And:

The countdown towards 10 pm is the moment of truth, the climax, in every election. Haim Yavin ends months of anticipation. A real drama. But the cries of defeat and happiness, 1977 style, do not repeat themselves.²⁰

Thus, the anticipation that the present of the election will be distinct from other moments, a climax, is met with disappointment. In the absence of a distinct present, with the anti-climax created by the results, the past horizon of the “past four years” joins a future horizon of indecisiveness and unstable government. In this conjuncture, chrono-work fails to create a chronological narrative. A repetitive narrative is constructed instead, with “dead-end” and “familiar situations” that “will repeat themselves”.

In fact, not only the past and future horizons do not join in the present to create a chronological narrative, but they are mixed:

Everything was ready for a celebration ... all the usual instruments. And the crowd. Oh, the crowd. So optimistic, waiting for a victory. The only thing left is that small detail, the announcement on television. In the meanwhile, everybody knew that Shamir, just like Begin, will form a government by midnight. Just a few more minutes ... and then came the blow. The tie. ... Many went home, depressed. ... Yes, perhaps Shamir will form the next government. Maybe he already has. But this is not the victory they had hoped for.²¹

We see that a chronological narrative has been constructed before the elections, connecting the current election with the past victory of the Likud's legendary leader, Menachem Begin, and the anticipated future of Shamir forming a government. This narrative, however, does not hold after the election, in light of the tight results. The past and future horizons are then mixed – Shamir *will* form the government, and at the same time he might already *had*.

As the past cannot explain the present of the election and this present does not set the stage for the hoped future, the meaning of the election is unclear:

19. H. Boshes. “A known prescription for blackmail”. *Ha'aretz*, 2.11.88

20. E. Bar-Kedma. “A real drama”. *Yediot Ahronot*, 2.11.88

21. R. Vardi. “Not to this victory they hoped for”. *Yediot Ahronot*, 2.11.88

It seems like the general public opinion has not changed. The partisan map drawn in the election four years ago stayed pretty much the same. ... At first glance, it appears that although the left-right coalition became sick and tired of itself, the public still wants it. ... However, re-forming this coalition means continuing the lack of progress, just like the past two years.²²

Going back to the past of the last election and the previous unity government, the future is depicted as halted, characterized by “lack of progress”. In this short timeline, a “general public opinion” is brought up, but, as we will shortly see, it is undermined.

The future horizon stretches from the election to the formation of the new government and into an uncertain political path: “now we should expect an intensive period of pursuit after the religious parties”;²³ “A unity government is a phenomenon justified only in emergency situations. ... But how should the political system react if the exit polls are right? The large parties probably will re-consider the partnership between them”.²⁴

The result of chrono-work after the 1988 election is short past and future horizons that are mixed instead of connected, leading to an uncertain political future. As a result, a repetitive rather than a chronological narrative is constructed, affecting the democratic meaning of the election:

The People, divided more than ever, brought a disappointing result upon themselves. The 1988 election, just like the election four years ago, ended without a clear decision. ... The one who failed is the Israeli people. In the deadlock voting for the right and the left, the people demonstrated their inability to distinguish between the two major blocs and their unwillingness to prefer one of them. And perhaps we should interpret the deadlock as if the people wanted to say to both parties: work it out and keep walking together in the future, as you did so far.²⁵

A divided people, a short timeline, and a difficulty to project into the future horizon are joined here into an inability to act meaningfully in the election and choose a political path. The demos is criticized for not taking on its democratic role. Cracks in the Israeli democracy are thus revealed:

22. “Poor catch for intensive electoral effort”. *Ha’aretz*, 2.11.88 (author: *Ha’aretz*’s editor)

23. “The Likud: we will not approach the Maarach; everyone pursuing the religious parties”. *Yediot Ahronot*, 2.11.88

24. D. Margalit. “Pointless Grand Coalition”. *Ha’aretz*, 2.11.88

25. Y. Ben-Porat. “Everyone are disappointed except the religious – and Gandhi”. *Yediot Ahronot*, 2.11.88

From now on, Shamir will not be able to blame the Ma'arach and Peres for his failures. This time he is on his own and he needs to prove, with a strong opposition challenging him, what he can and cannot do. That is the way things are. This is what more than half of the people wanted, and although we cannot admire their choice, we must respect it until they will come around and want to try the other way, once they will become disappointed with Shamir. This is the essence of democracy, and with God's help or the lack thereof, it is still the best we've got.²⁶

Here, the electoral decision is disapproved, attributed to only "half of the people" that hopefully "will come around" and will decide differently in the future. Democracy is unwillingly accepted as "the best we've got" and God's help is mentioned ironically. The temporal structure is that of waiting "until they come around and want to try something else". Compared with the "genuine democracy" of the 1949 election, here the "essence of democracy" is not anchored in the rhythm of the electoral cycle but in postponement. Serious doubts regarding the 'we' and democracy are therefore accompanied by a non-chronological, repetitive structure.

To sum, in the 1988 election, the present of Election Day is an anti-climax in which the past and the future do not create a sequence. As a result, the political future is uncertain, the demos is undermined, and the democratic meaning of the election is challenged.

6. Conclusions

This chapter highlights the role of creative connections between past, present, and future in the democratic meaning of elections. After an election, I argued, in a process of chrono-work, past events and future expectations are brought up in the public discourse to make sense of the election and the people's say. When these connections form a chronological narrative, an election obtains a democratic meaning, whereas when these connections form a non-chronological narrative about the election, its democratic meaning is challenged.

Two case studies were employed to demonstrate how chrono-work and the connections created between the past, the present, and the future after an election, affect the democratic meaning of an election. In the 1949 Israeli election, an overarching linear narrative was created after the election, connecting a festive day to the Jewish and Zionist history and to a democratic future. This linear narrative then fostered an Israeli demos with an effective political agency. The 1988 Israeli election was strikingly different – a disappointing Election Night and mixed past and future

26. Y. Markus. "Let see what he can do". *Ha'aretz*, 4.11.88

horizons resulted in a repetitive temporal structure. In accordance, the demos is questioned and the democratic role of the election is challenged.

The differences between the cases stem, in part, from their different contexts – the 1949 election was the first election, celebrating the new Israeli state as a democracy, while the 1988 election took place in the backdrop of an ongoing political deadlock and disenchantment of Israelis with their politics. Still, beyond their specific contexts, the two elections showcase the creativity in the post-election process, in which time horizons may be organized following elections and facilitate their democratic meaning. In the long-lasting scholarly discussion on chronological time and democracy, some scholars emphasize the importance of chronological time to democracy (Scheurman 2019), while others stress the drawbacks, and even dangers, of chronological time for democracy, such as the exclusion it entails (Brown 2005). Divergent as these approaches may be, they both conceive chronological time to be a *static* characteristic of democracy. However, the theoretical framework and discourse analysis presented in this chapter establish that chronological time in post-election narratives is not pre-given but the (potential) outcome of a *creative* process in which some connections of the present election with the past and the future are formed while others are dismantled.

This conception of chronology as creativity entails that while chronology is indeed important for democracy, and specifically for the democratic meaning of elections, it also bears openness for the inclusion of narratives and social groups in the post-election interpretation process that facilitates the democratic meaning of election. That being said, as we witness concerning democratic backsliding and erosion of electoral procedures and their legitimacy – in the United States and around the world – the longitudinal effect of repetitive failures to create chronological narratives following elections deems further research and consideration.

Acknowledgements

The author would like to thank Michal Shamir, Eyal Chowders, and Yaron Ezrahi, Frederic C. Schaffer, Joshua F. Dienstag, and Melvin L. Rogers for their insightful reading of this work along its different stages; to the Tel Aviv University School of Political Science, Governance, and International Relations and the UCLA Y&S Nazarian Center for Israel Studies for their support in this study; the panelists, discussants, and participants in the conferences in which different parts of this work were presented for their helpful comments; and to the anonymous reviewers and the editors of this edited volume for their thorough reading and suggestions.

References

- Arendt, H. (1981). *The life of the mind*. New York: Harcourt.
- Arian, A., & Shamir, M. (Eds.). (1990). *The elections in Israel, 1988*. London: Routledge.
- Arian, A., & Shamir, M. (2001). Candidates, parties and blocs Israel in the 1990s. *Party Politics*, 7(6), 689–710. <https://doi.org/10.1177/1354068801007006002>
- Brown, W. (2005). *Edgework: Critical essays on knowledge and politics*. New Jersey: Princeton University Press.
- Chambers, S. A. (2003). *Untimely politics*. Edinburgh: Edinburgh University Press.
- Chazan, M. (2016). Israel goes to the polls: The road to elections for the constituent assembly, 1948–1949. *Israel Studies Review*, 31(2), 80–100. <https://doi.org/10.3167/isr.2016.310206>
- Chowers, E. (2012). *The political philosophy of Zionism: Trading Jewish words for a Hebraic land*. Cambridge: Cambridge University Press.
- Connolly, W. E. (2002). *Neuropolitics: Thinking, culture, speed*. Minneapolis: University of Minnesota Press.
- de Tocqueville, A. (2010). *Democracy in America*. Indianapolis: Liberty Fund.
- Elias, N. (1993). *Time: An essay*. London: Blackwell.
- Gee, J. P. (2011). *An introduction to discourse analysis: Theory and method*. London: Routledge.
- Grossback, L. J., Peterson, D. A. M., & Stimson, J. A. (2006). *Mandate politics*. Cambridge: Cambridge University Press.
- Hassan, R. (2009). *Empires of speed: Time and the acceleration of politics and society*. London: Brill. <https://doi.org/10.1163/ej.9789004175907.i-254>
- Hazan, R. Y. (1996). Presidential parliamentarism: Direct popular election of the Prime Minister, Israel's new electoral and political system. *Electoral Studies*, 15(1), 21–37. [https://doi.org/10.1016/0261-3794\(94\)00003-4](https://doi.org/10.1016/0261-3794(94)00003-4)
- Hershey, M. R. (1992). The constructed explanation: Interpreting election results in the 1984 presidential race. *The Journal of Politics*, 54(4), 943–976. <https://doi.org/10.2307/2132104>
- Katz, E., & Levinsohn, H. (1989). Too good to be true: Notes on the Israel elections of 1988. *International Journal of Public Opinion Research*, 1(2), 111–122. <https://doi.org/10.1093/ijpor/1.2.111>
- Korn, D. (1998). *The demise of parties in Israel*. Tel-Aviv: Hakibutz Hameuchad.
- Lavi, L. (2013). Making time for national identity: Theoretical concept and empirical glance on the temporal performance of national identity. *Nations and Nationalism*, 19(4), 696–714. <https://doi.org/10.1111/nana.12027>
- Lavi, L. (2020). Time and meaning-making in the “hybrid” media: Evidence from the 2016 U.S. election. *Journal of Communication*, 70(2), 195–218. <https://doi.org/10.1093/joc/jqaa003>
- Locke, J. (1962). *Second treatise of government*. Indianapolis: Hackett Publishing.
- Melucci, A. (1996). *The playing self: Person and meaning in the planetary society*. Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9780511520907>
- Mendelsohn, M. (1998). The construction of electoral mandates: Media coverage of election results in Canada. *Political Communication*, 15(2), 239–253. <https://doi.org/10.1080/10584609809342368>
- Nietzsche, F. (1997). On the uses and disadvantages of history for life. In D. Breazeale (Ed.), *Untimely mediations, vol. I* (pp. 57–125). Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9780511812101.007>
- Nietzsche, F. (2006). *Thus spoke Zarathustra*. Cambridge: Cambridge University Press.

- Przeworski, A. (2016). Democracy: A never-ending quest. *Annual Review of Political Science*, 19(1), 1–12. <https://doi.org/10.1146/annurev-polisci-021113-122919>
- Rahat, G., & Sheaffer, T. (2007). The personalization(s) of politics: Israel, 1949–2003. *Political Communication*, 24(1), 65–80. <https://doi.org/10.1080/10584600601128739>
- Ricoeur, P. (1980). Narrative time. *Critical Inquiry*, 7(1), 169–190. <https://doi.org/10.1086/448093>
- Ricoeur, P. (1984). *Time and narrative I*. Chicago: University of Chicago Press.
<https://doi.org/10.7208/chicago/9780226713519.001.0001>
- Ricoeur, P. (1985). *Time and narrative II*. Chicago: University of Chicago Press.
- Santiso, J. (1998). The fall into the present. *Time & Society*, 7(1), 25–54.
<https://doi.org/10.1177/0961463X98007001002>
- Scheuerman, W. E. (2001). Liberal democracy and the empire of speed. *Polity*, 43(1), 41–67.
<https://doi.org/10.2307/3235508>
- Scheuerman, W. E. (2004). *Liberal democracy and the social acceleration of time*. Baltimore: Johns Hopkins University Press.
- Scheuerman, W. E. (2019). Time and the separation of powers. In K. H. Goetz (Ed.), *The Oxford handbook of time and politics*. Oxford: Oxford University Press.
<https://doi.org/10.1093/oxfordhb/9780190862084.013.14>
- Schmitter, P. C., & Santiso, J. (1998). Three temporal dimensions to the consolidation of democracy. *International Political Science Review*, 19(1), 69–92.
<https://doi.org/10.1177/019251298019001005>
- Shamir, J., Shamir, M., & Lavi, L. (2015). Voter election frames: What were the elections about? *Political Studies*, 63(5), 995–1013. <https://doi.org/10.1111/1467-9248.12145>
- Shamir, M., & Shamir, J. (2008). What were the elections about, and why we should ask about it in election surveys. *International Journal of Public Opinion Research*, 20(2), 211–223.
<https://doi.org/10.1093/ijpor/edn022>
- Shamir, M., Shamir, J., & Sheaffer, T. (2008). The political communication of mandate elections. *Political Communication*, 25(1), 47–66. <https://doi.org/10.1080/10584600701807869>
- Shapiro, R. Y. (1980). *The end of a dominant party system*. London: Academic Press.
- Smootha, S. (2002). The model of ethnic democracy: Israel as a Jewish and democratic state. *Nations and Nationalism*, 8(4), 475–503. <https://doi.org/10.1111/1469-8219.00062>
- Smootha, S. (2005). Ethnic democracy: Israel as an archetype. *Israel Studies*, 2(2), 198–241.
<https://doi.org/10.2979/ISR.1997.2.2.198>
- Thompson, D. F. (2004). Election time: Normative implications of temporal properties of the electoral process in the United States. *American Political Science Review*, 98(1), 51–63.
<https://doi.org/10.1017/S0003055404000991>
- Thompson, D. F. (2008). Electoral simultaneity: Expressing equal respect. *Journal of Social Issues*, 64(3), 487–501. <https://doi.org/10.1111/j.1540-4560.2008.00574.x>
- Yiftachel, O. (2006). *Ethnocracy: Land and identity politics in Israel/Palestine*. Philadelphia: University of Pennsylvania Press.
- Zerubavel, E. (1989). *The seven day circle: The history and meaning of the week*. Chicago: University of Chicago Press.

PART II

Beyond language

Multimodal representations of time

Creative visual metaphors of protracted and frozen time in autobiographical comics about depression

Elisabeth El Refaie

Cardiff University

One common but lesser-known symptom of depression is distorted temporal perception. This chapter analyzes visual metaphors in seven graphic memoirs about depression, revealing the unique opportunities for creativity in the evocation of subjective time offered by this genre. Specifically, the authors of these works use different combinations of “pictorial” and “spatial” metaphors (El Refaie 2019) to convey their sense of time slowing down or freezing, and of being out of sync with other people. These findings are related to Conceptual metaphor theory, including Stocker’s (2014) notion of “spacetime”.

Keywords: graphic memoirs, pictorial metaphor, spatial metaphor, subjective time

1. Introduction

Depression is a relatively common mood disorder that involves a range of related symptoms, including feelings of sadness, guilt or worthlessness, and disturbances in sleep patterns, appetite, and cognitive functioning (Bartczak and Bokus 2015). In many cases, it is also associated with a sense of time passing more slowly (Gil and Droit-Volet 2009; Thönes and Oberfeld 2015) and of being out of sync with others. When sufferers of depression talk or write about their illness experience, they tend to focus on their symptoms of low mood, which are commonly expressed through recurring metaphors of darkness, descent, and bearing a heavy burden (McMullen and Conway 2002). Other conventional verbal metaphors that cluster around the notion of being contained, stuck, or trapped in “a three-dimensional space such as a ‘pit’, ‘hole’, or ‘bubble’” (Charteris-Black 2012: 207) may allude to the altered time perception in depression, although scholars tend to interpret such expressions more narrowly as reflecting the sufferers’ sense of isolation and despondency (see

also Bjørkløf et al. 2015; Demjén 2014). By comparison, many creators of the increasingly popular genre of autobiographical comics about depression are more openly and explicitly concerned with their altered sense of time, which they convey through a range of striking (verbo-)visual metaphors (see also El Refaie 2014, 2019).

According to Conceptual metaphor theory (CMT), human time perception is a prime example of an abstract notion that cannot be understood or discussed properly without drawing on more concrete, embodied experience. In English, for example, time is often conceptualized as a valuable commodity, or else it is personified as a thief, a pursuer, or a destroyer (Kövecses 2002: 49–50; Lakoff and Johnson 1980: 7–9). By far the most common metaphors of time across all known languages, cultures, and modalities, however, are spatial in nature (Filipović and Jaszczolt 2012; Lewandowska-Tomaszczyk 2016). This intimate link between time and space is thought to be based on the ordinary, everyday experience we have from early childhood of the time it takes to move through space and arrive at our destinations, that, as a result of associative learning, shapes our neural pathways, too, since “neurons that fire together, wire together” (Feldman 2006: 201). Indeed, according to Stocker (2014), spatial and temporal cognition are so closely entangled that they need to be considered as two subcategories of one single domain of “spacetime”.

The aim of this chapter is to identify creative visual metaphors of distorted temporal perception in graphic memoirs about depression. Creativity is commonly defined as the “ability to produce work that is *novel* and *appropriate*”, which, as Carter (2004: 29) argues, means that it is not merely a mental process but rather a socio-cultural phenomenon that is shaped by specific contexts and constraints. For this reason, he recommends speaking of “creativities” in the plural and regarding these “as a common property of virtually all human beings”, rather than something that is exclusive to certain exceptional individuals (Carter 2004: 49). Adopting Carter’s perspective, I focus on general patterns of metaphor creativity in graphic memoirs, rather than trying to establish different degrees of creativity in individual examples.

In CMT, metaphor creativity has traditionally been regarded as rather limited in scope. Lakoff and Turner (1989) suggested that even the most illustrious examples of literary metaphor are often based on the same conventional metaphorical patterns that underlie our ordinary everyday thinking: they may specify existing elements in an unusual way (“elaboration”), include elements that are not normally included (“extension”), combine two or more metaphors, or explicitly question a conventional metaphor. The authors concede that it is possible to introduce completely new conceptual metaphors, while stressing that such cases are typically based on the perceptual resemblance between two concrete objects, which clearly does not apply when the target domain is time. However, metaphor creativity needs to be considered at the level of expression, too, “in terms of the salience and

originality of individual metaphorical choices and patterns” (Semino 2008: 54). Thus, even the most entrenched conceptual mapping from space onto time, for example, may be given new life by being expressed in unusual ways, including in non-verbal and multimodal formats.

As I argue in this chapter, comics display a uniquely close link between time and space; in other words, “spacetime” is built into their very fabric. Moreover, the graphic memoir genre is characterized by a high degree of literary ambition and stylistic experimentation (El Refaie 2012). Many such works contain both “pictorial” metaphors (Forceville 1996, 2009), which involve the visual representation of concrete entities in a way that draws attention to their non-literal nature, and “spatial” metaphors, which “work by exploiting correlations between the experience of our bodies in space and more abstract mental states, emotions, and social relations” (El Refaie 2019: 102). Pictorial metaphors are also often depicted in a way that emphasizes their spatial dimensions, thereby creating multiple layers of metaphorical meaning. The graphic memoir genre thus opens up new possibilities for creativity, enabling the representation of highly subjective experiences of temporality.

2. The painful experience of “explicit” time in depression

Time is universal in that it can be measured and shared, and yet the precise way it is perceived and interpreted by individuals is idiosyncratic and context-dependent. Scholars often use the notion of “subjective” time to describe the many ways in which a person’s perception of the passage and duration of time may deviate from how these are measured objectively (Piata 2019; Thönes and Stocker 2019). Depending on the nature of a particular event or situation, and the individuals’ feelings towards it, time can “fly, race, drag, or come to a complete halt, as in ‘time stands still’ or ‘time froze’” (Fauconnier and Turner 2008: 63), for example. Analyzing both “found” data and narratives generated through semi-structured interviews, Flaherty (1999) discovered that conscious awareness of subjective time is most often linked to situations when time is perceived to pass more slowly than usual, and that “suffering and intense emotions” are among the most common triggers of this sense of “protracted duration” (Flaherty 1999: 43).

Many people with depression experience a more general and enduring clash between objective temporal reality and their subjective perception of it. Fuchs (2005, 2013) uses the distinction between “implicit” and “explicit” time to describe the characteristic features of this experience. Implicit time “is retrieved every time that we are absorbed in what we are doing”, whereas explicit time refers to those situations in which time “is experienced as a ‘not yet’ or ‘no more’, often with a component of displeasure or suffering” (Fuchs 2005: 195). Implicit time thus

becomes explicit when either our future plans are frustrated or when we yearn for something in the past that is irretrievably lost, leading to the temporality of “awaiting, striving, or longing for” in the first case, and of “missing or mourning” in the second (p. 195).

Explicit time is also often characterized by the acceleration or retardation of an individual’s temporal experience in relation to his or her social environment, which Fuchs refers to as intersubjective “desynchronization” (Fuchs 2005: 196). In the case of depression, the ordinary purposeful pursuit of future goals is typically disrupted and time is perceived as severely retarded with respect to others: “explicit time establishes a merciless rule; its passing by is noticed painfully, and the future of lived time seems closed forever” (Fuchs 2005: 170). Indeed, for some individuals with depression, time is perceived as completely frozen, as in the example of a suicidal woman cited by Flaherty (1999: 47–48), who described a “molasses-like feeling of being stuck in endless time”. As this example shows, and as discussed in more detail in the following section, when people try to express their experience of time in any mode or medium, they often draw on spatial metaphors.

3. Spatial dimensions of time in human understanding and representation

There is a wealth of empirical evidence suggesting that time is universally conceived in spatial terms, though some cultural and linguistic differences have emerged, including with regard to whether time is mentally represented as stationary or moving; curvilinear or linear; horizontal or vertical; and oriented from left-to-right, right-to-left, front-to-back, or back-to-front (Evans 2013; Filipović and Jaszczolt 2012; Lewandowska-Tomaszczyk 2016). When English speakers consider time from their own perspective, they typically draw on either the Time-moving metaphor, where time is imagined as moving towards and then passing behind the static observer (e.g., *Christmas is rapidly approaching*), or the Ego-moving metaphor, in which the observer progresses along a line through a landscape towards the future (e.g., *We’re coming up to Christmas*) (Lakoff 1993). These two distinct ways of talking about time have been shown to be closely related not only to concurrent – real or imagined – bodily movement, but also to our emotions and attitudes toward future events (Hauser, Carter, and Meier 2019). Thus, feeling happy and looking forward to the future correlate positively with the use of an Ego-moving conceptualization of time, whereas anxiety, depression, and the anticipation of an unpleasant future are more likely to lead to Time-moving mental representations (Lee and Ji 2014; Richmond, Wilson and Zinken 2012).

Another common way of imagining time spatially is the “moving attention perspective” (Casasanto and Jasmin 2012), which involves directing one’s attention

to a sequence of events along a lateral line. As Moore (2014: 81) points out, in this perspective, events in time are located and ordered relative to each other, not relative to the ego, which makes it more suited to the conceptualization of temporal sequences than the experience of duration. It finds expression, for example, in people's gestures and cultural artifacts such as calendars, or museum exhibits that are arranged on a wall in chronological order. The association between the left or the right side and either the past or the future has been shown convincingly to depend on the dominant writing direction in a given culture: When people are used to reading and writing from left to right, the agent of an action and the past are conceptualized preferentially on the left, whereas the recipient of an action and the future are imagined to be on the right (Maass et al. 2009; Santiago et al. 2007). In cultures with a right-to-left script direction, these unconscious associations are typically reversed (Fuhrman and Boroditsky 2010).

Indeed, in some cases people seem to draw on different spatial representations of time simultaneously. A study of elicited and spontaneous gestures in English speakers, for example, found that these often involved the simultaneous co-activation of both front-back and left-right timelines (Walker and Cooperrider 2015). People's choice of spatial metaphors for mentally representing and expressing their experience of time thus appears to be flexible and dependent on their emotions, their (habitual) embodied practices, and the medium of communication they are using.

There are some suggestions that the very boundary between spatial and temporal cognition is fuzzy and indistinct. As Fauconnier and Turner (2008: 55) point out, even some of the most common linguistic expressions for time involve imagining spatial units as objects moving at variable speeds (e.g., *Those three hours went by slowly for me, but the same three hours went by quickly for him*). Since the notion of speed already requires an understanding of time, this suggests that the traditional account in CMT of a straightforward mapping from the conceptual domain of space onto that of time is too simplistic. Fauconnier and Turner (2008: 53) address this by positing the existence of "mental constructions involving many spaces and many mappings in elaborate integration networks constructed by means of overarching general principles". However, their theory, and the language in which it is couched, is reminiscent of the Mind as Computer metaphor, which used to dominate cognitive science but which is now widely discredited, as it ignores the deeply embodied and intuitive nature of human cognition, instead reducing it to a set of logical computations (Johnson and Rohrer 2007). A more convincing response to this apparent paradox is offered by Stocker (2014), who argues that spatial and temporal cognition are not separate at all; rather, they form one single unit with different emphases, on "object spacetime" in the case of the former, and "event spacetime" in the latter. As I show in the following section, the comics medium is a prime example

for the unity of time and space in our experience and understanding. Comics – like gestures, but in contrast to verbal language – use both sequence and space to communicate the passing of time. Consequently, they can convey two or more different spatial metaphors for time at once, as well as frequently combining these with other forms of visual metaphor. These affordances of the medium provide highly fertile ground for metaphor creativity.

4. Representations of subjective time in comics

Clock time is often referenced literally in comics – either verbally, or visually, through the depiction of timepieces of various kinds – but the more subjective experience of time may be hard to verbalize and cannot be visualized at all without recourse to some form of nonliteral representation. One option that presents itself to comics artists is to create a (verbo-)pictorial metaphor. This involves the visual depiction of one or more concrete things in a way that evokes a metaphorical meaning through specific formal cues (Forceville 1996, 2009; see also El Refaie 2019: 81–117). For example, a sense of time running out might be represented through the image of a woman's body blended with an hourglass, with just a few grains of sand remaining in the upper section (a “hybrid” metaphor). Likewise, a picture of a snail crawling up a hill may be used to evoke a particular time perception, if, for example, it is accompanied by a verbal caption providing the metaphor's target domain (a “verbo-pictorial” metaphor), or if, in a sequence of images, the snail replaces the protagonist, thereby appearing incongruous in the narrative context (a “contextual” metaphor).

However, such pictorial metaphors tend to be rather obvious and lacking in subtlety. A more sophisticated way of conveying the many nuances of explicit time perception in people suffering from depression is provided by the close relationship between time and space in the comics medium. Spatial metaphors may be evoked by the layout of the different elements on the page (“compositional spatial metaphors”), or by the spatial relations both between characters in the story world (“diegetic spatial metaphors”) and between depicted characters and the reader (“interactive spatial metaphors”) (El Refaie 2019: 102–108).

The basic principle underlying comics is the translation of a sequence of events into the spatial arrangement of individual pictures on the page. Each individual picture or panel represents both a specific portion of time in an imagined sequence of events and an abstract component of a spatial design (Hatfield 2009), thereby prompting both a “successive or diachronic reading”, and “a kind of global or synchronic look” (Genette 1980: 34). Traditional comics typically invite a z-shaped reading path, where temporal progression is conceptualized in a way that might be

compared to the “moving attention perspective”, except that here the simple left-to-right timeline is complicated by additional vertical and diagonal dimensions. In many less conventional comics such as the works under discussion in this chapter, the potential reading paths are often even more complex and ambiguous, involving not just left-right, up-down, and diagonal eye movement, but also potential center-margin and inside-outside spatial relationships (El Refaie 2012: 125–130; Miodrag 2013: 142–165), all of which can be exploited for the creation of compositional spatial metaphors.

The layout of the page also interacts with the (imagined) spatial landscape of the story and the arrangement and implied motion of characters and objects in it, which may give rise to diegetic spatial metaphors. According to Massironi (2002: 187), our perception of time passing at this story world level is based on “a trade-off between permanence and variation”. In other words, providing there is a sufficient level of continuity in order for something to still be recognized as the same object or person, “the amount of change between two successive images is interpreted as information about the temporal distance between the depicted scenes” (199–200). If there is a significant change from one picture or panel to another, time thus appears to the reader to be passing more quickly than if just a tiny alteration is depicted through several consecutive panels. Implied movement can also evoke temporal progression (Potsch and Williams 2012). When a character in a story is depicted in a way that suggests energetic forward motion (walking, running, driving), this is likely to evoke a fast pace. By contrast, the representation of a character in a static pose (lying on a sofa, for example) may bring to mind the subjective experience of time slowing down or even coming to a complete standstill.

Interactive spatial metaphors, finally, may arise from the way depicted people in a comic are positioned relatively to the viewer. According to social semioticians (Kress and van Leeuwen 2006: 114–153), images that represent someone from a high angle give the viewer symbolic power over them, an eye-level view implies an equal relationship, and a low angle makes the depicted person appear more powerful. These associations are most likely based on “the structural features of real-life situations in which we ‘look up’ to powerful people and ‘look down’ upon weak people”, as, for example, when children interact with adults (Feng and O’Halloran 2013: 330). Similarly, our experiences of real-world human interactions mean that the implied distance between the reader and a depicted person is likely to be correlated in our understanding with greater or lesser intimacy, and a fully frontal angle and “eye-contact” with characters will usually create greater reader involvement than a view of them from the side or behind. Depending on the narrative context, an interactive spatial metaphor that implies distance between a depicted character and the “normal” world of the reader may in turn evoke a sense of intersubjective desynchronization, for example.

Comics artists thus have a broad range of options at their disposal for expressing not just temporal sequence but also a sense of duration. As I show in the following section, this enables individuals with depression to convey different aspects of their unique subjective temporal perceptions in creative ways.

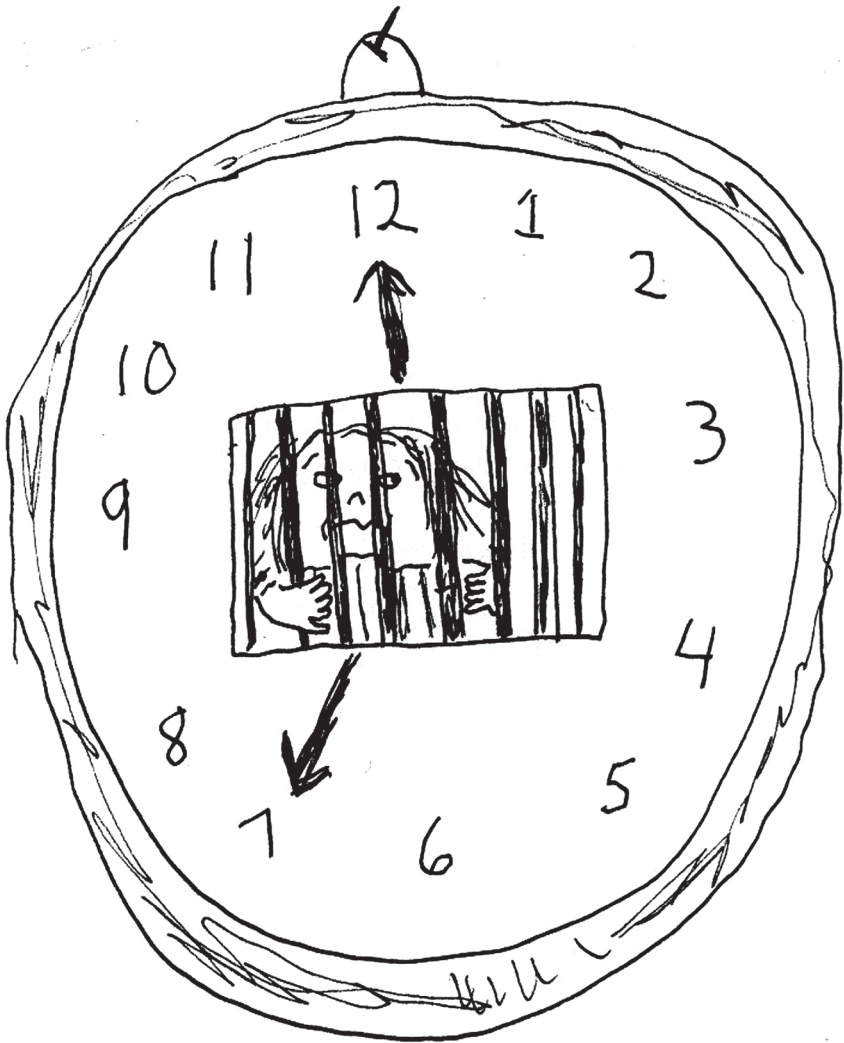
5. Creative time metaphors in graphic memoirs

In recent years, autobiographical comics about depression have been appearing in ever-increasing numbers, especially in the English-speaking world. Such works are generally categorized as “graphic novels” or “graphic memoirs”, a label that emphasizes their greater literary or artistic ambitions compared to traditional comics. As I have argued elsewhere (El Refaie 2012), this genre offers new opportunities for creativity, not just because of the rich affordances of the comics medium but also because of the way such works are often used as a platform for innovation, in terms of both their themes and their stylistic properties.

Three of the seven books under consideration in this chapter are by US Americans (Chisholm 2019; Swados 2005; White 2010), two by British creators (Brick 2010; Smith 2017), and one by a Canadian artist (Wong 2019); the final work was created collaboratively by two Australians (Chipkin and Tavassoli 2017). Only Brick is a man; the other creators are all women. There is a broad range of visual styles and different levels of training and skill on display. A recurring theme across all these works is the author’s subjective sense of time slowing down or coming to a complete standstill, and, in some cases, of being out of sync with others. This is achieved by evoking, through a combination of pictorial and spatial metaphors, an equivalence in experience between a lack of or inhibited mobility, and frozen or protracted time; in other words, a form of entrapment in spacetime. I start by considering extracts that contain overt pictorial metaphors for time (often in combination with spatial metaphors), before turning to those instances where temporal meaning is conveyed by means of spatial relations alone.

5.1 Pictorial metaphors for entrapment in spacetime

My depression, by Elizabeth Swados (2005), contains the most overt instance of a metaphorical representation of the sense of time passing much more slowly for people suffering from depression (Figure 1). Using a simple, sketchy drawing that fills the whole page, Swados has portrayed herself trapped behind the bars of a cage or prison cell that forms the center of a giant wall clock. Underneath, she has scrawled the words: “Each moment feels like it lasts forever.” (Swados 2005: np).



Each moment feels like it lasts forever.

Figure 1. Swados, E. 2005. *My depression: A picture book*, np. © Elizabeth Swados 2005¹

1. Every effort has been made to trace the copyright holders and obtain permission to reproduce this material.

This is an example of a “hybrid” pictorial metaphor, which involves the fusion of two separate entities – in this case, a prison cell and a clock – into one overall figure (Forceville 1996). It represents feelings of mental or psychological restraint in terms of the literal, physical containment of the autobiographical protagonist. Although the clock hands show a specific hour, anyone trapped inside the cell behind the clock face, as Elizabeth is, would be unable to read the time. This image thus gives a sense of the discrepancy between objective clock time and the subjective experience of what Fuchs (2005: 170) calls the “merciless rule” of “explicit” time, which seems to Elizabeth to have come to a complete standstill.

A metaphor of containment is used also by Jessica Tavassoli (“Tava”) in the graphic memoir *Eyes too dry*, which she co-created with her friend and housemate, Alice Chipkin. In alternate chapters, the two women tell and show the story of Tava’s gradual descent into severe depression. On the page reprinted in Figure 2, Tava recounts her experience of being “in what I call my ‘emotional blackhole’”: “Very little can penetrate when I’m there. I just have to wait” (Chipkin and Tavassoli 2017: np).

In the top right-hand corner, Tava’s avatar is drawn naked, lying on her back at the bottom of a dark blunted cone shape. This combines the verbo-pictorial metaphor of entrapment with the diegetic spatial metaphor of being “down”, which, as multiple empirical studies have shown, is universally associated with lack of power, ill health, sadness or other negatively valenced properties, most likely because of the common experience of finding it harder to resist the pull of gravity on our bodies when we are feeling weak or unwell (e.g. Crawford et al. 2006).

This image of her body being trapped inside time is apparently reversed in the following pictorial metaphor, which suggests that Tava’s own body is the container, and time the contained. An extreme close-up of the bottom half of her face, and then a more distant view of her head and shoulders in profile, show Tava gradually lowering a fob watch on a chain into her mouth. The hands of the watch appear to show that only one minute has passed in the “spacetime” between the two panels, which are separated by the merest hint of a black frame line and which share the same uniform dark background. The two panels are thus not as neatly separated from each other as is typically the case in comics, suggesting that, in Tava’s experience of depression, moments in time all begin to blend into each other, rather than forming regular, separate, measurable units. The lack of space between individual panels, as well as between panel frames and the words or drawing contained within them, act as compositional spatial metaphors, thereby increasing the sense of entrapment.

Taken together, the various metaphors thus create a powerful image of time being ingested and thereby entering the body of the depressed person, who herself



Figure 2. Chipkin, A., & Tavassoli, J. 2017. *Eyes too dry: A graphic memoir about heavy feelings*, np. © Alice Chipkin and Jessica Tavassoli 2017. Reprinted by permission of the authors

is stuck inside a bubble that separates her from the ordinary clock time governing the rest of the world. This is remarkably similar to the “containment” model of depression that Charteris-Black (2012) discovered to be dominant in depressed people’s verbal descriptions of their experiences, although in that case it was emotions rather than temporal perceptions that were conceptualized as “being contained within the body that is itself contained within depression” (p. 215). Indeed, temporal perceptions do not seem to have been mentioned explicitly at all in the interview data analyzed by Charteris-Black.

As already mentioned, metaphorical projections of downwards orientation onto negative emotions of various kinds appear to be universal in nature, due to our shared experience of gravity. In the graphic memoirs under consideration, images of the autobiographical protagonist lying on the floor, in bed, or on the sofa in a way that suggests they have not moved for long periods of time, are very common. In some cases, an abstract shape or figure representing depression is depicted lying on top of the depressed person and weighing them down, making movement – and, by implication, the ordinary flow of time – impossible. Throughout her comic, *Just peachy* (p. 40), for example, Holly Chisholm draws her mental illness as a black, hooded, faceless figure that is always hovering close by and with which she often converses about her state of mind and sense of worthlessness. Most of the time, the figure is not particularly fearsome, although it does frequently confront her with the truth when she is trying to delude herself.

In the extract in Figure 3, we see Holly lying in bed and trying hard to persuade herself to get up. The first panel shows her from above, her eyes half-closed and her arms lying stretched out to her sides, suggesting that she is incapable of even moving her limbs, let alone following her self-injunction to get up “right now” (Chisholm 2019: 40). The second panel is almost entirely taken up by a close-up of her face, whose expression emphasizes the enormous – and ultimately entirely fruitless – effort the character is making to try and get out of bed, “NOW!” (Chisholm 2019: 40). In the final panel, the posture and facial expression of Holly’s spread-eagled avatar suggest that she has, once again, succumbed to an overwhelming sense of listlessness. This is reinforced through the image of the personification of her depression lying across her and pinning her down, while playfully lifting one leg into the air and jeering: “Hey look! We’re late to work!” The cell phone at the foot of the bed shows that, for everyone else out there in the world, it is just after nine o’clock in the morning, whereas for Holly time appears to be standing still. The fact that, as indicated by the cable, the phone is charging, forms an ironic juxtaposition to the image of Holly’s own utter lack of energy and drive.

A similar pictorial metaphor is employed by Rachael Smith in her graphic memoir about depression, *Wired up wrong*. Throughout the book, she draws her mental health problems as either a giant dog or a more shadowy wolf figure, which



Figure 3. Chisholm, H. 2019. *Just Peachy: Comics about depression, anxiety, love, and finding the humor in being sad*, p. 40. © Holly Chisholm 2019. Reprinted by permission of the author (Instagram: @justpeachycomic)

is often depicted looming over her, squashing her under its huge bulk, or lying across her front door to prevent her from leaving the house. Later in the book, when her depression has reached a particularly severe level, the artist has drawn herself in a way that suggests she has become completely merged with her own bed (see Figure 4).



Figure 4. Smith, R. 2017. *Wired up wrong*, np. © Rachael Smith 2017. Reprinted by permission of the author

Rachael's despondent facial expression and her tiny, immobile limbs protruding from the foot of the bed suggest her utter inability to follow her own instructions to "Just get out of bed" (Smith 2017: np), however hard she may try. The way these words are written in the space above the bed, following an obvious downwards trajectory, further reinforces the sense of her being stuck, both literally and in the more abstract sense of feeling unable to move forward with her life. This example thus combines the hybrid pictorial metaphor of the Rachael-bed figure with a compositional spatial metaphor to magnify the sense of entrapment in spacetime the artist clearly wishes to convey.

5.2 Spatial metaphors for entrapment in spacetime

Not all the graphic memoirs examined in this study use explicit pictorial metaphors to convey distorted temporal perceptions triggered by depression; in some cases, a similar idea is suggested through spatial metaphors alone. A good case in point is Teresa Wong's comic about her experience of postpartum depression, *Dear Scarlet*. The long panel stretching across the full width of the page reprinted in Figure 5 presents a bird's-eye view of Teresa in her dressing gown, stretched out on the sofa, her newborn baby lying across her belly. The bird's-eye perspective adopted in

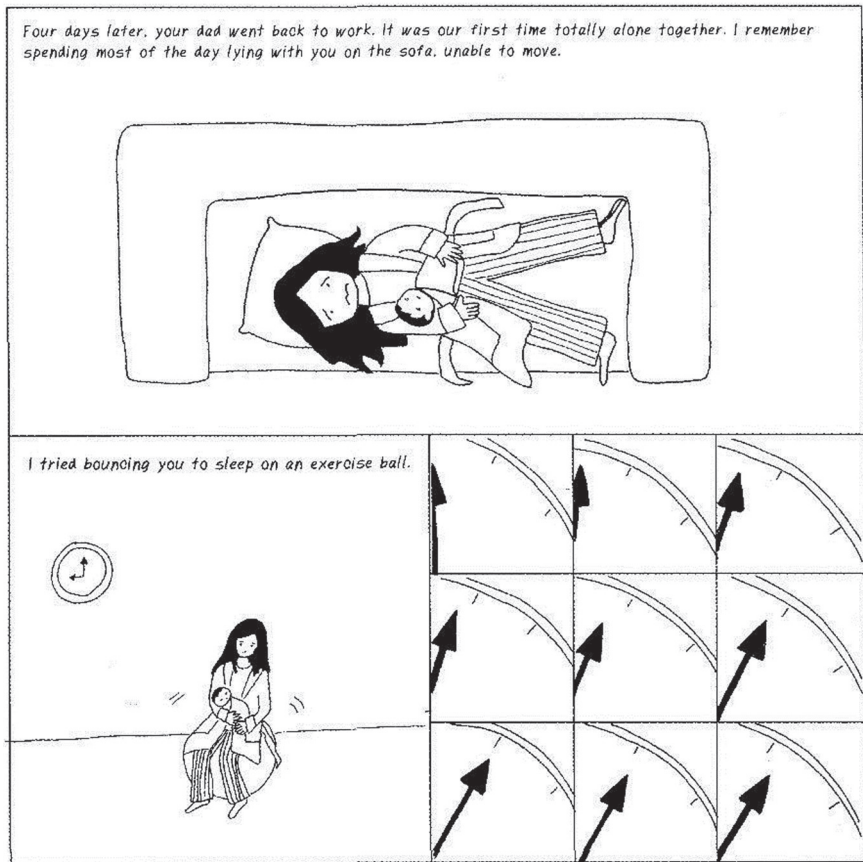


Figure 5. Wong, T. 2019. *Dear Scarlet: The story of my postpartum depression*, p. 47.
© Teresa Wong 2019. Permissions granted

this drawing can be described as an interactive spatial metaphor that accentuates Teresa's immobility and powerlessness, making the narrator's description of her memory of "spending most of the day lying with you on the sofa, unable to move" (Wong 2019: 47) almost redundant. The lower half of the page is split into two sections. The one on the left shows Teresa sitting on an exercise ball and trying to calm the baby by bouncing up and down; the wall clock in the background tells us that it is nine o'clock. The section on the right-hand-side is further subdivided into nine equally sized squares, each showing a close-up of the same small section of the clock and the position of the minute hand, which shifts so minimally across the nine panels that time almost seems to be standing still. This diegetic spatial metaphor invites the reader to imagine what the whole day must feel like for Teresa if just a single minute seems to go on forever in her perception.

In *How I made it to eighteen*, Tracy White (2010) also uses spatial metaphors to convey the idea of lying in bed for an unspecified but seemingly endless period of time. Tracy is admitted to a psychiatric hospital for young people after smashing her fist through a windowpane for no apparent reason. This scene is followed by the double-page spread reprinted in Figure 6, and the words “I felt better for a few moments”, which are printed in small letters across the top of the first panel, refer to her sense of release after the preceding compulsive action.

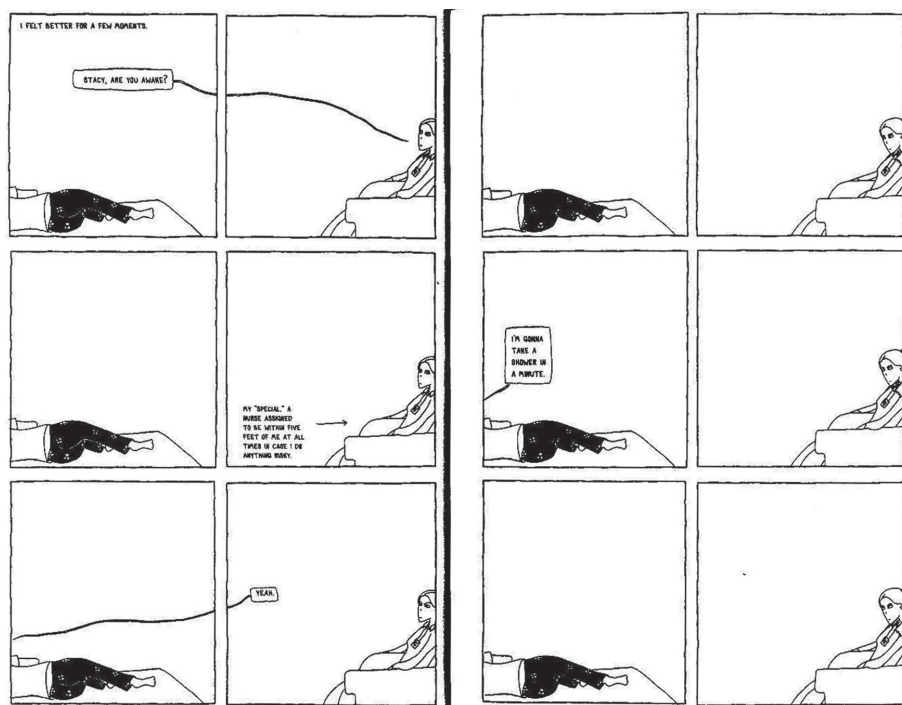


Figure 6. White, T. 2010. *How I made it to eighteen*, pp. 14–15. © Tracy White 2010. Reprinted by permission of the author

The double-page spread is arranged into a regular pattern of two panels in three tiers per page, with the one on the left always showing the lower half of Tracy’s body lying on a bed and facing away from the reader, which, through an interactive spatial metaphor, creates a sense of emotional detachment. The panel on the right contains a picture of the nurse who has been assigned the task of watching over her to ensure she does not self-harm again. The social distance between Tracy and the nurse is emphasized visually through the way their bodies are placed so far

at the edge of the panels that they are partially cut off. Moreover, although in the story world they are clearly meant to be in the same room, on the comics page the two figures are separated by panel borders, which suggests that, at least in terms of Tracy's perceptions, they are in completely different spaces. When the nurse asks if she is awake, and Tracy, after one "silent" panel, answers "Yeah" (White 2010: 14), the tails of their speech balloons must traverse the gap between the panels, further emphasizing the emotional and perceptual distance between them. Tracy's declaration: "I'm gonna take a shower in a minute" (White 2010: 15) is similarly preceded and followed by one "silent" beat.

The portrait of Tracy is identical across all six panels, and the nurse, too, shows no movement at all on the first page and has only adjusted the position of her head very slightly on the second page. As discussed in Section 4, the reader's perception of time passing in a comics narrative is based on the balance between change and continuity from one depicted scene to the next, with greater variation suggesting a faster pace, and less variation a slowing down of time (Massironi 2002). When, as in this case, there is just a tiny change – or, indeed, no change at all – from one panel to the next, time thus seems to come to an almost complete standstill. Only the speech balloons convey a minimal sense of sequence and duration, by calling to mind "that which can only exist in time – sound" (McCloud 1994: 95), while the lack of any speech balloons in the panels in-between creates a powerful sense of what Carney (2008: 198) calls "the silence of time passing". The spatial layout of the page and the posture and arrangement of the characters in the story world thus suggest, via a combination of compositional, diegetic, and interactive spatial metaphors, Tracy's subjective perception of time as an amorphous entity, in which the minutes and hours seem to merge and drag on endlessly, devoid of any meaning and with no clear sequence and duration.

In all the extracts discussed so far, the autobiographical avatar is shown on their own, except for Figure 6, where Tracy and the nurse are portrayed in a way that suggests they share the same protracted spacetime, the former because of her depression, and the latter because she has nothing to do and is extremely bored. The final extract from Brick's (2010) graphic memoir *Depresso* (Figure 7), by contrast, juxtaposes two different temporal experiences in order to evoke the sense of intersubjective desynchronization vis-à-vis other people and events around them that depressed individuals often experience.



Figure 7. Brick 2010. *Depresso: Or: How I learned to stop worrying...and embrace being bonkers!* p. 49. © 2010 John Stuart Clark. Reprinted by permission of the author (brickbats.co.uk)

Three long panels running across the full width of the page are subdivided by elements of the story world, namely the window frames and the columns of the porch. These form strong vertical lines that create additional panel-like structures against which the events in the foreground play out. Each of the three panels contains a picture of Brick's avatar, sitting slumped and motionless on the step of his porch, one leg extended and an arm wrapped around one of the pillars, in a posture that looks distinctly uncomfortable – painful, even. The fact that he is located at the far right-hand side of each panel emphasizes his stasis, since, in our left-to-right reading culture, he seems to have “nowhere left to go”, as it were. Brick is also shown from quite a distance and his head is bowed, so the reader is unable to “make eye-contact” with him and may feel disconnected from his experience. While Brick is sitting there, a fox approaches, stares at him, and then, having apparently decided that he poses no threat, proceeds to the drain on the other side of the veranda to drink some water. Unlike Brick himself, his cat reacts immediately to the fox's presence and rushes to hide behind its owner's legs, whose only response to this extraordinary scene is to glance down at the cat and say: “Y'think you've got problems!?” (Brick 2010: 49).

By showing the expected amount of implied movement from one panel to the next in relation to the two animals – a movement that also crosses several of the frame-like vertical lines within each of the three panels – the artist has managed to suggest that they are experiencing time in a way that is akin to the reader's “normal” perceptions. Contrastingly, Brick's sense of temporal stasis during periods of severe depression is conveyed through the complete lack of motion of his cartoon character. This is a perfect example of how, in comics, compositional, diegetic, and interactive spatial metaphors may work together in a seamless fashion to evoke a highly complex and idiosyncratic temporal experience that would be very difficult, if not impossible, to communicate in any other medium.

6. Conclusion

Adopting Carter's (2004) perspective on creativity as a culturally located phenomenon, the focus of this chapter has been on identifying the novel forms of expression that are enabled by the affordances of a particular genre. I have demonstrated that graphic memoirs offer artists unique opportunities for creativity when they are trying to evoke the sense of protracted or frozen duration that is common among sufferers of depression; the question of whether one individual instance is more or less creative than another is beyond the scope of this chapter.

In Lakoff and Turner's (1989) terms, the examples discussed here can be described as creative in the sense that they extend and/or elaborate existing conceptual metaphors in new ways. All seven extracts are based on a correlation between painfully slow, inhibited, or lack of movement and the subjective experience of protracted or frozen time. There are several plausible ways to interpret this. Seen from the artist's point of view, it could be regarded as an extension of the Ego-moving metaphor, in the sense that it adds the notion of slow pace and/or immobility to the conventional conceptualization of the ego traveling through a landscape of time. Alternatively, we might describe it from the reader's perspective as an extension and elaboration of the "moving attention perspective", which is normally limited to the mental representation of a sequence of events along an imagined lateral timeline but which in this case uses the actual layout of the whole page (or double-page spread) to convey not just sequence but a powerful sense of duration, too. However, as discussed in Section 3, the notion of moving through space at a variable pace already includes a reference to time, which suggests that the CMT view of a straightforward mapping from space onto time is problematic. Instead, it is plausible that they form subcategories of one single domain of spacetime, as Stocker (2014) suggests. Seen from this perspective, the central metaphor underlying all the examples under consideration in this chapter is best described as a form of entrapment in spacetime.

The extracts also all display creativity at the level of expression. The visual mode is intrinsically less conventionalized than language, and artists working in the innovative literary genre of graphic memoirs, in particular, are often able to come up with entirely novel pictorial metaphors, as well as combining these with two or more spatial metaphors. The striking pictorial metaphors of being stuck inside a black pit (Figure 2), pinned to the bed by a giant hooded figure (Figure 3), or swallowed up by the bed (Figure 4), for example, are all arranged on the page in a way that evokes further metaphorical associations with protracted or frozen time. Other instances discussed in this chapter feature no explicit pictorial metaphors at all, instead relying only on the extradiegetic space of the page layout and the diegetic space of the story world, as well as the implied relationship between the characters and the reader, to represent aspects of time as the artists perceived it. For example, by drawing themselves sitting or lying down in a (near-)identical posture across a number of repeated panels (Figures 6 and 7), and in a way that creates a sense of distance between the depicted character and the reader, the artists are able to show how time seemed to be passing painfully slowly, both in their own subjective experience and relative to the "normal" world. Many of the extracts discussed here also exploit the subconscious associations we have with up-down orientation, for instance, by placing the autobiographical characters low down in the panel, which evokes the shared experience of gravity pulling us down and, by implication, feelings of sadness and sluggishness (Figures 2, 6 and 7).

It is striking how frequently the issue of warped time perception is raised in graphic memoirs, since this symptom of the mood disorder is apparently rarely thematized explicitly in the spoken discourses of depressed patients. Graphic memoirs about depression may thus expose temporal aspects of the experience which are obscured by other forms of communication, and which, perhaps as result, are rarely discussed and so not generally considered to be one of the key symptoms of this mood disorder. They should thus be recognized as an important resource for researchers trying to understand the condition better, as well as for health professionals looking for new ways to support their patients.

References

- Bartczak, M., & Bokus, B. (2015). Cognitive representations (metaphorical conceptualizations) of PAST, FUTURE, JOY, SADNESS, and HAPPINESS in depressive and non-depressive subjects: Cognitive distortions in depression at the level of notion. *Journal of Psycholinguistic Research*, 44(2), 159–185. <https://doi.org/10.1007/s10936-014-9286-6>
- Bjørkløf, G. H., Kirkevold, M., Engedal, K., Selbæk, G., & Helvik, A.-S. (2015). Being stuck in a vice: The process of coping with severe depression in late life. *International Journal of Qualitative Studies on Health and Wellbeing*, 10(1), 27187. Available (17.7.2022) at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4483368/>. <https://doi.org/10.3402/qhw.v10.27187>
- Brick (2010). *Depresso. Or: How I learned to stop worrying...and embrace being bonkers!* London: Knockabout.
- Carney, S. (2008). The ear of the eye, or, do drawings make sounds? *English Language Notes*, 46(2), 193–209. <https://doi.org/10.1215/00138282-46.2.193>
- Carter, R. (2004). *Language and creativity: The art of common talk*. London: Routledge.
- Casasanto, D., & Jasmin, K. (2012). The hands of time: Temporal gestures in English speakers. *Cognitive Linguistics*, 23(4), 643–674. <https://doi.org/10.1515/cog-2012-0020>
- Charteris-Black, J. (2012). Shattering the bell jar: Metaphor, gender, and depression. *Metaphor & Symbol*, 27(3), 199–216. <https://doi.org/10.1080/10926488.2012.665796>
- Chipkin, A., & Tavassoli, J. (2017). *Eyes too dry: A graphic memoir about heavy feelings*. Richmond, Victoria: Bonnier.
- Chisholm, H. (2019). *Just peachy: Comics about depression, anxiety, love, and finding the humor in being sad*. New York: Skyhorse.
- Crawford, L. E., Margolies, S. M., Drake, J. T., & Murphy, M. E. (2006). Affect biases memory of location: Evidence for the spatial representation of affect. *Cognition and Emotion*, 20(8), 1153–1169. <https://doi.org/10.1080/02699930500347794>
- Demjén, Z. (2014). Drowning in negativism, self-hate, doubt, madness: Linguistic insights into Sylvia Plath's experience of depression. *Communication and Medicine*, 11(1), 41–54. <https://doi.org/10.1558/cam.v11i1.18478>
- El Refaie, E. (2012). *Autobiographical comics: Life writing in pictures*. Jackson: University Press of Mississippi. <https://doi.org/10.14325/mississippi/9781617036132.001.0001>
- El Refaie, E. (2014). Looking on the dark and bright side: Creative metaphors of depression in two graphic memoirs. *Auto/Biography Studies*, 29(1), 149–174. <https://doi.org/10.1080/08989575.2014.921989>

- El Refaie, E. (2019). *Visual metaphor and embodiment in graphic illness narratives*. New York: Oxford University Press. <https://doi.org/10.1093/oso/9780190678173.001.0001>
- Evans, V. (2013). *Language and time: A cognitive linguistics approach*. Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9781107340626>
- Fauconnier, G., & Turner, M. (2008). Rethinking metaphor. In R. Gibbs (Ed.), *The Cambridge handbook of metaphor and thought* (pp. 53–66). Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9780511816802.005>
- Feldman, J. A. (2006). *From molecule to metaphor: A neural theory of language*. Cambridge & London: Massachusetts Institute of Technology Press. <https://doi.org/10.7551/mitpress/3135.001.0001>
- Feng, D., & O'Halloran, K. L. (2013). The visual representation of metaphor: A social semiotic approach. *Review of Cognitive Linguistics*, 11(2), 320–335. <https://doi.org/10.1075/rcl.11.2.07fen>
- Filipović, L., & Jaszczolt, K. M. (Eds.). (2012). *Space and time in languages and cultures, vol. I*. Amsterdam: John Benjamins. <https://doi.org/10.1075/hcp.36>
- Flaherty, M. G. (1999). *A watched pot: How we experience time*. New York: New York University Press
- Forceville, C. (1996). *Pictorial metaphor in advertising*. London: Routledge. <https://doi.org/10.4324/9780203272305>
- Forceville, C. (2009). Non-verbal and multimodal metaphor in a cognitivist framework: Agendas for research. In C. Forceville & E. Urios-Aparisi (Eds.), *Multimodal metaphor* (pp. 19–42). Berlin: Mouton de Gruyter. <https://doi.org/10.1515/9783110215366.1.19>
- Fuchs, T. (2005). Implicit and explicit temporality. *Philosophy, Psychiatry and Psychology*, 12(3), 195–98. <https://doi.org/10.1353/ppp.2006.0004>
- Fuchs, T. (2013). Temporality and psychopathology. *Phenomenology and the Cognitive Sciences*, 12(1), 75–104. <https://doi.org/10.1007/s11097-010-9189-4>
- Fuhrman, O., & Boroditsky, L. (2010). Cross-cultural differences in mental representations of time: Evidence from an implicit nonlinguistic task. *Cognitive Science*, 34, 1430–1451. <https://doi.org/10.1111/j.1551-6709.2010.01105.x>
- Genette, G. (1980). *Narrative discourse*. Oxford: Blackwell.
- Gil, S., & Droit-Volet, S. (2009). Time perception, depression and sadness. *Behavioural Processes*, 80(2), 169–176. <https://doi.org/10.1016/j.beproc.2008.11.012>
- Hatfield, C. (2009). An art of tensions. In J. Heer & K. Worcester (Eds.), *A comics studies reader* (pp. 132–148). Jackson: University Press of Mississippi.
- Hauser, D. J., Carter, M. S., & Meier, B. P. (2009). Mellow Monday and furious Friday: The approach-related link between anger and time representation. *Cognition and Emotion*, 23(6), 1166–1180. <https://doi.org/10.1080/02699930802358424>
- Johnson, M., & Rohrer, T. (2007). We are live creatures: Embodiment, American Pragmatism and the cognitive organism. In T. Ziemke, J. Zlatev & R. M. Frank (Eds.), *Body, language and mind* (vol 1, pp. 17–54). Berlin: Mouton de Gruyter.
- Kövecses, Z. (2002). *Metaphor: A practical introduction*. Oxford: Oxford University Press.
- Kress, G., & van Leeuwen, T. (2006). *Reading images: The grammar of visual design* (2nd ed.). London: Routledge. <https://doi.org/10.4324/9780203619728>
- Lakoff, G. (1993). The contemporary theory of metaphor. In A. Ortony (Ed.), *Metaphor and thought* (pp. 202–225). 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.

- Lakoff, G., & Turner, M. (1989). *More than cool reason: A field guide to poetic metaphor*. Chicago: University of Chicago Press. <https://doi.org/10.7208/chicago/9780226470986.001.0001>
- Lee, A., & Ji, L.-J. (2014). Moving away from a bad past and toward a good future: Feelings influence the metaphorical understanding of time. *Journal of Experimental Psychology: General*, 143(1), 21–26. <https://doi.org/10.1037/a0032233>
- Lewandowska-Tomaszczyk, B. (Ed.). (2016). *Conceptualizations of time*. Amsterdam: John Benjamins. <https://doi.org/10.1075/hcp.52>
- Maass, A., Suitner, C., Favaretto, X., & Cignacchi, M. (2009). Groups in space: Stereotypes and the spatial agency bias. *Journal of Experimental Social Psychology*, 45(3), 496–504. <https://doi.org/10.1016/j.jesp.2009.01.004>
- Massironi, M. (2002). *The psychology of graphic images: Seeing, drawing, communicating*. New York & Hove: Psychology Press.
- McCloud, S. (1994). *Understanding comics: The invisible art*. New York: Harper Perennial.
- McMullen, L. M., & Conway, J. B. (2002). Conventional metaphors for depression. In S. Fussell (Ed.), *The verbal communication of emotions: Interdisciplinary perspectives* (pp. 167–181). Mahwah: Lawrence Erlbaum.
- Miodrag, H. (2013). *Comics and language: Reimagining critical discourse on the form*. Jackson: University Press of Mississippi. <https://doi.org/10.14325/mississippi/9781617038044.001.0001>
- Moore, K. E. (2014). *The spatial language of time: Metaphor, metonymy, and frames of reference*. Amsterdam: John Benjamins. <https://doi.org/10.1075/hcp.42>
- Piata, A. (2019). When time passes quickly: A cognitive linguistic study on compressed time. *Metaphor & Symbol*, 34(3), 167–184. <https://doi.org/10.1080/10926488.2019.1649842>
- Potsch, E., & Williams, R. F. (2012). Image schemas and conceptual metaphor in action comics. In E. Bramlett (Ed.), *Linguistics and the study of comics* (pp. 13–36). Basingstoke: Palgrave Macmillan. https://doi.org/10.1057/9781137004109_2
- Richmond, J., Clare Wilson, J., & Zinken, J. (2012). A feeling for the future: How does agency in time metaphors relate to feelings? *European Journal of Social Psychology*, 42(7), 813–823. <https://doi.org/10.1002/ejsp.1906>
- Santiago, J., Pérez, E., Lupiáñez, J., & Funes, M. J. (2007). Time (also) flies from left to right. *Psychonomic Bulletin and Review*, 14(3), 512–516. <https://doi.org/10.3758/BF03194099>
- Semino, E. (2008). *Metaphor in discourse*. Cambridge: Cambridge University Press.
- Smith, R. (2017). *Wired up wrong*. Rachael Smith Illustration.
- Stocker, K. (2014). The theory of cognitive spacetime. *Metaphor & Symbol*, 29(2), 71–93. <https://doi.org/10.1080/10926488.2014.889991>
- Swados, E. (2005). *My depression: A picture book*. New York: Seven Stories Press.
- Thönes, S., & Oberfeld, D. (2015). Time perception in depression: A meta-analysis. *Journal of Affective Disorders*, 175, 359–372. <https://doi.org/10.1016/j.jad.2014.12.057>
- Thönes, S., & Stocker, K. (2019). A standard conceptual framework for the study of subjective time. *Consciousness and Cognition*, 71, 114–122. <https://doi.org/10.1016/j.concog.2019.04.004>
- Walker, E., & Cooperrider, K. (2015). The continuity of metaphor: Evidence from temporal gestures. *Cognitive Science*, 39(7), 1–15.
- White, T. (2010). *How I made it to eighteen: A mostly true story*. New York: Roaring Brook Press.
- Wong, T. (2019). *Dear Scarlet: The story of my postpartum depression*. Vancouver: Arsenal Pulp Press.

Time-creation in film

An embodied cognitive perspective

Maarten Coëgnarts

University of Antwerp

This chapter aims to discuss the creation of time in cinema from an embodied cognitive perspective. Drawing on principles of Cognitive linguistics, we first discuss briefly how our ordinary thinking about time is informed by spatial knowledge. Knowing how space shapes temporal thought, we subsequently show how filmmakers may cue this spatio-temporal logic in the direction of two opposing models of time-creation in cinema: one model in which cinematic creativity serves the purpose of optimal narrative clarity, and another model in which creativity resolves around the opposite goal of spatio-temporal ambiguity. We illustrate both models through various case-examples drawn from classical narrative cinema and modern and postmodern art cinema, respectively.

Keywords: arthouse cinema, film style, narrative cinema, time spatialization

1. Introduction

How do filmmakers come to represent time, a concept that people are unable to see or touch in ordinary life? One suggestion is that filmmakers' cinematic expressions of abstract notions such as time are built on the same kind of knowledge structures that people use to understand them. As several studies demonstrate, people's understanding of abstract domains is strongly tied to analogical extensions from richer, more experience-based domains (Boroditsky and Ramscar 2002; Gibbs 2005; Lakoff and Johnson 1980, 1999). This is how people come to talk about emotions such as love in terms of a journey (e.g., 'We're at a *crossroads*') or mental faculties such as knowing in terms of seeing (e.g., 'I finally *see* what you are saying'). Likewise, scholars have argued that people tend to think and talk about the concept of time in terms of spatial knowledge (Boroditsky 2000, 2001; Casasanto and Boroditsky 2008; Evans 2003; Gentner 2001; Gentner, Imai and Boroditsky 2002; Lakoff and Johnson 1980, 1999; Núñez, Motz and Teuscher 2006; Núñez and

Sweetser 2006; Radden 2011). This is evidenced by such expressions as ‘Time *flies by*’, ‘Christmas *is approaching*’ or ‘Wednesday *follows* Tuesday’.

This chapter aims to expand on these insights from embodied cognitive science in order to further our understanding of the various ways in which filmmakers give creative expression to the concept of time. Indeed, if human reasoning about time is embodied, then, it is not unthinkable to assume that the level of human creativity involved in the artistic expression of time is equally embedded within a spatial framework. In what sense, then, can it be said that creativity is anchored in our spatial understanding of time?

The present study seeks to answer this question by focusing on two different ways of engaging creatively with spatio-temporal metaphors. Creativity in the first way is primarily motivated by the intention to inform the viewer. This function has been traditionally linked to classical narrative cinema (Bordwell, Staiger and Thompson 1985). Creativity in this model revolves around the question of how filmmakers may convey spatio-temporal metaphors as comprehensibly and unambiguously as possible to a viewer. The task then is to identify the creative strategies by which filmmakers succeed in exhibiting this communication goal. Creativity in the second way, by contrast, is aimed at precisely the opposite. Here the filmmaker intends to challenge the information function of classical cinema by representing spatio-temporal metaphors in ways that are narratively more confusing and disorientating. To study creativity in this model is to engage in the formal conditions that allow this spatio-temporal ambiguity to rise. Two strands of cinema that are commonly argued to exhibit typical case-examples of this model are modern European art cinema (Kovács 2007) and postmodern mind game or puzzle films (Buckland 2009; Kiss and Willemsen 2017).

Before elaborating on this categorical distinction, however, we first need to know how people ordinarily make sense of time. This is the central aim of the first part of this chapter which draws upon existing scholarship in the field of Cognitive linguistics to explore the spatial logic of temporal reasoning. Knowing this logic, we can go on to discuss and illustrate, in the subsequent parts, how creativity may serve both models of time in cinema.

2. Spatio-temporal reasoning

How do we make sense of time in our ordinary everyday lives? According to Núñez and Sweetser (2006), the answer to this question depends on the reference point that we use to conceptualize it. As these scholars argue, people construe time events as locations either with or without reference to an ego or canonical observer (see

also Núñez, Motz, and Teuscher 2006). This distinction gives rise to two types of temporal metaphors which the authors coin: 'Ego-Reference-Point (Ego-RP) metaphors' and 'Time-Reference-Point (Time-RP) metaphors', respectively. In the first type the ego's location always specifies the present, now, as in 'The week *ahead of us*' or 'The deadline *is approaching*', whereas in the second type there is no compulsory specification of 'now'. This type accounts for the linguistic form and the semantic entailments of expressions like 'Christmas *follows* Thanksgiving' or 'It is 20 min *ahead of* 1 p.m.'. Here earlier events in time are conceived as locations 'in front of' later events. Most research in Cognitive linguistics, however, focuses on Ego-RP metaphors and the question of which of the time spheres is to be in front of the ego and which one is to be behind it. The literature seems to suggest evidence for the existence of both mappings. It is said that in Western society people usually map the future in front of the perceiver as in 'The week *ahead of us*', whereas the location behind the observer is typically conceived of as representing the past as in 'The week *behind us*'. By contrast, the past may also be seen as lying in front of the observer and the future as lying behind (Lakoff and Johnson 1999: 141; Núñez and Sweetser 2006). This is the case with Aymara, an Amerindian language spoken in the Andean highlands of Bolivia. Although this mapping is rather uncommon in language, it is nevertheless well motivated, as Núñez and Sweetser (2006: 438–439) argue, by the KNOWING IS SEEING metaphor, a common metaphor across languages which maps the objects we see on the objects we know (Lakoff and Johnson 1999: 393–394). As we already know what we have perceived in the past (e.g., memories), it follows that past events are expressed as being in front of the eyes and future events as behind. With most speakers this static spatial conception of time, however, changes once motion comes into play. Because most people experience time as dynamic, future times will eventually become present, and past times once were present. As Núñez and Sweetser (2006: 439) explain: "A traveler will be at a location ahead of him or her and has been at locations behind him or her". Hence, the prevalence of the mappings FUTURE IS AHEAD/IN FRONT and PAST IS BEHIND/BACK in Western culture.

Since times are conceived as bounded regions or locations in space, both Ego-RP and Time-RP metaphors adhere to a fundamental spatial logic. Lakoff and Johnson (1999: 31–32) refer to this logic as the CONTAINER schema logic. This logic follows directly from the gestalt structure of a container which entails an inside, a boundary, and an outside. It is a gestalt structure because the parts make no sense without the whole. As the authors explain: 'There is no inside without a boundary and an outside, no outside without a boundary and an inside, and no boundary without sides'. This structure gives rise to a particular spatial logic which the authors describe as follows: 'Given two containers, A, and B, and an object, X, if A is in B and X is in A, then X is in B'. Schematically, we may put this logic as in Figure 1.

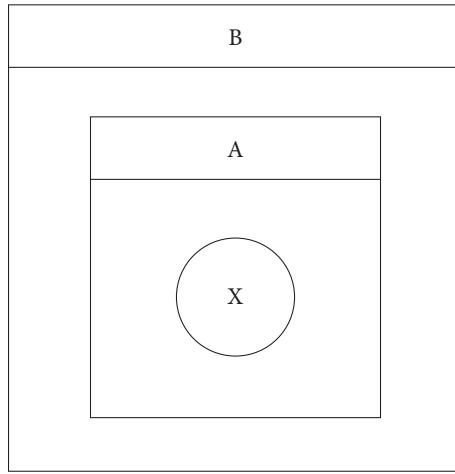


Figure 1. The CONTAINER schema logic

With this brief overview of the literature in mind, let us now turn to the question of how filmmakers appeal to this spatio-temporal logic to represent time in cinema in two very distinctive creative ways.

3. Creating spatio-temporal clarity in cinema

In what creative ways do filmmakers communicate transparently and unambiguously about time in film? A correct answer to this question requires that we first explore the ways in which cinema can evoke the logic by which viewers make sense of time in the first place. Since the latter is rooted in the spatial logic of a bounded region, the first question to answer is how cinema can evoke this logic. Given the nature of cinema, the most obvious place to look for this logic is in a shot and the series of frames out of which they are constructed (see also Coëgnarts 2019: 75–76). As Branigan (2006: 103) observes, “[t]he frame is the *real edge* of an image on the screen that has resulted from limits imposed on celluloid inside a physical camera and projector so that, for example, a projected image can be said to be ‘in frame’ or ‘out of frame’ on the screen”. The boundary of a frame thus provides us with the criteria for distinguishing between two different locations: one location ‘inside’ the frame (the so-called ‘on-screen space’) and another location, ‘outside’ (the so-called ‘off-screen space’). If the locations depicted over various shots take place in a single location or spatial region, we speak of a scene (see also Monaco 1977: 427). Alternatively, a single shot may also depict various locations. This is how we make sense of a sequence shot. Rather than decomposing space into a sequence of shots,

this technique continues for an unusually lengthy period of time before the transition to the next shot, thus allowing the camera, not editing, to reveal the sequence of locations (and thus time events). The camera moves uninterruptedly through space including new locations while simultaneously excluding them for new ones (Coëgnarts 2019: 99–101). In sum, then, we may roughly identify locations at three levels of filmmaking: (i) the level of spatially discontinuous shots, (ii) the level of a scene and, (iii) the level of a sequence shot.¹

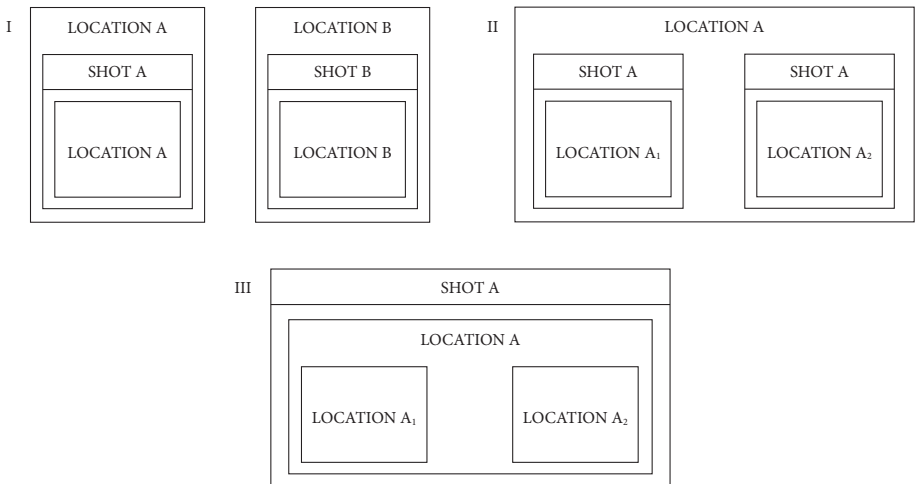


Figure 2. Identifying locations in the (visual) logic of filmmaking

Depending on whether or not different locations are conveyed in the same shot or not, and depending on whether or not these locations are spatially related to each other, we can distinguish between at least three spatio-temporal templates for rendering times visually in cinema.

1. Given two different times, A and B, they can be both allocated over two different locations, A and B, which do not belong to the same spatial region and which are both rendered in different shots.
2. Given two different times, A and B, they can be both allocated over two sub-locations, A₁ and A₂, of the same spatial region, A, which, like template I, are both rendered in different shots (i.e., a scene).

1. The focus here is on the visual evocation of locations. It is important to stress, however, that locations may also be rendered through sound. As Zettl (2017: 319) points out, sounds have an important “outer orientation function,” that is, they “can help us reveal and define the location of an event (...), provided the audience is familiar with those environmental sounds.”

3. Given two different times, A and B, they can be both allocated over two sub-locations, A₁ and A₂, of the same spatial region, A, which, contrary to templates I and II, are both rendered in the same shot (i.e., a sequence shot)

Knowing the structures by virtue of which filmmakers may render locations visually, we can start to discuss and illustrate how filmmakers may enrich them creatively for the purpose of communicating time as narratively transparent and unambiguous as possible to the viewer. We do so by demonstrating how each template further triggers the use of various devices such as camera movements, verbal time markers, facial expressions, and musical cues; all of which show to contribute significantly to the transparent conveyance of time shifts to the viewer.

3.1 Creativity within spatio-temporal template I

The first spatio-temporal template is perhaps the most conventional one in which to convey Ego-RP metaphors visually to a viewer. Evidence for this can be found in the manner in which a significant portion of the so called ‘memory flashbacks’ or ‘subjective flashbacks’ are communicated to spectators (Turim 1989; Branigan 1984: 64, 75; see also Gordejuela 2021: 16). These flashbacks most typically occur in classical film genres such as film noir and melodrama, and depict events that were already experienced by the characters in the past and thus, via the metaphor KNOWING IS SEEING, were already known to them. As a way of illustration, let us consider the first of three flashback scenes from *A Letter to Three Wives* (Joseph L. Mankiewicz 1949), as also cited by Coëgnarts and Kravanja (2015a: 246–248) and Deaca (2020: 574–575). In it, the first of the three wives, Deborah Bishop (Jeanne Crain), recalls how her marriage had come to be so strained at the present. As Figure 3 shows, the first shot starts in medium long shot (A). There is still plenty of distance between the camera and Deborah. As the girl next to her on the boat starts to read aloud the first words of a fairy story: ‘Once upon a time, there lived a very poor girl...’, the camera gradually encloses in on the character’s face (B) thus excluding the girl while at the same time recalling to the viewer’s mind the metonymy HEAD FOR THINKING. When her face is captured in a close-up (C), the diegetic sound of the little girl’s voice (i.e., the aural object inside of the present location) weakens. Finally, it disappears completely so as to be replaced by the voice of Addie Ross, the unseen woman who wrote the titular letter as she utters the words: ‘Do you remember your first night in town? ... That was a first Saturday in May, too’. After this verbal time marker, the shot dissolves into the second shot which depicts her first night in town.

This scene is an archetypal case of how various creative choices serve the communication function of classical Hollywood cinema. First, it provides a clear-cut



Figure 3. A memory flashback in *A Letter to Three Wives*

example of how an Ego-RP metaphor of time can be conveyed cinematically through the first visual template. Both the perceiver (present) and the object perceived (past) are allocated over two separate shots that are spatially discontinuous.² Second, it reveals the important role of facial expressions in announcing this Ego-RP metaphor to the viewer. As psychologists have observed, the face has an important communication function. “While we cannot look inside the head”, Scherer (1992: 141) points out, “we can look at it, particularly at the face”, that is, “we can use facial expressions to infer some ongoing cognitive processes”. In this case, the face is revelatory of the inner process of remembering. As Deaca (2020: 575) further comments on this, “the character changes the direction of his gaze from a diegetic focused one to a possible extradiegetic one. The change of the character’s viewing direction marks the boundary of a new event. The upward gaze cues the action of looking at something situated at a distance from the viewer”. Third, the temporal metaphor is cued not only by means of facial gesture but also by sound. The environmental diegetic sound is silenced so as to draw attention to the flashback that is about to unfold on-screen. Fourth and lastly, there is the verbal marker of the voice-over which explicitly tells the viewer that what we are about to see does not occur in the present but in the past.

The use of this spatio-temporal template, however, is not limited only to the representation of Ego-RP based memory flashbacks in cinema. In addition, the same template may also structure the cinematic representation of Time-RP based

2. In this example past follows the present directly. However, cinema also provides the possibility of presenting this mapping more indirectly through the perception of an intermediary object in the present location that precedes it. In the literature this is also known as the ‘involuntary memory’ or Proust’s famous ‘madeleine cake moment’ referring to a scene from Swann’s Way, the first volume of his famous novel *Remembrance of Things Past* (1913–1927). An involuntary memory occurs when the past is not recalled with conscious effort as when, for instance, the perception of an everyday life object evokes a recollection of the past. Notable examples of this type can be found, for instance, in *The Pawnbroker* (1954) by Sidney Lumet, *Hiroshima Mon Amour* (1959) by Alain Resnais and *First Blood* (1982) by Ted Kotcheff. For a discussion, see Coëgnarts and Kravanja (2015b).

metaphors in which the two different locations are not relative to a character's perception. For instance, filmmakers often resort to this template to leave out a portion of the sequence of story events. Because such a temporal ellipsis might endanger the flow by which viewers experience the narrative, filmmakers often make use of all sort of rhetorical devices to bridge the temporal gap between the two different locations (times). One rule in classical Hollywood, for example, says that dissolves are best used to indicate a brief time lapse whereas fades are best used to indicate a much longer one (Bordwell and Thompson 2004: 332). Sometimes, however, filmmakers use more creative and graphic solutions to smooth over the gap, especially if this distance omits years, centuries or even millions of years of story time. One way would be to establish a perceptual correspondence (either pictorial or aural) between the objects from the two disparate locations (times).³ A vivid example of this technique can be found, for instance, in James Gray's historical adventure film *Lost City of Z* (2016).⁴ Aboard a ship to South America Fawcett meets his aide-de camp, Corporal Henry Costin (Robert Pattinson), whose knowledge and experience of the Amazon rainforest is useful. As a token of initiating their journey together, Fawcett pours alcohol out of the flask of his assistant, remarking that he will not be needing this from now on. As the liquid rushes to the left side of the image (see Figure 4A), down the drain of a sink, the film cuts to a new shot that perfectly matches the prior image with the new image of a train rushing leftward (B). On the soundtrack we can hear how Ivor Stravinsky's *Rite of Springs* bridges both images. In other words, despite the spatial and temporal discontinuity of shot and location, there is nevertheless a strong feeling of narrative continuity established creatively by both visual and musical choices.

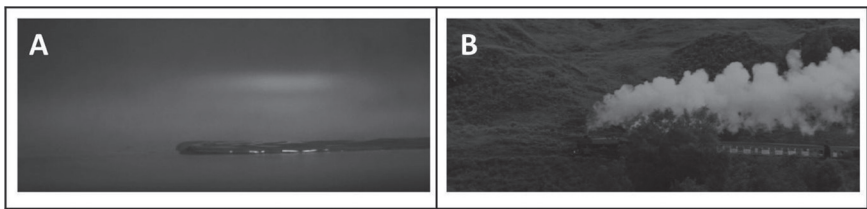


Figure 4. Bridging time gaps through shape similarity in *Lost City of Z*

3. In the literature this alignment of differing objects is often referred to as 'symmetric image alignment' (Teng 2009; Teng and Sun 2002), 'symmetric object alignment' (Schilperoord, Maes and Ferdinandusse 2009) or simply 'shape similarity' (van Weelden, Maes, Schilperoord and Cozijn 2011; van Weelden, Maes and Schilperoord 2018). As these scholars point out, such alignment is apt for facilitating metaphoric or associative conceptual links between them.

4. Perhaps the most iconic example in this regard is the famous bone to satellite match cut from Kubrick's *2001: A Space Odyssey* (1968). For a discussion, see Coëgnarts 2019: 102–103.

3.2 Creativity within spatio-temporal template II

The second template maintains the shot discontinuity of the first template, but diverges with respect to the discontinuity of location. In other words, where the first template showed time A in another location than time B, this model, by contrast, shows time A in a location that belongs to the same spatial region as the location of time B. In other words, it follows the spatio-temporal logic of a scene. One typical way in which to render this template creatively for the purpose of conveying an Ego-RP metaphor is through the technique of the point-of-view (POV) shot (see also Bordwell and Thompson 2004: 85; Branigan 1984). In this technique the camera is placed approximately where the character's eyes would be so as to enable the viewer to see what the character would see. In metaphorical terms, the inside of the shot becomes the 'container' of the character's visual field (Coëgnarts 2019: 50, 129–134).⁵ It is usually established by being intersected between a shot of the actor's performative act of looking at something, and a shot showing the actor's reaction (i.e., a shot-reverse-shot). A good application of this type can be found at the end of *Letter from an Unknown Woman* (Max Ophüls 1948). After Stefan (Louis Jordan) has finished reading the letter of the unknown woman, Stefan realizes that his servant knew who she was all along, and the servant quietly writes down her name for Stefan: Lisa Berndle (Joan Fontaine). When he exits his home Stefan turns around, as shown in Figure 5, and he sees her exactly as he saw her the first time when she was still a girl, and he was still an ambitious young man studying music and making a career.



Figure 5. Seeing the past in the present: The end scene of *A Letter to Three Wives*

As with the example from *A Letter from Three Wives* the past is rendered in front of the character's eyes. In both cases the memory flashback involves an event that the character has already experienced before. Hence, what is known is already seen and thus in front of the character's eyes. The crucial difference here, however, is that in

5. In language the VISUAL FIELDS ARE CONTAINERS metaphor is licensed by such linguistic expressions as 'The ship is *coming into view*' and 'I have him *in sight*'. For a discussion, see Lakoff and Johnson (1980: 30).

A Letter from an Unknown Woman, not only the character, but also the viewer has seen the image before. The memory flashback of *A Letter to Three Wives* occurs at the beginning of the film whereas the memory flashback of the latter occurs at the end. As a consequence of this, there is no need to further contextualize the image as it is already part of the viewer's working memory.⁶ Moreover, the filmmaker chooses to superimpose the past image over the location of his visual field so as to clearly establish the boundary between reality and imagination.

3.3 Creativity within spatio-temporal template III

In the third and last visual template, by contrast, the temporal metaphor is established with complete continuity of shot and location: time A and time B are shown in the same shot. Naturally, such blending dismisses the use of montage and benefits from the spatio-temporal logic of camera movement. This can be achieved, for instance, by having the camera excluding location A_1 which maps onto time A in favor of the inclusion of location A_2 , which maps onto time B. As I have discussed elsewhere (Coëgnarts 2019: 95), INCLUSION and its counterpart EXCLUSION are two instances of what Dewell (2005) refers to as 'dynamic patterns of containment'. In the former the container takes hold of an object, while in the latter the container releases its content. Diagrammatically, these complementary patterns may be represented as in Figure 6.

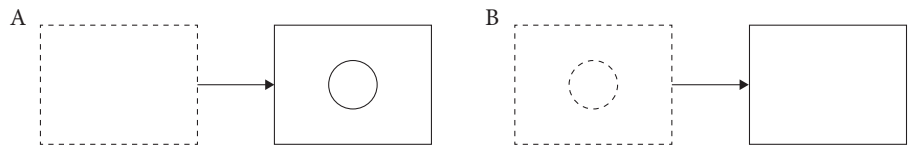


Figure 6. The dynamic patterns of A, INCLUSION, and B, EXCLUSION

To see how this dynamic pattern of containment may serve the conveyance of temporal metaphors in cinema, let us consider a sequence shot from George Cukor's musical comedy *Les Girls* (1957). As with *A Letter to Three Wives* the story unravels via a series of memory flashbacks recalled by the leading characters. The shot, as shown in Figure 7, opens at a trial: after the publication of her memoirs about her days with the dance troupe, one of the girls, Sybil (Kay Kendall) is sued for libeling fellow dancer Angèle. As Sybil tells her side of the story (A), the camera slowly moves to the right, *excluding* the present (B) in favor of the *inclusion* of a new scene that took place many years ago (C-D). Considering the nature of the template, one

6. The working memory is the part of the cognitive system that people use to hold "a limited amount of information in the focus of attention" (Hinson et al. 2003: 299).

would expect that the viewer has more difficulty in making a distinction between the two different time frames. After all, the events are shown in one and the same shot. Yet, the opposite seems the case. As in *A Letter to Three Wives*, the viewer is verbally assisted to make the transition from the present to the past. Replying to the court Sybil utters:

It was Spring. Spring is a chronological truth that happens once a year. I can remember what I wrote. We *were* in Paris, that was true. We *were* playing at the musical *Parisienne*. It happened... Well, well, some few years ago. It *was* our first engagement in Paris and I can *recall* the excitement we felt. I *was* sharing a little flat with an American dancer called Joy Henderson. (...)

Furthermore, while the continuity of the shot resists any boundary, the viewer nevertheless is cued to observe one within the scenery itself. As the camera strolls by, we can see how a bookshelf clearly separates the two locations. Once more, the creative choices are clearly aimed at communicating a transition in time as comprehensible as possible for sake of narrative clarity.



Figure 7. Creating temporal boundaries within a sequence shot in *Les Girls*

The same template may also serve the representation of Ego-RP metaphors in which the distinction between the locations, as depicted within the shot, is more prominently motivated by the perception of the character. In that case locations, A_1 and A_2 , are relative to the standpoint of the perceiver and the object perceived, respectively. Location A_1 may contain the perceiver's physical body, but it may also be the container for his or her visual field (i.e., POV shot).⁷ A vivid example

7. Cinematic manifestations of flashbacks in which the perceiver is visible in location A_1 can be found, for instance, in *The Passenger* (1975) by Michelangelo Antonioni, *Come Back to the 5 & Dime Jimmy Dean, Jimmy Dean* (1982) by Robert Altman and *Lone Star* (1996) by John Sayles. For a discussion, see Coëgnarts and Kravanja (2015b).

of the latter can be found, for instance, in Alf Sjöberg's film treatment of August Strindberg's theatrical play *Miss Julie*. The film from 1951 centers on the moral crisis of a young Countess in 19th century Sweden (Anita Björk) who gives herself to one of her father's servants, Jean (Ulf Palme), whom she is attracted to. In one scene, as shown in Figure 8, Jean enters the drawing room where Julie is seated as she indulges herself in a bottle of wine. A high-angle wide shot (A) draws the viewer's attention to a portrait of Julie's deceased mother which is shown above the fireplace, in between the two characters. As she refills her glass, thus ignoring Jean's objections, she starts to tell him her 'life story', just as Jean did to her in the first half of the film (a story which was also rendered in a series of flashbacks). In a reverse shot (B), shooting over Jean's left shoulder, Julie commences her story: 'You see my mother was a commoner, of quite humble birth. She was brought up with ideas about equality, freedom for women and all that. (...)'. As she utters these words, Julie turns her gaze to screen right, in the direction of her mother's portrait. This gesture is mimicked by the camera which now tracks to the right so that, when the camera halts, the viewer is looking at Julie over Jean's right shoulder instead of his left (C). As Adair (2019) comments, "the movements of both her head and the camera lend special emphasis to what we'll see next".



Figure 8. Linking present and past in Sjöberg's *Miss Julie*

Following the spatio-temporal logic of a scene, the film then cuts to the next shot which shows her mother's portrait (D), presumably from their point of view. At this moment the literal sound of Julie's voice becomes source-disconnected: we still hear the sound of Julie's voice as she continues her story off-screen, but the sound-producing source is now located in off-screen space. The camera moves

in closer to the portrait (E). When the portrait is rendered in close-up, however, something peculiar happens. The camera distances itself again from the portrait by dolling backward. Julie's voice disappears and is taken over by the new sound of a man laughing. The camera reveals the source of the laughter to be Julie's father, the Count (F). He is proudly showing the painting of Julie's mother to some guests. Oddly enough, the painting is no longer hanging above the fireplace. It now leans against. Thus, Sjöberg has just carried us into the past. As Adair (2019) comments in his analysis:

The two dolly movements within a single shot – first toward the portrait, which implies a heightening of Julie's concentration as she summons her memories, and then back away from it, which initiates the shift to the visual enactment of her verbal narrative – are key here, the transition further indicated by the replacement of voices on the soundtrack.

As before, the various verbal, aural and visual cues instruct the viewer to make the passage of time in the narrative.

4. Creating spatio-temporal ambiguity in cinema

So far we have discussed and illustrated how filmmakers may use all sorts of creative devices for the purpose of communicating different times clearly and unambiguously to the viewer: from close-ups of facial expressions and graphical match cuts that bridge the omission of times to verbal time makers and signaling camera movements. To illustrate these devices, we drew examples from predominantly American classical cinema. In this section we aim to show that creativity does not necessarily have to operate in the service of transparent temporal communication. Indeed, film history provides us with a number of films and even whole strands of filmmaking that radically opposed the intention of classical cinema to represent shifts in time as narratively clear as possible. In what follows, we analyze three such counterexamples: two cases that have their origins in the tradition of European arthouse cinema, Joseph Losey's *Accident* (1967) and Alain Resnais' *Last Year at Marienbad* (1961), and one recent case that is representative of current postmodernist American cinema, Charlie Kaufman's *I'm Thinking of Ending Things* (2020). The scenes under discussion are also shown to be embedded in the spatio-temporal logic of filmmaking. Yet, where in the previous section cinematic creativity cued this logic in the direction of optimal narrative clarity, here creativity is shown to deny the spatio-temporal metaphors of any clear narrative direction. The result is a far more ambiguous, puzzling, and abstract picture of time in cinema.

4.1 *Accident* (1967)

In all of the verbal examples discussed so far, the viewer was perfectly capable of associating literal sounds (e.g., voices, sound of a train) with their sound-producing source. When, for example, we watched Sybil and Julie telling their stories, we obviously associated the sound of their voices with their screen images, even if the camera abandoned these images to the off-screen space and their voices became disconnected from their source images. In other words, sound and sound-producing source are assumed to share the same spatio-temporal location. This naturally follows from the CONTAINER schema logic: if a sound-producing source is in a location A and a literal sound is causally connected to this source, then, it most naturally follows that this sound is also in location A. This is congruent with the way people experience everyday life. Consequently, this makes one think if there are any ways to challenge this logic so as to confuse the viewer's sense of time and space? It is precisely to this effect that the American filmmaker Joseph Losey directs us in *Accident* (1967), his second collaboration with the famous English playwright Harold Pinter. Pinter's plays are renowned for their unique treatment of time which, as Regal (1995: 3) argues, does not accept the logic on which conventional naturalism stands. The time schemes in many of his plays (e.g., *Silence*, *The Basement* and *Family Voices*) diverge from the naturalistic mode and show, as the author points out, "a deliberate distortion of temporal sequence, often giving no account either in the stage directions or in the dialogue of their lack of continuity. Contiguity in space in these plays is not guarantee of continuity in time" (Regal 1995: 6).

In *Accident* we can find a cinematic equivalent to the playwright's treatment of time. In one of the scenes, Stephen (Dirk Bogarde), a married professor at Oxford University, visits London to meet with a television producer (played by Pinter himself). Although his arrival proves to be unfruitful, the producer nevertheless reminds Stephen of a woman, Francesca (a role played by Delphine Seyrig), who used to be Stephen's onetime mistress. Frustrated by the producer's indifference, he calls upon her and takes her out to a restaurant for dinner. The film shows the events in chronological order: they meet in her place, they go out, they dine, and eventually end up together in bed. However, there is something strange about the way these events are presented to the viewer. As they are shown to us, we can hear voices, presumably theirs, as we cannot see them articulated by their screen images which remain silent. The voices, however, seem to originate from a nearby distance. For instance, the first shot of the sequence, shown in Figure 9A, depicts Stephen as he arrives at her house. On the soundtrack we can hear a female voice saying, 'I was in my bath when you phoned me', assuming that the soundtrack is already anticipating a later event. Soon after we are in her apartment. The film shows the pair in silence (B) as we can hear such trivial lines as 'You haven't changed at all, not at all', 'It's wonderful to see you'.



Figure 9. Spatio-temporal ambiguity in *Accident*

Also, later in the restaurant (C) we do not see them speaking, while we can hear their voices recollecting past life memories ('Do you remember those times in the car, do you? Well, do you? Of course I remember, I remember').

As Losey (in Milne 1967: 115) himself remarked on the scene: "As it is, there is a slight confusion as to why the words aren't articulated, because they aren't too far removed from what is going on in the scene". In other words, as viewers we see the sound-producing sources as they appear to us visually in a narrative chronological order, but this order is not followed by the literal sounds which speak to us in another sequential order. As a result, the viewer is confronted with two different sequences of times at the same time. While in the previous section times were clearly separated from each other in order to facilitate time comprehension in the viewer, even when they were shown in the same shot, the opposite is the case here. As time no longer follows a natural mode of representation, time obtains a status far more subjective and abstract than we have encountered so far in classical Hollywood cinema.⁸

4.2 *Last Year at Marienbad* (1961)

The sequence from *Accident* can be regarded as an unconcealed homage to European arthouse cinema and in particular to the work of Alain Resnais whose films in the fifties and sixties radically redefined the way time and space were experienced by film viewers. His films no longer clearly distinguish, as flashbacks do, between past and present. Rather creativity serves the purpose of radical continuity, that is, to make abstraction of the boundaries that separate different times from each other to the extent that any natural distinction between past, present, and future stops to exist. Locations do not only refer to single times: they simultaneously embody past and present, and thus become indiscernible. As the director told Paris journalist Joan Dupont once in an interview: "The present and the past coexist, but the past shouldn't be in flashback. ... On a formal level, I found that ambiguity interesting". We have

8. This liberation of time from the logic of storytelling has been defined as one of the key principles of European modernist cinema. For a discussion, see, among others, Deleuze (1989) and Kovács (2007: 40–44).

already shown how this modernist goal can be fleshed out creatively at the level of editing and sound design. Let us now consider how the same effect can be elicited through the spatio-temporal template of the sequence shot (i.e., the third template). To illustrate this, let us turn to a long camera movement from what is perhaps his most well-known work, *Last Year at Marienbad*. As can be seen in Figure 10, the camera first shows the nameless central couple of the film as the man (Giorgio Albertazzi) compels the woman (*Accident* star Delphine Seyrig) to remember their shared past (A). The man insists that they have met before at Marienbad and she asked him to wait a year before deciding on a future together. The woman, however, contradicts his claim as she is convinced that they have never met before. As in *Les Girls*, the camera then moves slowly to screen right until the stationary characters are excluded from the on-screen space (B). The camera continues to include and exclude several other men and women until the camera halts at the same man again from the beginning wearing exactly the same clothes (C). As the man starts to move, he gazes above him. The camera follows the direction of his eye movement and pans away from him in order to show the same woman again from the beginning of the shot as she now enters the frame by appearing on a balcony (D).



Figure 10. The coexistence of present and the past in *Last Year at Marienbad*

As with *Les Girls*, the film has shifted towards another temporal dimension in one and the same camera movement, yet where Cukor and his entourage relied on various cues to maintain the boundary between present and past, Resnais and his crew do nothing to preserve this spatio-temporal distinction. There are no clear verbal and aural cues nor striking changes in clothes and set-design. As Thomas (as quoted in Catania and Bianco 2002: 82) observes: “What *Marienbad* dramatizes is the relative quality of human memory... but memory is non-linear, collapsing past and present into a single entity”.

4.3 *I am Thinking of Ending Things* (2020)

Let us conclude this section by exploring how ambiguity can be created, not at the level of a sequence shot, but at the level of a scene. We know that the template underlying a scene maps different times onto different shots whose depicted locations belong to the same spatial region. As such, a scene already embodies a natural boundary that is inherent to the technique of editing. The application of a cut by definition makes a distinction between various locations. However, because these locations share the same spatial region, as opposed to the first spatio-temporal template, there is also a strong sense of spatial unity. When the syntax of continuity editing further uses these spatially continuous locations for seamless visual sequences and narrative flow, the effect is that the viewer will disregard the presence of boundaries and by extension, the presence of different time frames. Naturally, this poses a challenge for those filmmakers who want to convey flashbacks that allow viewers to make a clear distinction between past and present. As we saw in the previous section, one way to resolve this problem creatively is by cueing the spatially continuous location as if it were belonging to a different time frame. Max Ophüls, for instance, used the technique of superimposition precisely to this effect in *A Letter to an Unknown Woman*. However, as Resnais already showed to us, filmmakers may also opt to leave these cues behind so as to intentionally blur the distinction between reality and imagination. Such an approach, by contrast, does not offer many answers. Rather, it denies them in order to encourage the viewer to participate more actively in making sense of the film. The example from *Last Year at Marienbad* illustrated to us how this effect might be achieved in a sequence shot.

Charlie Kaufman's enigmatic Netflix drama *I'm Thinking of Ending Things* provides us with a vivid case of how this effect can be provoked through editing within the second spatio-temporal template. The film tells the story of a young couple, Jake (Jesse Plemons) and Lucy (Jessie Buckley) who in the opening sequence of the movie take a long car trip to meet Jake's parents on their farm. Inside the home, however, strange and surreal things start to happen. After dinner, they all join in the sitting room for some dessert (Figure 11A). At one moment Lucy relocates herself toward the window (B) as she gazes toward the blizzard outside while she utters the words: 'It's looking pretty bad out there'. When she turns her head, the film cuts to a long shot of Lucy revealing to her and the viewer that everyone bizarrely seems to have disappeared (C). The film then cuts to a dynamic shot, apparently from her point of view, as the view perfectly matches her action in the prior shot (D). The camera wanders inside of the room, making a half turn around the corner of the right wall (E). As the camera includes this new space, Lucy suddenly enters the frame screen right (F), thus challenging the viewer's conception of the prior

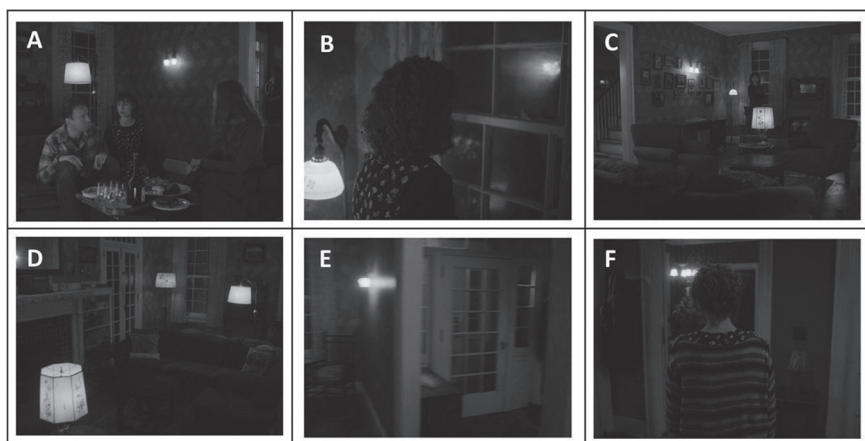


Figure 11. Spatio-temporal ambiguity in *I am Thinking of Ending Things*

shot (did we not then watch the room through Lucy's visual field?).⁹ This sense of confusion is heightened by the transformation in her looks: her clothes and haircut have visibly changed and she is no longer wearing a necklace. While her presence suggests a different time frame, her behavior rarely enough still seems to match the time frame of the previous shot. She is still in search for everybody as she calls for her friend's name Jake. Also, in the events that follow, Kaufman continues to preserve this sense of ambiguity in the *mise-en-scène* and the continuity editing. Soon after, as she explores the various rooms in the house, upstairs and downstairs, she finds Jake's parents as they begin to age back and forth from their younger selves to elderly dementia patients. In sum, what this fragment so clearly illustrates is the conceptual uncertainty that arises when time shifts are embedded in the spatio-temporal logic of a scene, while at the same time the temporal cues are deliberately held opaque.

5. Conclusion

What does this chapter tell us about time-creation in cinema? First and foremost, it shows that creative expressions of time in cinema are rooted in spatial knowledge. In order to structure temporal meanings in cinema, filmmakers make use of the same spatio-temporal metaphors that people use to reason about time in ordinary life. In

9. The same disorientating strategy is also used by the American film director Stanley Kubrick in *The Shining* (1980) and *2001: A Space Odyssey* (1968). For a discussion, see Coëgnarts (2019: 130–134).

film as well as in language, times are conceived as bounded regions or containers, either relative to the vantage point of an observer (or character) or not. The nature of cinema subsequently allowed us to make a rough distinction between three different spatio-temporal templates for conveying locations visually. The CONTAINER schema logic was shown to be inherent to the logic of spatially discontinuous shots, a scene and a sequence shot. Second and above all, this chapter argued that there are two opposing ways in which filmmakers may render transitions in time creatively through these templates. In the first way, which is typical of classical narrative cinema, filmmakers were shown to use various creative devices including verbal time makers, facial expressions, and changes in setting and sound design, to guide the viewer as effortlessly as possible through the various temporal changes in the narrative. A logical next step then was to explore what the conceptual consequences for a viewer's comprehension of the narrative would be if creativity would not serve this purpose. This was the central goal of the subsequent part in which we drew on cases of modernist and postmodern cinema to illustrate how filmmakers may obscure spatio-temporal boundaries by disorientating editing techniques in both sound and visual design and confusing changes in the *mise-en-scène*. The chapter only provides a limited set of examples and thus by no means accounts for all the creative variability one observes in the makings of time in cinema. Nevertheless, by grounding these examples in the firm logic of embodied cognition, we hope to have provided film scholars with a useful spatio-temporal framework from which time-creation in cinema can be further studied in all its variety and richness.

References

- Adair, G. (2019). Linking past and present in Sjöberg's 'Miss Julie'. *The Kinetograph*. <https://thekinetograph.blogspot.com/p/linking-past-and-present-in-sjostroms.html>
- Bordwell, D., & Thompson, K. (2004). *Film art: An introduction* (7th ed.). New York: McGraw-Hill.
- Bordwell, D., Staiger, J., & and Thompson, K. (1985). *The classical Hollywood cinema*. London: Routledge.
- Boroditsky, L. (2000). Metaphoric structuring: Understanding time through spatial metaphors. *Cognition*, 75(1), 1–28. [https://doi.org/10.1016/S0010-0277\(99\)00073-6](https://doi.org/10.1016/S0010-0277(99)00073-6)
- Boroditsky, L. (2001). Does language shape thought?: Mandarin and English speakers' conceptions of time. *Cognitive Psychology*, 43(1), 1–22. <https://doi.org/10.1006/cogp.2001.0748>
- Boroditsky, L., & Ramscar, M. (2002). The roles of body and mind in abstract thought. *Psychological Science*, 13(2), 185–189. <https://doi.org/10.1111/1467-9280.00434>
- Branigan, E. (1984). *Point of view in the cinema*. Berlin: Mouton de Gruyter. <https://doi.org/10.1515/9783110817591>
- Branigan, E. (2006). *Projecting a camera: Language-games in film theory*. London: Routledge.

- Buckland, W. (2009). *Puzzle films. Complex storytelling in contemporary cinema*. Oxford: Wiley-Blackwell.
- Casasanto, D., & Boroditsky, L. (2008). Time in the mind: Using space to think about time. *Cognition*, 106, 579–593. <https://doi.org/10.1016/j.cognition.2007.03.004>
- Catania, S., & Bianco, L. (2002). *L'année dernière à Marienbad* and the cartography of an orphic life-in-death: The modern *Katábasis* of Resnais. *Melita Theologica*, 53(1), 81–100.
- Coëgnarts, M. (2019). *Film as embodied art: Bodily meaning in the cinema of Stanley Kubrick*. Boston, MA: Academic Studies Press. <https://doi.org/10.1515/9781644691137>
- Coëgnarts, M., & Kravanja, P. (2015a). On the embodiment of temporal meaning in cinema: Perceiving time through the character's eyes. In M. Coëgnarts & P. Kravanja (Eds.), *Embodied cognition and cinema* (pp. 245–270). Leuven: Leuven University Press.
- Coëgnarts, M., & Kravanja, P. (2015b). With the past in front of the character: Evidence for spatial-temporal metaphors in cinema. *Metaphor & Symbol*, 30(3), 218–239. <https://doi.org/10.1080/10926488.2015.1049508>
- Deaca, M. (2020). *The control cycle in film: Circular coupling from brain to culture*. Berlin: Sciendo. <https://doi.org/10.2478/9788366675094>
- Deleuze, G. (1989). *Cinema 2: The time image* (H. Tomlison & R. Galeta, Trans.). London: Athlone Press.
- Dewell, R. (2005). Dynamic patterns of containment. In B. Hampe (Ed.), *From perception to meaning: Image schemas in cognitive linguistics* (pp. 369–394). Chicago: University of Chicago Press. <https://doi.org/10.1515/9783110197532.5.369>
- Evans, V. (2003). *The structure of time: Language, meaning and temporal cognition*. Amsterdam: John Benjamins. <https://doi.org/10.1075/hcp.12hcp.12>
- Gentner, D. (2001). Spatial metaphors in temporal reasoning. In M. Gattis (Ed.), *Spatial schemas and abstract thought* (pp. 203–222). Cambridge: Cambridge University Press.
- Gentner, D., Imai, M., & Boroditsky, L. (2002). As time goes by: Evidence for two systems in processing space > time metaphors. *Language and Cognitive Processes*, 17(5), 537–565. <https://doi.org/10.1080/01690960143000317>
- Gibbs, R. (2005). *Embodiment and cognitive science*. Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9780511805844>
- Gordejuela, A. (2021). *Flashbacks in film: A cognitive and multimodal analysis*. London: Routledge. <https://doi.org/10.4324/9781003153573>
- Hinson, J. M., Jameson, T. L., & Whitney, P. (2003). Impulsive decision making and working memory. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 29(2), 298–306.
- Kiss, M., & Willemsen, S. (2017). *Impossible puzzle films: A cognitive approach to contemporary complex cinema*. Edinburgh: Edinburgh University Press. <https://doi.org/10.3366/edinburgh/9781474406727.001.0001>
- Kovács, A. B. (2007). *Screening modernism: European art cinema, 1950 1980*. Chicago: University of Chicago Press. <https://doi.org/10.7208/chicago/9780226451664.001.0001>
- Lakoff, G., & Johnson, M. (1980). *Metaphors we live by*. Chicago: University of Chicago Press.
- Lakoff, G., & Johnson, M. (1999). *Philosophy in the flesh: The embodied mind and its challenge to western thought*. New York: Basic Books.
- Milne, T. (1967). *Losey on Losey*. London: Secker & Warburg.
- Monaco, J. (1977). *How to read a film: The art technology, language, history and theory of film and media*. New York: Oxford University Press.

- Núñez, R. E., & Sweetser, E. (2006). With the future behind them: Convergent evidence from Aymara language and gesture in the crosslinguistic comparison of spatial construals of time. *Cognitive Science*, 30(3), 401–450. https://doi.org/10.1207/s15516709cog00000_62
- Núñez, R. E., Motz, B. A., & Teuscher, U. (2006). Time after time: The psychological reality of the ego- and time-reference-point distinction in metaphorical construals of time. *Metaphor & Symbol*, 21(3), 133–146. https://doi.org/10.1207/s15327868ms2103_1
- Radden, G. (2011). Spatial time in the West and the East. In M. Brdar, M. Omazi, V. P. Takac, T. Gradecak-Erdeljic & G. Buljan (Eds.), *Space in time and language* (pp. 1–40). Bern: Peter Lang.
- Regal, M. S. (1995). *Harold Pinter: A question of timing*. Hampshire: Macmillan Press. <https://doi.org/10.1057/9780230371484>
- Scherer, K. R. (1992). What does facial expression express? In K. T. Strongman (Ed.), *International review of studies on emotion* (pp. 139–165). Chichester: Wiley.
- Schilperoord, J., Maes, A., & Ferdinandusse, H. (2009). Perceptual and conceptual visual rhetoric: The case of symmetric object alignment. *Metaphor & Symbol*, 24(3), 155–173. <https://doi.org/10.1080/10926480903028110>
- Teng, N. Y. (2009). Image alignment in multimodal metaphor. In C. Forceville & E. Urios-Aparisi (Eds.), *Multimodal metaphor* (pp. 197–211). Berlin: Mouton de Gruyter.
- Teng, N. Y., & Sun, S. (2002). Grouping, simile, and oxymoron in pictures: A design-based cognitive approach. *Metaphor & Symbol*, 17(4), 295–316. https://doi.org/10.1207/S15327868MS1704_3
- Turim, M. (1989). *Flashbacks in film: Memory and history*. London: Routledge.
- Van Weelden, L., Maes, A., Schilperoord, J., & Cozijn, R. (2011). The role of shape in comparing objects: How perceptual similarity may affect visual metaphor processing. *Metaphor & Symbol*, 26(4), 272–298. <https://doi.org/10.1080/10926488.2011.609093>
- Van Weelden, L., Maes, F., & Schilperoord. (2018). How visual form affects metaphorical conceptualization: The role of shape similarity. In G. Steen (Ed.), *Visual metaphor: structure and process* (pp. 147–162). Amsterdam: John Benjamins. <https://doi.org/10.1075/celcr.18.06van>
- Zettl, H. (2017). *Sight, sound, motion: Applied media aesthetics* (8th ed.). Boston, MA: Cengage Learning.

Beyond the limits

Merging past and present in film flashbacks

Adriana Gordejuela

Institute for Culture and Society, University of Navarra

Film flashbacks are rich multimodal devices that combine a stable pattern of retrospection with formal versatility that provides filmmakers with much space for being creative (Turim 1989; Gordejuela 2021). This chapter focuses on a particular kind of flashbacks where past and present are rendered simultaneously in two possible ways: either the past gets inserted into the present and is merged with it, or a character from the present appears as such in his or her own memories of the past. Through decompression of identity, these flashbacks simultaneously represent two different perspectives (viewpoint compression) and two separate moments in time (time compression) (cf. Dancygier 2012). The chapter illustrates the creative rendering of narrative time in a number of unconventional flashbacks.

Keywords: conceptual integration, decompression of identity, film discourse, time compression, viewpoint compression

1. Introduction

Film is a medium that deals with time at different levels. On the one hand, time is an element intrinsic to cinema (cf. for example, Currie 1995; Powell 2012). Films are sequences of images that unfold in time, and this temporal dimension allows multiple manipulations. On the other hand, temporality in film can be considered from a narratological perspective, and in this sense it involves “story time” (the temporal features of the chronological sequence of events told) and “narration time” (that refers to *how* the story is told in terms of time) (cf. Bordwell 1995).¹ Story time

1. Building on the terminology proposed by Russian formalists, Bordwell more specifically speaks of *fabula* and *syuzhet*. The *fabula* “embodies the action as a chronological, cause-and-effect chain of events occurring within a given duration and a spatial field” (Bordwell 1995: 49). The *syuzhet* is “the actual arrangement and presentation of the fabula in the film”, and it operates alongside film style (cinematic devices) to bring the story to life (Bordwell 1995: 50).

and narration time develop a number of relations regarding order, duration, and frequency (cf. Bordwell 1995, who builds on Genette 1972). The category of order is the one that is most relevant for the purposes of this chapter, since flashbacks result from altering in the narration the order of events in the story. However, duration should also be taken into account, for retrospection scenes condense a set of past events in the story into a reduced portion of narrative and screen time.

Temporal manipulation in film affords multiple possibilities as well due to the multimodal quality of the medium. Literary narratives shape time through verbal language, but cinema also (and fundamentally) has at its disposal the visual and sound modalities: it can use, for instance, a montage sequence to visually compress a passage of time into a number of images (Bordwell and Thompson 2008: 479), combine the visual narration of events with a voice-over narrator, and resort to extradiegetic music to emphasize the emotional dimension of the events narrated, to name only a few.

The potential of cinema as a multimodal and narrative medium is singularly manifested in the construction of flashbacks or narrative retrospections. Of course, flashbacks were not invented by filmmakers: they simply constitute the filmic version of the classical concept of *analepsis*, that the *Oxford English Dictionary* (n.d) defines as “[a] literary device in narrative, in which a past event is narrated at a point later than its chronological place in a story”. A flashback is the multimodal version of this device: it is “an image or a filmic segment that is understood as representing temporal occurrences anterior to those in the images that preceded it” (Turim 1989: 1). In other words, it is a narrative leap to previous events in the story that can take a visual or auditory form (or both). There are some formal traits and technical devices that have been traditionally associated with flashbacks, such as dissolves (a common feature of retrospections in American films of the ’40s and ’50s, as Bordwell (2017) points out), distorted images and variations in non-diegetic music (cf. Turim 1989). But flashbacks can take many other forms, and among them there are some particularly daring and creative.

However, creativity does not deal exclusively with the aesthetic dimension of the device: it has to do with taking the cognitive foundations of the flashback and giving them another twist. For example, the leap from the present time in the story to a moment in the past can be performed in such a way that a fusion of past and present takes place. Blending, or Conceptual integration theory (Fauconnier and Turner 2002) explains this kind of cognitive operation as a blend of mental spaces (i.e. sets of meaning constructed as we think) from which new meaning emerges. This chapter focuses on flashback scenes where the spaces of past and present are simultaneously represented and, by means of conceptual integration, they are cognitively accessible at the same time. By breaking the mold of conventional flashbacks, these scenes show creativity at work at a cognitive, narrative, and multimodal level.

2. Flashbacks in film: Tradition and innovation

Cinematic retrospections have been used since the origins of film (cf. Turim 1989). Given that many prints from the early years have been lost, it has not been possible to trace the first flashback scene in film history, but there are plenty of examples from different periods that show the evolution of the device both technically and aesthetically. What this evolution shows, as Turim points out (1989: 6), is that creativity in flashbacks has not been directly proportional to the years of life of cinema as a medium. That is, creativity in film does not amount to the years that have passed in film history. Creative examples of narrative retrospection can be found, for instance, both in avant-garde films of the 1920s and in auteur films of later decades (cf. Greenberg and Gabbard 1999). Certainly, the arrival of sound marked the beginning of a new period and allowed for innovative ways of narrating (e.g., flashbacks could be introduced by voice-over narrators) (cf. Bordwell 2017), but the silent period had also been highly creative precisely because of its purely visual nature, and what seemed at first a limitation became a strength. Also, throughout film history different cinematic traditions influenced each other and, most importantly, other narrative arts, such as literature and theatre, had an impact in film innovations. In fact, the interdependence between these different mediums is clear in the history of flashbacks (Turim 1989: 22–25), and it shows that the creative evolution of the device has been non-linear.

However, even though flashbacks take a variety of forms regarding style, structure, length, and other aspects, they still can be identified as narrative retrospections, as instances of the same device. There is a common denominator to all of them, a number of elements that conform the flashback standard model that serve as the basis for flashback construction and also set the point of departure for innovations: the model sets the limits that creativity dares to break. This flashback “recipe”, that I have proposed elsewhere (Gordejuela 2021), draws from Blending or Conceptual integration theory (hereafter BT) (Fauconnier and Turner 2002), from Dancygier’s (2012) narrative model based on BT and from diverse cognitive approaches to the study of film (cf. Bordwell and Carroll 1996). It basically defines flashbacks as a narrative leap between two different “narrative spaces” (the narrative version of BT’s mental spaces, as defined by Dancygier): the present space and the past space. The transition from the present to the past is done by means of “space builders” (Fauconnier 1994/1985, 1997), verbal, visual and auditory cues that activate the narrative space of the past, and that often take the form of “narrative anchors” (Dancygier 2012). Such elements

set up or suggest the availability of narrative spaces, but do not elaborate them right away. Such “place-holders” may activate new narrative spaces and allow them to remain active, but the spaces are elaborated gradually as the text [or film, in this case] unfolds.
(Dancygier 2012: 42)

Apart from setting up a particular narrative space, narrative anchors also serve to reactivate spaces at different times, link diverse spaces (e.g. they connect the present and past narrative spaces in a flashback) and encourage cross-mappings between elements in different narrative spaces (e.g. between the same character in the present and past spaces). As both present and past spaces are set up, multiple connections or cross-space mappings are established between elements from both spaces, many of which take the form of “vital relations” (Fauconnier and Turner 2002: 91–102) such as time, change or identity (e.g. the two versions of the same character in a flashback, one in the present and one in the past, are linked by an identity connection). Most importantly, those relations are further compressed and decompressed in the story-blend that produces the emergent story (cf. Dancygier 2012: 53–57).

The flashback examples I analyze in this chapter are built upon the model described, but they push the envelope in a number of ways to simultaneously represent past and present narrative spaces: instead of a conventional narrative leap to the past that leaves the present behind, these flashbacks feature a combination of past and present that is rendered multimodally through visual, auditory, and verbal means. Their creativity lies precisely in this simultaneous representation of both narrative spaces that involves processes of conceptual combination, an idea that lies at the core of BT and that has also been described as a prominent mechanism of creative cognition (cf. Ward and Kolomyts 2019). Two sets of flashback examples are analyzed in the following sections: first, scenes in which the past gets inserted into the present, and second, flashbacks where one of the characters “visits” the past with his or her present appearance; in such cases, the character’s identity is decompressed and, through that process, viewpoint compression is achieved.

3. Creative techniques in film flashbacks

3.1 Embedding the past in the present

A conventional flashback involves a transition from the present to the past narrative space, and this transition can be verbal, visual, auditory, or a combination of them (cf. Gordejuela 2021): the narrative space of the past can be set up through insert titles, a narrating voice, a point-of-view shot that calls attention to a particular object, etc. Sometimes, however, elements belonging to the past space get into the present, which is the case of auditory flashbacks: for instance, when a character’s voice coming from the past is heard in the present space. Nevertheless, this intrusion can be taken one step further by aligning the present with the past in some

way. This is what happens in one of the last scenes of *Ivan's Childhood* (*Ivanovo Detstvo*; Tarkovsky 1962), which tells how Ivan died. The film narrates the story of Ivan Bondarev, a twelve-year-old Soviet orphan who in World War II works for the Soviet army as a scout behind German lines. Towards the end of the film, he is sent across the river on one last mission, and the next time we hear about him it is discovered that the Germans executed him just before the war ended.

This last scene (01:30:25–01:32:00) takes place when the Soviets have finally occupied Berlin. Lieutenant Galtsev, who knew Ivan well, walks through a ruined building and, finding Ivan's file, discovers that he has been executed. Upon the discovery, a tracking shot starts showing the places Ivan passed through while being led to the scaffold (Figure 1, shot (a)). Also, Galtsev follows with his gaze the places Ivan went through (Figure 1, shot (b)). As the camera guides us through the building, a dialogue is heard in voice-over: it is two German officers looking for Ivan to take him to execution, and the sound of doors opening and closing accompanies the conversation. It is clearly a non-diegetic dialogue, since the voices cannot be coming from the present time in the story; also, the sound of doors does not go along with images of doors opening and closing.² This element alone does not make the flashback different or special: non-diegetic voices and sounds are a common device in film. What sets this flashback apart is the fusion of the voice-over dialogue, that belongs to the past, with the visual depiction of the present: as the German officers look for Ivan and take him to the scaffold, the camera shows the places they would have walked through in the past, as if these characters, though invisible, were actually there in the present. As the scene continues, Galtsev arrives at the execution chamber where the guillotine is (Figure 1, shots (c) and (d)). These images are also accompanied by a sound that belongs to the past: that of the guillotine working. Then, after the sound of the deadly stroke, Ivan's head is shown rolling on the floor (Figure 1, shot (e)), and thus the flashback scene is closed with the visual depiction of the past narrative space.

The merging of the past and the present is carried out by means of a narrative anchor, a function developed here by the ruined building where the scene takes place. It is in this place where Ivan died (past), and also where his execution is discovered and relived (present). The auditory flashback (the voice-over conversation and contextual sounds) activates the narrative space of the past, but without leaving

2. The source of the sound must be identified in the present narrative space in order to consider that sound a diegetic one. In *Professione: reporter* (*The Passenger*; Antonioni 1975), a voice-over dialogue that initially seems to be non-diegetic (and could be interpreted as an auditory flashback) is later identified as a diegetic one when the source of the dialogue, a recording machine, is shown in the present (around 00:19:40).



a.



b.



c.



d.



e.

Figure 1. The past is merged with the present in *Ivanovo Detstvo* (*Ivan's Childhood*) (1962)

the present: the camera's movement and Galtsev's gaze guide the viewer's attention through the building in the present, and do it so in synchrony with the auditory inputs from the past. The building and the camera's movement in it thus anchor two different but related moments in the story: Ivan's execution and Galtsev's experience upon discovering it. Past and present narrative spaces are accessible simultaneously

by means of a process of time compression (cf. Fauconnier and Turner 2002: 312–325). As a result of this compression, Galtsev's viewpoint and emotional experience in the present are available to the viewer, and at the same time we have direct access to the events of the past: we can actually hear the voices and sounds in the auditory flashback, while Galtsev can only imagine them. By breaking the limits of the conventional flashback, this scene is innovative at an aesthetic level, and also offers a more nuanced and complex experience of the events narrated.

Another example of the past intruding in the present and being merged with it is found in *Jane Eyre* (Cary Fukunaga 2011), the latest filmic adaptation of the classical novel. At the beginning of the film, which breaks the chronological narration of the novel, Jane arrives at the Rivers' home after fleeing Thornfield Hall and Rochester. St. John and his sisters put her up and take care of her, while they wonder who she is and how they can be of help. This scene leads to the first flashback in the film (0:03:55–00:12:40), which narrates Jane's childhood since her aunt sent her to Lowood School.³

When Jane is taken in by the Rivers, she is exhausted and a bit delirious. This is multimodally represented in the scene through devices such as shaky camera movements, distorted images and voices, and changes of focus, that underline Jane's subjective viewpoint (Figure 2, shots (a) and (b)). St. John and his sisters then inquire about who she is ("Ask her her name" – "What's your name?"), but Jane, quivering and in a feverish state, is not able to give a coherent answer. Then, right after the last question, an echoed voice-over says: "Jane Eyre...". This is the first time the past gets into the present narrative space, but the source of the voice remains unknown until a little later in the scene. Jane's hosts keep insisting ("Tell us how we may help you" – "Your name"), and the voice-over is heard a second time: "Where are you?". Then Jane, visibly agitated, mutters "I must hide", and there is a cut to actual images of the past for the first time, where young Jane is seen running down a hallway (Figure 2, shot (c)). After a short return to the Rivers' home, where voices are now heard in the distance and progressively fade away, the narrative goes back to the past again and a longer flashback shows some notable events from Jane's childhood. Among other things, the flashback reveals the source of the voice-over previously heard in the present: at the beginning of the scene, Jane hides from her cousin John Reed, a bully who, searching for her, asks: "Where are you, rat?". It is he (or rather the memory of him) who also hounds Jane in the present ("Jane Eyre...", "Where are you?") and makes her react accordingly.

3. A more comprehensive analysis of this flashback, considering the cognitive underpinnings of the scene in terms of blended joint attention and viewpoint and time compression, can be found in Gordejuela (2021).

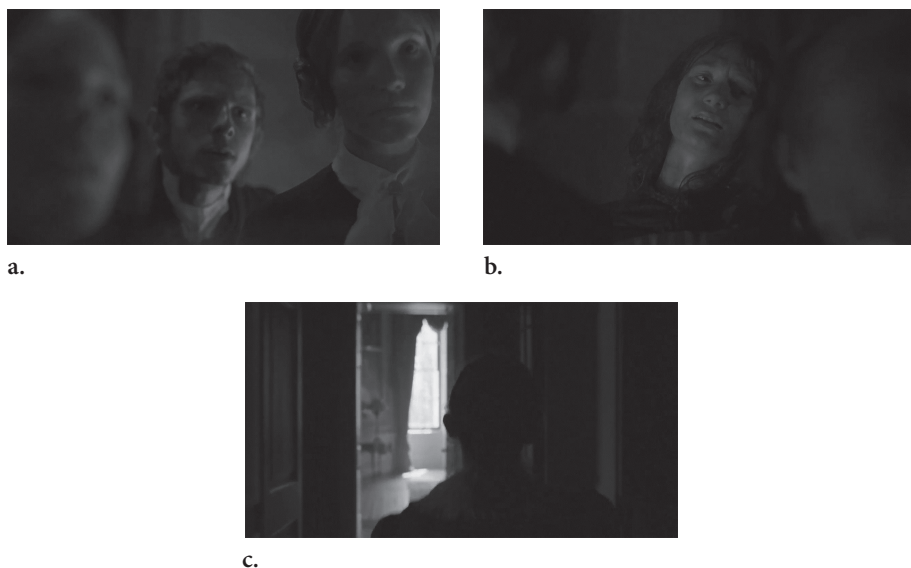


Figure 2. The past interacts with the present in *Jane Eyre* (2011)

When the past intrudes in the present narrative space for the first time through John Reed's voice-over, a conversation frame sets the basis for the merging of past and present: the question posed in the present ("What's your name?") is answered by a character from the past ("Jane Eyre..."). This constitutes an instance of "fictive interaction", a conceptual phenomenon that involves "the use of the conversation as a frame to structure mental, discursive, and linguistic processes" (Pascual 2014: 9). This underlying pattern of conversation allows for the interaction between past and present, which are merged at the level of the story-blend. That is, only at this level where both narrative spaces are blended can the interaction take place, and that is why viewers have access to both the question in the present and the answer coming from the past, but the Rivers don't hear the latter (and so they keep on asking: "Your name"). Of course, Jane can "hear" in her memories her cousin's voice, and through her it is made available to the viewer, but she doesn't take part in the conversation dynamic that emerges.

The scene continues and the past shows up in the present a second time when John Reed's voice-over says: "Where are you?". Then Jane mumbles "I must hide", and the scene briefly cuts to a shot of young Jane running down a hallway (Figure 2, shot (c)). Shortly after, when the flashback is fully developed, Jane is shown hiding from her cousin, who keeps pestering her: "Where are you, rat?". The hide-and-seek scene that takes place in the past is previously hinted at in the present through the voice-over and Jane's reaction, and in fact a hide-and-seek semantic frame (Fillmore

1976) underlies that interaction in the present narrative space: past and present are merged under a persecution pattern that makes both narrative spaces simultaneously available at the story-blend level. The viewer thus perceives Jane as being hounded in the present by a very real memory of her cousin to which she reacts.

When the flashback ends, the narrative goes back to the Rivers' home. While the last images of the past are shown (young Jane arrives at Lowood School), voices that belong to the present are heard. In voice-over, Jane says: "My name is Jane Elliott". Then St. John asks: "Who can we send for to help you?", to which Jane replies: "No one. I mustn't ever be found". This last dialogue is connected in a number of ways to the one already discussed, when Jane was first taken in by the Rivers. On the one hand, when Jane states "My name is Jane Elliott" she is finally answering the question she was asked at the beginning of the scene, before the flashback (and so the conversation frame is reactivated here). But she is lying, and the viewer, unlike Jane's hosts, knows this because s/he has direct access to both the past and the present: the past tells the truth, while the present is telling a lie.

Finally, the hiding cognitive frame is activated once more when Jane says: "I mustn't ever be found". This statement parallels one at the beginning of the scene ("I must hide"), but it only refers to Jane's present situation: that is, now she is hiding from Rochester in the present narrative space, and not from her bully cousin who pesters her in memories of the past. However, in the light of this new utterance and its corresponding perspective (that of the present narrative space), Jane's reaction before the flashback ("I must hide") can be re-read (cf. Tobin 2017) and be meaningful in two different narrative spaces: in the past, Jane must hide from John Reed, but she also has to hide in her present circumstances, and that is precisely why she lies about her identity. Therefore, "I must hide" integrates a double viewpoint from two different narrative spaces and merges those two spaces (past and present) in the story-blend.

On the whole, the creativity of this flashback scene lies in the constant interplay between past and present narrative spaces, which takes place fundamentally through the activation of two specific cognitive frames: one for conversation and one for hiding. The interconnection of both narrative spaces, supported also by the technical and aesthetic devices employed, makes the viewer experience the past linked to Jane's perspective from the present. Moreover, and in contrast to the flashback in *Ivan's Childhood*, where Galtsev's emotional experience is only hinted at, the fusion of past and present in this scene stems from and reflects Jane's emotional state. The flashback thus constitutes an instance of a subjective experience of time (cf., for example, Matthews and Meck 2016; Thönes and Stocker 2019; El Refaie, this volume) on the part of the protagonist, and the viewer is invited to engage in her experience.

3.2 Decompression of identity for viewpoint compression

Another type of flashback that blends the present with the past is that where a character appears in his or her memories of the past with his or her features of the present, of which the physical ones are the most noticeable. In those examples, the uniqueness of the character's identity is decompressed by having separately but in the same scene his or her present and past self. Each of these representations of the character provides a specific point of view (one belonging to the present and one to the past narrative space), and so viewpoint compression in the story-blend is achieved through the decompression of identity that takes place at the level of narrative spaces.

Dancygier (2012: 100–102) introduces the concept of “decompression [of identity] for viewpoint compression” to describe this narrative technique, and she discusses a number of examples in literary narratives where this process of viewpoint construction is at work. Furthermore, elsewhere (Dancygier 2006), analyzing one of the flashbacks in *Annie Hall* (Allen 1977), she shows how the same mechanisms involving identity and viewpoint operate in film. Based on this research, I have further analyzed how this technique is used in other flashbacks (cf. Gordejuela 2021), and it certainly seems to be a resource that particularly favors narrative and multimodal creativity. The analysis of two more examples illustrates it.

Woman in Gold (Simon Curtis 2015) narrates the quest of Maria Altmann, an Austrian-American Jewish refugee, to recover artwork that was taken from her family by the Nazis and that now is owned by the Austrian Government. Of particular value is a portrait of her aunt painted by Gustav Klimt and known as *Woman in Gold*. Maria's legal actions take place in contemporary times, but a series of flashbacks recount events from her childhood and youth, most notably the looting carried out by the Nazis and Maria's escape from Austria with her husband after the invasion. The legal battle is finally won by Maria, who recovers the paintings and takes them to the US.

In the final scene of the film, Maria visits her old family home in Vienna, now an office building. The visit triggers a flashback to different happy moments in the house, separated in time and distributed in different rooms (01:38:15–01:41:00). When she first enters the living room, she finds her mother calling her, and two girls (young Maria and her sister) run up to her (Figure 3, shot (a)). This is the first instance of decompression of identity, since Maria is doubly present in the scene: on the one hand as a child, and on the other as a lady (Figure 3, shot (b)). The child belongs to the narrative space of the past, and the lady to the present space, but both are brought together through a process of identity decompression. Furthermore, each one contributes a specific viewpoint to the scene (e.g. the child does not have the life experience or the memories that adult Maria has), and both are merged in



a.



b.



c.



d.

Figure 3. Maria Altmann visits past memories in *Woman in Gold* (2015)

the story-blend through viewpoint compression. It is in this narrative macro-level where past and present are blended.

Maria continues pacing the room and briefly interacts with her uncle and her father. They don't speak, but look and smile at each other. The blend of past and present is manifested in those (fictive) interactions and in that her father and uncle recognize Maria and are not surprised by her adult appearance nor by her double presence in the room. She does not simply look at her memories from a distance or invisibly walk through them, but, although slightly, participates in them.

Then the door to the next room opens and Maria is once again immersed in her wedding dance. Her younger self is there as well, dancing with her husband, and therefore identity decompression takes place a second time (Figure 3, shot (c)). Two viewpoints are again represented: that of Maria's present self, who looks at her wedding from the distance of time elapsed, and that of Maria as a newlywed, who provides the direct experience of that day. These two perspectives are compressed and available at the same time in the story-blend, where past and present are merged. Once more, Maria is not just an observer of past events but she is immersed in them, as evidenced by the fact that her younger self and her husband take notice of her while they dance. This is also proved by the fact that shortly after her mother meets her and makes a gesture for her to follow. Entering into a third room, Maria finds her aunt, Adele Bloch-Bauer, and also sees Klimt's portrait of her, *Woman in Gold*, hanging on the wall (Figure 3, shot (d)). Maria smiles tenderly at her aunt, and both the flashback and the film end.

The triple decompression of Maria's identity in the scene affords three separate viewpoints that correspond to three different stages in Maria's life: childhood,

youth, and adulthood. Interestingly, time is also rooted in space: the house serves as a narrative anchor for different moments in Maria's life, and each room encloses one of those moments. Furthermore, Maria's tour around the house, revisiting those events, is chronologically organized: she first goes through her childhood, then her youth (the wedding scene), and finally, although still in the wedding scene, she visits as an adult a third room where the painting is (there is no decompression of identity in this last space). The rooms in the house and Maria's tour thus compress the time relations between the different events represented. These, in turn, are part of a single narrative space of the past, that is merged with the present by projecting Maria's adult self into the blend. All in all, it is in the macro-level of the story-blend where both narrative spaces are simultaneously available through time compression, and also where Maria's diverse viewpoints are compressed and accessible at once.

Ultimately, this last flashback scene serves to encapsulate happy moments in Maria's life, leaving painful events behind. In doing so, Maria reevaluates her life from the perspective of the recovered painting, and the scene reflects her happiness and satisfaction in having done justice to her family's memory (this is another instance of subjective experience of time, particularly of remembered time; cf. Piata 2019). *Woman in Gold* is now where it belongs, both in the present narrative space and in the past, as shown at the end of the flashback.

Another flashback scene that resorts to decompression of identity appears in *Captain America: The Winter Soldier* (Russo & Russo 2014). This is the second one in a series of films about the superhero, who once was a feeble rejected soldier, Steve Rogers, but has become powerful Captain America after undergoing a military "supersoldier" experiment. The second film of the series takes place seventy years after World War II, when Steve wakes up after having been "asleep" (frozen) for all those decades after a plane crash. He now works for an espionage agency and is on a mission to hunt down a seemingly immortal assassin.

Halfway into the film (00:58:40–00:59:25), he and one of his colleagues, Natasha, arrive at an abandoned military base, that turns out to be the camp where he was trained as a soldier, and also where he underwent the experiment that transformed him into a superhero. Natasha asks Steve if the place has changed much, and he says a little. While considering his answer, he looks at a rusty flag stick that involved a training test many years ago (it is narrated in a previous film), and it makes him recall his days at the camp. The flag stick thus functions as a narrative anchor that activates the past narrative space and triggers the flashback. The voice of a military officer is then heard yelling at soldiers as they run in training, and at the sound of the voice Steve looks in front of him and sees the officer and the soldiers. The voice is perceived as distant, with a certain echo, thus signaling its belonging to a different, remote narrative space. After all the soldiers have passed, the officer shouts: "Come

on, Rogers, move it!” The camera pans to the right, showing the empty path, and after a second young Steve comes up running, alone. When he reaches the point where contemporary Steve is, he stops and they both look at each other for a few seconds (Figure 4, shots (a) and (b)). Then younger Steve keeps running and present Steve follows him with his eyes, watching him go. The flashback ends.



a.



b.

Figure 4. Decompression of identity in *Captain America: The Winter Soldier* (2014)

In this case, more than a visit from Steve to the past, it seems that the scene of the past unfolds before his eyes. It is as if the very place and the flag stick have “invoked” the memories, and then the past runs before Steve’s eyes (figuratively, but also literally in the blend of past and present that the flashback provides). However, since the location where the scene takes place belongs both to the present and the past, once both narrative spaces have merged it is difficult to identify the place as pertaining to one or the other.

The fundamental device employed to bring past and present together is decompression of identity: Steve appears with his current physical features (he is tall and strong) and also with his physical appearance from the past (small and weak). When young Steve stops in front of his present self, he seems to recognize him(self). As for present Steve, he looks at his past self with a mixture of pity and melancholy. Both viewpoints are made available in the scene through decompression of identity, and they are accessible together (compressed) in the story-blend, where the narrative spaces of the present and the past are also merged. It is at this higher level where the meaning of the scene emerges: young Steve desires the physical qualities he does not have and to be admitted in the military (which his future self has achieved). Present Steve, on the other hand, misses his own time and all he left behind, but somewhat pities his younger self; furthermore, he got what he wanted: to be a soldier. In a way, they both want something the other has. This double yearning, paradoxical as well as understandable, becomes compatible through viewpoint and time compression, and therefore Steve is comprehended in the uniqueness of his identity, composed of his present and past self.

4. Conclusions

The aim of this chapter has been to show the creative mechanisms employed in the construction of certain flashbacks. The scenes analyzed are unconventional in some ways, but at their core lies the fundamental structure that every flashback possesses, a cognitive “recipe” that makes each flashback understood as such. This structure is basically composed of two narrative mental spaces (one for the present and one for the past), some kind of narrative anchor (that often works as a space builder as well and activates the past space), and the multiplicity of connections between the elements in both spaces, such as the identity connection linking the same character in the present and the past, or the time relation that exists between both narrative spaces. Those connections are compressed in the story-blend, where the meaning of the flashback emerges.

All of these basic components are at work in the analyzed examples. All of them feature the two fundamental narrative spaces and some kind of narrative anchor that connects them. In *Ivan’s Childhood*, *Woman in Gold* and *Captain America*, the location where the scene takes place functions as a narrative anchor that links and merges both narrative spaces. However, each case is different: in *Ivan’s Childhood*, camera movement through the building in the present recreates the events of the past, and the movement is synchronized with the voice-over coming from the past space, thus merging both narrative spaces. In *Woman in Gold*, the rooms in the house and Maria’s walk through them anchor different events and their linearity. And in *Captain America* the flag stick in the training camp works as a narrative anchor, a function that is then extended to the camp in general. On the other hand, the voices-over in *Ivan’s Childhood* and *Jane Eyre*, and the officer’s voice in *Captain America* work as space builders that announce a different narrative space, which is later confirmed (mainly through narrative context) to be that of the past.

But none of these flashbacks is limited by this fundamental structure, rather they all have innovative features that make them creative in their form but, most importantly, that merge the narrative spaces of the present and the past and render them simultaneously. In *Ivan’s Childhood*, this is achieved by the synchronization of camera movement and voice-over. In *Jane Eyre* it is the two cognitive frames activated (conversation and hide-and-seek) that provide the basis for the interaction between present and past and their integration in the story-blend. Finally, *Woman in Gold* and *Captain America* constitute examples of creativity through the use of decompression of identity, that in turn leads to the compression of viewpoints: one from each of the instances of decompressed identity, and each belonging to one of the two narrative spaces involved. Past and present are therefore blended as well.

In short, the creativity of these flashbacks lies in depicting the present and the past narrative spaces at the same time. Temporal and spatial barriers are broken

and two moments in time that in principle cannot coexist are combined and presented together. This combination occurs fundamentally in two ways: either the past gets into the present, as in *Ivan's Childhood* and *Jane Eyre*, or a character from the present appears in a past scene with his or her present features, as in *Woman in Gold* and *Captain America*. Taking the aforementioned fundamental flashback structure as the point of departure, these examples venture beyond its limits and reach creative results.

Finally, on the basis of the flashbacks discussed it can be said that creativity is not restricted to films that are more “artistic” or avant-garde, such as auteur films. The examples show that creative flashbacks are used in auteur films (*Ivan's Childhood*), in more commercial movies (*Captain America* and *Woman in Gold*), and in films somewhere in between (*Jane Eyre*). Since the flashback “recipe” is the same for retrospections in all kinds of movies, its limits can be broken as well in different types of films. It is true that boundaries are probably transgressed more often in films of a more artistic type, but it may be simply because it is a kind of cinema that seeks to break the mold.

References

- Analepsis. (n.d.). *Oxford English dictionary online*. Retrieved September 21, 2021, from <https://en.oxforddictionaries.com/definition/analepsis>
- Bordwell, D. (1995). *Narration in the fiction film* (2nd ed.). London: Routledge.
- Bordwell, D. (2017). *Reinventing Hollywood: How 1940s filmmakers changed movie storytelling*. Chicago: University of Chicago Press.
<https://doi.org/10.7208/chicago/9780226487892.001.0001>
- Bordwell, D., & Carroll, N. (Eds.) (1996). *Post-theory: Reconstructing film studies*. Madison: University of Wisconsin Press.
- Bordwell, D., & Thompson, K. (2008). *Film art: An introduction* (8th ed). New York: McGraw-Hill.
- Currie, G. (1995). *Image and mind: Film, philosophy, and cognitive science*. Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9780511551277>
- Dancygier, B. (2006). What can blending do for you? *Language and Literature*, 15(1), 5–15.
<https://doi.org/10.1177/0963947006060549>
- Dancygier, B. (2012). *The language of stories: A cognitive approach*. Cambridge: Cambridge University Press. <https://doi.org/10.1017/cbo9780511794414>
- Fauconnier, G. (1994). *Mental spaces: Aspects of meaning construction in natural language*. Cambridge: Cambridge University Press. (Original work published 1985).
<https://doi.org/10.1017/CBO9780511624582>
- Fauconnier, G. (1997). *Mappings in thought and language*. Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9781139174220>
- Fauconnier, G., & Turner, M. (2002). *The way we think: Conceptual blending and the mind's hidden complexities*. New York: Basic Books.

- Fillmore, C. J. (1976). Frame semantics and the nature of language. *Annals of the New York Academy of Sciences: Conference on the origin and development of language and speech*, 280, 20–32. <https://doi.org/10.1111/j.1749-6632.1976.tb25467.x>
- Genette, G. (1972). *Figures III*. Paris: Éditions du Seuil.
- Gordejuela, A. (2021). *Flashbacks in film: A cognitive and multimodal analysis*. London: Routledge. <https://doi.org/10.4324/9781003153573>
- Greenberg, H., & Gabbard, K. (1999). Reel recollection: Notes on the cinematic depiction of memory. *PSYART: A Hyperlink Journal for the Psychological Study of the Arts*, 3. http://psyartjournal.com/article/show/greenberg-reel_recollection_notes_on_the_cinematic
- Matthews, W. J., & Meck, W. H. (2016). Temporal cognition: connecting subjective time to perception, attention, and memory. *Psychological Bulletin*, 142(8), 865–907. <https://doi.org/10.1037/bul0000045>
- Pascual, E. (2014). *Fictive interaction: The conversation frame in thought, language, and discourse*. Amsterdam: John Benjamins. <https://doi.org/10.1075/hcp.47>
- Piata, A. (2019). When time passes quickly: A cognitive linguistic study on compressed time. *Metaphor & Symbol*, 34(3), 167–184. <https://doi.org/10.1080/10926488.2019.1649842>
- Powell, H. (2012). *Stop the clocks! Time and narrative in cinema*. London: I.B. Tauris. <https://doi.org/10.5040/9780755693863>
- Thönes, S., & Stocker, K. (2019). A standard conceptual framework for the study of subjective time. *Consciousness and Cognition*, 71, 114–122. <https://doi.org/10.1016/j.concog.2019.04.004>
- Tobin, V. (2017). Viewpoint, misdirection, and sound design in film: “The Conversation”. *Journal of Pragmatics*, 122, 24–34. <https://doi.org/10.1016/j.pragma.2017.06.003>
- Turim, M. (1989). *Flashbacks in film: Memory and history*. London: Routledge.
- Ward, T. B., & Kolomyts, Y. (2019). Creative cognition. In J. C. Kaufman & R. J. Sternberg (Eds.), *The Cambridge handbook of creativity* (pp. 175–199). Cambridge: Cambridge University Press. <https://doi.org/10.1017/9781316979839.011>

Films

- Allen, W. (Director). (1977). *Annie Hall*. Jack Rollins & Charles H. Joffe Productions.
- Antonioni, M. (Director) (1975). *Professione: Reporter* [The Passenger]. MGM/Compagnia Cinematografica Champion/Les Films Concordia/ C.I.P.I. Cinematográfica.
- Curtis, S. (Director). (2015). *Woman in Gold*. Origin Pictures/BBC Films.
- Fukunaga, C. (Director). (2011). *Jane Eyre*. Focus Features/BBC Films/Ruby Films.
- Russo, A. & Russo, J. (Directors). (2014). *Captain America: The Winter Soldier*. Marvel Studios/Walt Disney Pictures.
- Tarkovsky, A. (Director). (1962). *Ivanovo Detstvo* [Ivan's Childhood]. Mosfilm/Trete Tvorcheskoe Obiedinenie.

From “slow lettuce” to “striated time”

On Pierre Boulez’s conceptualizations of musical temporality

José L. Besada

Complutense University of Madrid

Many trends of the 20th (and 21st) century Western art music have emphasized the value of individual novelty when conceiving art. This ideological imperative has boosted composers’ creativity for developing personal and almost *ex novo* conceptions of musical attributes and parameters, time among them. Some of these conceptions can be retrieved in the several traces of their compositional practices. My study focuses on composer and conductor Pierre Boulez (1925–2016), and his presentation of some original formulae for managing musical temporality. Through his essays, compositional sketches, scores, and performances, I analyze several cross-modal features, based on embodied experience, and image schemata underlying his time conceptualizations, with the help of cognitive science and in quest of a generalizable model.

Keywords: cross-modality, embodiment, image schemata, musical creativity, Pierre Boulez

1. Introduction

Pierre Boulez stands as a crucial figure within the 20th-century Western art music because of his multifaceted endeavor: as a composer, he championed total serialism since the 50s; as a conductor, he premiered and scheduled many works that have become emblematic milestones of the past century repertoire; as a musical promoter, he gave birth to ensembles and research institutions that continue to shape nowadays the contemporary music milieu. In addition, he was quite prolific in theoretical terms, providing numerous reflections upon music, in particular on his own compositional practices and his peers’. This fact probably encouraged neuroscientist Jean-Pierre Changeux to challenge him with a series of interviews aimed at discussing the psychology of music and musical creativity, in which composer Philippe Manoury was also invited. During their dialogue, Changeux remembered

the hypothesis of a shared ancestral origin of music and language, supported by Steven Brown (2000) and Steven J. Mithen (2005), and next asked Boulez about his considerations on both human capacities. The composer answered:

In the absence of words, music [...] doesn't convey specific messages or ideas that are literally decipherable. It conveys states, whether stable or transitory. And even when words are sung, the vocal range often gets in the way of good enunciation, which makes certain vowels in the high register [...] incomprehensible. Consonants at the ends of words are sometimes lost. The meaning of the "message" is thus more or less perceptually blurred.

(Boulez in Boulez, Changeux, and Manoury 2014/2020: 26)¹

Boulez pointed towards acoustic and semiotic differences, but the spectrum of convergences and divergences between music and language is wider and deeper, as shown in important accounts of the psychology and neuroscience of music (Patel 2008; Koelsch 2013). Changeux wanted however to highlight that both music and language – or more accurately, speech – unfold in time.

Music has been historically depicted as the most evident "art of time" from an aesthetic viewpoint (Alperson 1980). Any person, except those suffering amusia, i.e. an impairment of cognitive skills for musical recognition (Alossa and Castelli 2009), has probably had particular feelings of how time flows when singing, playing an instrument, or simply listening to music. It does not mean that music is an isolated modality of human communication and interaction; nor does it mean that the experience of musical time cannot be linked to other cognitive capacities and expressed by means of other communicative modalities. As a matter of fact, time is a recurrent topic in many composers' writings. Particularly, the ideological imperatives of novelty and individual expression, which arose during Romanticism within the Western art music tradition, have led many composers of the 20th- and 21st-centuries to devise personal mechanisms for developing their musical practices. Among them, new conceptualizations of musical time – or just of time in a wider sense – are often found; if we manage to unlevel some of their cognitive foundations, we might provide a significant contribution to both the psychology of music and the research, broadly speaking, on human creativity.

Boulez belonged to those composers developing newfangled conceptualizations of musical temporality. During the aforementioned triologue, he summoned twice his old idea of "striated time" (Boulez, Changeux, and Manoury 2014/2020: 8, 140). The goal of my chapter is to scrutinize this time ideation and several others

1. Boulez's writings and interviews have been widely translated. I henceforth quote from the English translations when possible, and add a comment upon the French source when a subtler linguistic discussion is needed.

developed by the composer. For that purpose, my essay is divided into several sections. First, I review previous research, mainly carried by the psychology of music and the study of compositional practices, and having an impact on the issue of time. Next, I elucidate, informed by cognitive science, the context and traits in which the composer coined some of his novel terms about time. As I show, these conceptualizations are highly creative but, at the same time, quite close to further well-established metaphors of time in Western culture. I also make a few remarks about the way in which these concepts are implicitly incorporated in his scores or enacted when conducting other musicians. The case study finally leads me to bring forward a more general scheme of the emergence of composers’ complex conceptualizations of time.

2. Preliminary approaches

Since music has been often considered as the “art of time”, it comes as no surprise that the psychology and neuroscience of music has strongly paid attention to musical temporality in multiple ways, overlapping sometimes with the psychology and neuroscience of speech. In the following paragraphs, I highlight two main issues having some impact on the forthcoming discussion about Boulez’s musical practices: the topic of musical expectancy from the listeners’ side, and the topic of temporal synchronization from the performers’ side. The second subsection is devoted to a first linguistic approach to Boulez’s aforementioned formula.

2.1 Musical time and time in musical composition

Both music and speech are usually patterned signals, which facilitate listeners to make some prediction over time, based on the information they receive. Expectancy in music has been identified as a crucial matter for understanding musical affect (Meyer 1956; Huron 2006). Analogously, expectancy in speech may modulate emotions in the course of interpersonal communication (Burgoon 1993). From the perspective of language, features of syntactic and semantic expectation, i.e. how we may anticipate some linguistic elements of speech (e.g. Gunter, Friederici and Schriefers 2000), have been found; the same is true in music, for instance, for some chord sequences (e.g. Bigand, Madurell, Tillmann and Pineau 1999) and melodic contours (e.g. Krumhansl 1995). In addition, potential correlations of expectation have been tested when individuals simultaneously listen to both modalities (Koelsch 2013: 138–147). Besides, the study carried by Mari Riess Jones (1976) on perception and attention of aural regularities has settled the bases of a growing research

corpus on temporal expectation while hearing music (Jones 2016: 128–133; Large and Kim 2019: 237–245). Among the results and hypotheses of this subfield, the dynamic attending theory (Large and Jones 1999) is particularly relevant for the discussion in the following sections of this chapter. The authors postulate that time expectancy would be the consequence of a synchronization between human neural oscillations and exogenous perceived rhythms. In other words, we probably have a kind of inner neural clock that may rhythmically match with external stimuli, and a pairing persistence would give rise to temporal expectations.

This issue leads to the large domain of referential behavior theory (Pressing 1999), in particular to the topic of musical sensorimotor synchronization (Repp 2005: 985–986; Repp and Su 2013: 430–431). Musical performance is often a joint action in which involved participants need to get as much synchronized as possible for reaching their shared goals. Each individual's expectations based on the sounding outcomes of their peers, and specifically from a rhythmic viewpoint, are crucial for adaptive efficiency (Keller 1999) but not restricted to these sources. Temporal expectations in musical performance also come from visual inputs such as reading a score – when it exists – or the gestural and bodily interactions of all performers (Palmer and Zamm 2017) which may include an eventual conductor. Timing during musical performance is therefore an extremely complex multimodal network beyond the expectations arising from sound.

Neither musical expectancy nor joint action can help to fully and straightforwardly explain the way in which composers conceptualize time for their creative practices. Several methods have been employed for trying to grasp the “here and now” of compositional tasks, such as autoethnography (Sloboda 1985: 125–138), situated retrospective verbal accounts (Collins 2005; Donin and Theureau 2006), retrospective accounts after partial real-time tracking (Donin and Féron 2012), or think-aloud protocols (Collins 2007). Although they have proven to be successful in providing quite accurate chronological reconstructions of some of the creative processes, none of them has delved into composers' sophisticated conceptualizations of musical time. This lack of data is not surprising; after all, it is hard to believe that highly intricate ideations of time come to any musician's mind as a kind of epiphany in the course of composition. They are more likely to emerge during a reflexive period, before or after the compositional act itself.

The scrutiny of these complex mental representations should therefore take into account a variety of trails left by composers as wide as possible, from their sketches and scores to their eventual writings, forward and backward. Coming back to Boulez's “striated time” and beyond the standard framework of music theory, this particular expression has equally drawn the attention, for instance, of scholars working on musical notation and semiotics (Reiner 2000: 154–161), on musical psychology and psychoanalysis (Imberty and Capogreco 2004: 71–72; Imberty

2005: 14–16), or collaterally on embodied music cognition (Kozak 2020: 3). My forthcoming discussion about this notion and others coined by Boulez is mainly grounded in cognitive linguistics. In doing so, I follow the footsteps of previous research on time conceptualizations formulated by Iannis Xenakis (Besada, Barthel-Calvet and Pagán Canovas 2021) and the spectral composers Gérard Grisey and Kaija Saariaho (Schreiber 2016; Besada and Pagán Cánovas 2020).

2.2 Eating kale and expressing musical experience

Kanzi is a quite well-known bonobo among the scholars in the field of evolutionary psychology. His caregivers assert that they have taught him to communicate with human beings via lexigram interfaces (Savage-Rumbaugh and Lewin 1994), although the presumptive similarities between these sorts of cross-species interactions and the modalities of human communication have been put into doubt (e.g. Wynne 2008). In spite of this controversial dispute, the expression “slow lettuce”, ostensibly coined once by the ape with the machine, served to entitle a book chapter by Eleanor Rosch (2011). Her essay entered into the discussion of the problematic relationship between fuzzy logics (Zadeh 1965) and several theories of concepts through prototype theory (Rosch 1973; Rosch and Mervis 1975). In doing so, she joined the scholarly debate about the emergence of complex concepts (Osherson and Smith 1982; Murphy 1988).

Kanzi allegedly used the expression “slow lettuce” for alluding to kale; it has been interpreted as a reference to this meal “because it takes longer to chew than regular lettuce” (Rosch 2011: 117). What does the routine act of eating *crudités* consist of? You first introduce a raw vegetable in your mouth, you chew it, and you finally swallow the resulting bolus. Both the vegetable and the person ingesting it are changing their respective states over time, i.e. they are subjected to dynamic processes. From this perspective, “slow lettuce” is a quite particular expression: the prepositive adjective is not denoting an attribute of the noun – unless somebody was imaginig, for instance, the sprout growing –, but the speed of an agent performing an action on it. In other words, the concept combination assembles a noun for an entity that, to all appearances, does not evoke dynamism itself with an adjective that expressly does.

By contrast, “striated time” puts together a noun which is inherent to any dynamic process and an adjective that, at first glance, would not bring dynamism to mind. Making abstraction of both concept combinations and leaving their obvious differences aside, it is like a switch of the dynamic roles of the adjective and the noun. My insistence here on the issue of dynamism is informed by Lawrence M. Zbikowski’s hypothesis for the function of music, which mainly draws on the theory of perceptual symbol systems by Lawrence W. Barsalou (1999): the music theorist

argues that “at the most fundamental level, musical utterances provide sonic analogs of dynamic processes” (Zbikowski 2017: xi). Of course the utterance “striated time” is not musical but linguistic. However, the research on the conceptualization and discourse about music has shown a pervasive use of metaphors of motion entailing dynamical processes (Johnson and Larson 2003; Pérez-Sobrino and Julich 2014) in Western culture, which seems to be consistent with Zbikowski’s hypothesis.

Broadly speaking, conceptualizations of time involving spatiality, and particularly metaphors of motion for this purpose, are ubiquitous in Western culture (Boroditsky 2000; Gentner, Imai and Boroditsky 2002; Casasanto and Boroditsky 2008). In this sense, a scrutiny of Boulez’s expression shall be aligned with previous research pondering the continuum between well-established metaphors of time and highly creative ones (Piata 2018). Are Boulez’s expressions for describing the temporal experience of music as eccentric in a way as Kanzi’s presumptive portrayal of the kale or, conversely, are they closer to Western people’s metaphors of motion when talking about music? The following arguments corroborate the second option.

3. Boulez on time

As mentioned in the Introduction, Boulez was a quite prolific author of musical essays. Although he had already provided several short texts or conference transcriptions, his first book was published in 1963 in German with the title *Musikdenken heute* and the French version appeared the same year (Boulez 1963). The Anglo-Saxon readers had to wait eight years for a translation (Boulez 1963/1971). As French is the composer’s mother language and English the one for the present book, I henceforth disregard the German source.²

The *Internationale Ferienkurse für Neue Musik* [International Vacation Courses of New Music] started in Darmstadt in 1946, i.e. within the American Zone of Occupation in Germany after World War II. This annual event rapidly became the most influential worldwide meeting point of artists committed to the new music. Boulez’s *Deuxième sonate* (1947) for piano was his first work played at the Darmstadt summer course in 1952; he started to teach composition and music analysis in 1955 (Iddon 2013: xvi–xviii). His book mainly built on the notes and materials he prepared for the conferences in 1960.

My aim is not to provide an overall remark – it has been already done elsewhere (Decroupet 2003; Goldman 2011: 31–36) – upon the particular style of Boulez’s essay, which shows, rhetorically speaking, a great influence of the scientific discourse.

2. As there is no reference of a translator for the French version, I assume that Boulez was fully committed with the choice of the translated terms.

In return, his text coined some expressions for a conceptualization of musical time that deserve discussion. Several scholars have tried to elucidate a plausible origin of formulae such as “striated time” in further textual sources by Boulez, from his reflections on Richard Wagner’s and Claude Debussy’s oeuvre (Nattiez 1993/2004: 78–79) to an influence of non-Western traditions (Campbell 2010: 236) the musician never concealed (Boulez 1985/1986: 421–422). I do not aspire to enter into this debate, which is probably irresolvable, but to focus on some cognitive features emanating from the aforesaid expression and similar ones.

3.1 Smoothness vs striae

The first occurrence of the expression “striated time” in the book is as a synonym of “pulsed time” (Boulez 1963/1971: 50). Both expressions are later defined, as well as their opposites, respectively “amorphous time” and “smooth time”. These definitions are displayed in order to introduce an analogical reasoning. On the one hand, the notions of “pulsed time” and “amorphous time”, in French “*temps pulsé*” and “*temps amorphe*” (Boulez 1963: 99), are defined within the context of tempo, i.e., from a musical – therefore mainly auditory – viewpoint:

[T]here are [...] two categories in musical time: *pulsed* time [...] and *amorphous* time. In *pulsed* time, the structures of duration will be related to chronometric time as landmarks [...], systematically placed regular or irregular beacons: these constitute a pulsation [...] or of a simple multiple of this unit. [...] *Amorphous* time is only related to chronometric time in a global sense; durations, whether with defined proportions [...] or having no indication of proportion, appear in a field of time. (Boulez 1963/1971: 88)³

On the other hand, the notions of “striated time” and “smooth time”, in French “*temps strié*” and “*temps lisse*” (Boulez 1963: 100), are introduced by means of an analogy based on visual imagery:

Beneath a line of reference, place a *completely* smooth surface and a striated surface, [...] regular or irregular. If this *ideal* smooth surface is displaced, it will give no indication of either the speed or the direction of its displacement, since there is no guidemark for the eye. The displacement of a striated surface will on the contrary be immediately noticeable, both in its speed and its direction. Amorphous time is comparable to the smooth surface, pulsated time to the striated surface; by analogy, I will call these two categories smooth and striated time. (Boulez 1963/1971: 89)

3. I keep the emphasis of the original source in this and the following quotations despite Boulez’s lack of systematism.

Boulez's analogy is based on a mechanical device like a large pasteboard making the striated surface move through the visual field; it incorporates a referential line for exactly detecting when the striae go across it. His imagined mechanism and the perceptual outcome seem to be quite more intricate than the pulse which is evoked in his preliminary definitions. From an aural perspective, a quite simple recognition of pulsations may come, for example, from a metronome or from the second hand of an old clock. A pulse is also perceived, visually speaking, when watching the light blinks of a distant lighthouse. I cannot wonder how to identify pulsations via smell and taste, but just put a finger on a superficial blood vessel for a haptic identification of the heart rate. Touching, finally, leads to a wider variety of somatosensorial detections of pulses, as may happen for instance through the bodily impact of loud low beats in a nightclub.

Pulse can be therefore recognized by disparate sensory modalities, but patterns are often more complex than a uniform repetition. In his definition of "pulsed time", Boulez insisted on the comparison between actual perceived durations by the ear and pulsations with their subdivisions. His informal definition is indeed in tune with the aforesaid dynamic attending theory, which provides an explanation of our cognitive capacities when confronting rhythmic patterns. Rhythm in my last sentence brings music to mind but, as shown with pulsations, it may involve other modalities beyond audition. Take for instance the Morse code: it is possible to identify a message emitted by a sailor with a signal lamp, or silently tapped on a shoulder by someone else. Research on multimodal recognition of rhythm has proven an auditory-haptic-visual precedence and dominance concerning the average capacities of human beings (Kosonen and Raisamo 2006; Bresciani, Dammeier and Ernst 2008).

Back again to Boulez's description of "pulsed time", I point now towards the use of the terms "landmark" and "beacon", in French "*repérage*" and "*balisage*" (Boulez 1963: 99). There are of course sound beacons but both terms probably activate, first and foremost, visual imagery. In addition, the translator's choice of the expression "landmark" is a lucky coincidence with a concept of cognitive grammar which, along with "trajector", denotes the conceptualization of motion (Langacker 1987: 217–220, 231–243). Both remarks lead to also highlight that the etymology of the term "rhythm", "*ρυθμός*" in Greek, denotes motion without presupposing a specific modality. Motion is also elicited, in the composer's book, for describing musical features beyond rhythm such as pitches:

Temperament [...] will '*striate*' the surface, the musical space, and will provide our perception [...] with useful points of reference; in the opposite cases, where partition can be effected at will, the ear will lose all landmarks and all absolute cognisance of intervals; that is comparable to the eye's inability to estimate distances on a perfectly smooth surface. (Boulez 1963/1971: 85)

There are two salient aspects in this passage. First, the composer alludes to striae by means of a verb, “*strier*” in French (Boulez 1963: 95). Second, he endues pitches with the capacity to imprint striae on a surface. It is not difficult to imagine an agent causing striae or other physical alterations on a smooth surface that can be observed by sight: just consider the undulation of the water surface when a pebble is thrown into a calm lake. Conversely, I find no ordinary situation wherein sound-waves, and particularly pitches, can striate a surface in a visually perceivable way. Boulez’s cross-modal analogy is surely based on the vertical image schema for musical pitches developed in Western culture (Zbikowski 2002: 66–72) and its notational embedment: the lines of the musical staves could be regarded as striae on a sheet.

Both Boulez’s imagined device and the pebble in the lake are mediating methods for visually noticing physical variations on a surface. In these examples, as well as those I summoned for discussing pulse and rhythm, the observer may adopt a quite passive attitude. Striated surfaces, however, can be actively spotted by passing a hand on them; tiny alterations on a surface may even provide highly encoded information, as happens while reading Braille. Agency for visually detecting striae can be also mentally performed: Cognitive linguistics has provided evidence of multiple ordinary situations in which fictive motion is summoned (Talmy 1996). It is equally possible to mentally visualize linear marks on an imagined surface for striating a real one. Something similar, but on a line instead of a surface, was performed by Boulez while composing *Figures-Doubles-Prismes* (1963–1964), his first orchestral piece once his early book was published. Among the conserved sketches for this score, there is a quite particular drawing (see Figure 1) which I interpret as layers of timelines: the spiky portions would match with “striated time” periods whereas the almost straight segments would match with “smooth time” periods. The square brackets would emphasize the idea of disruptions throughout the flux of pulses or recognizable patterns.

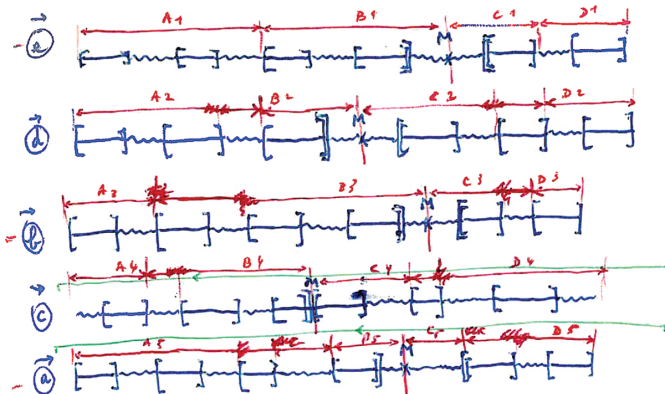


Figure 1. Timelines in a compositional sketch for *Figures-Doubles-Prismes*. Pierre Boulez Collection. Paul Sacher Stiftung, Basel

In sum, Boulez could coin the idea of “striated time” because he was able to perceive pulse and to have temporal expectations. As pulsations and rhythms can be perceived through different modalities beyond audition, he devised a cross-modal analogy. By contrast, he matched the absence of pulse and the inability to recognize and to expect patterns with a lack of form. This situation led him to settle again a cross-modal analogy for coining the term “smooth time”. In addition, the recognition of rhythm aligns Boulez’s “striated time” with many standardized metaphors of musical motion in Western culture.

3.2 Straightness vs curvature

Timelines are efficient material anchors for mental representations of time (Coulson and Pagán Cánovas 2013). The ones by Boulez I commented in the previous subsection unfold an atypical shape; this fact would not probably alter, however, the fact that a large majority of Western people “read” them from left to right. This horizontal image schema for time and the vertical one mentioned above for pitches, both orientated, are inherent to the Western current standard notation for music. These schemata are explicitly enounced in a passage of the composer’s book which opens the scope to further spatial directions:

Time, like pitch, has three dimensions: horizontal, vertical and diagonal; distribution proceeds similarly by points, groups and groups of groups; [...] time acts as a link between the different dimensions relative to pitch, since the vertical is only the zero time of the horizontal, a progression from the successive to the simultaneous. (Boulez 1963/1971: 28)

This quotation and the one below are exemplary cases of Boulez’s borrowing of mathematical terminology. A lack of unambiguity has been pointed out by the scholarly community (Campbell 2010: 234–235); nevertheless, I consider the possibility to infer some cognitive features. In a page of the musician’s essay, he compares several triangles with superposed rhythmic layers (Boulez 1963/1971: 56). Triangles *f* and *g* incorporate associated lines: the first one includes its vertical altitude as the segment perpendicular to the horizontal side that reaches the opposite vertex, whereas the second one comprehends an oblique median as the segment connecting the midpoint of a side with its opposite vertex. Both segments are transferred onto their respective equivalents of layered musical notation: the altitude matches with the coincidence of all voices; the median seems to make evident their asymmetry. Boulez’s explanations and drawings lead me to provide a more concise discussion of the involved image schemata (see Figure 2). I align a group of four eight-notes in different ways: the horizontal standard schema (a) evokes melodic motion, the diagonal one (b) reminds polyphonic entries, and the vertical one (c) brings to

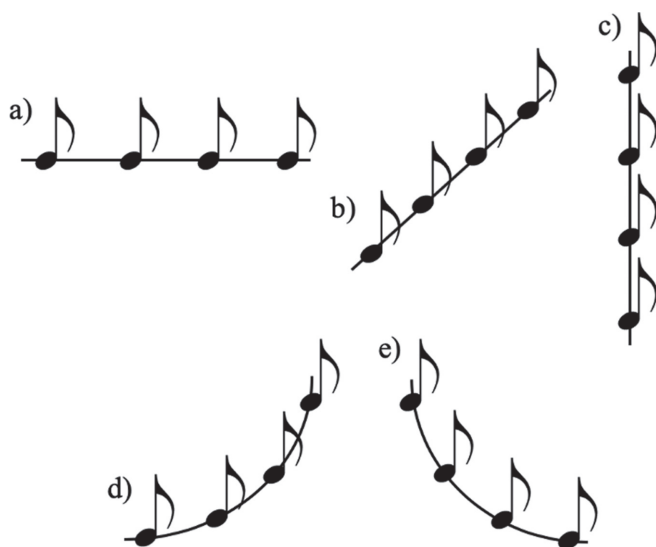


Figure 2. Eight-note sequence with an alignment of noteheads onto different image schemata: (a) horizontal schema, (b) diagonal schema, (c) vertical schema, (d) and (e) curved schemata

mind harmonic simultaneity. The sequence I formulate is coherent with the composer’s remark upon a progression, and the last match is in particular consistent with Boulez’s expression of “zero time”, as a kind of temporal collapse. My figure includes two extra schemata related to another quotation by the composer:

Straight time [...] will [...] observe a constant module; [...] the original values being comprised between two limits, the derived values will be comprised between the multiples of the relationship defined by these two limits. *Curved time* [...] will cause the derived values to depend upon a function of the relationship defined by these two limits (all the values will for example be augmented or diminished according to the direction of the time-register which is followed).

(Boulez 1963/1971: 93)

Both the “straight time” and the “curved time”, in French “*temps droit*” and “*temps courbe*” (Boulez 1963: 106), are presented as sub-varieties of the “striated time”. They differ in the way the lapses between pulses – i.e. the “modules” or “values” – are unfolded. Back again to my representation of image schemata (see Figure 2), the constant distance between adjacent noteheads in the horizontal schema (a) and the diagonal one (b) is preserved. It would be possible, however, that a reader may imagine a faster pulse for the second case because the eight-notes are closer to each other; I develop this aspect later. Something similar happens with the curved schemata (d-e): the notes, or at least their horizontal projections, seem to

be approaching more and more in the first case, which might create the image of an accelerated motion; contrariwise, the appearance of distancing in the second case might come across as deceleration. Geometrically speaking, both cases would reflect graded but asymptotic relationships between the vertical and horizontal image schemata.

In sum, it seems that Boulez mentally worked with some variations of standard image schemata in order to reformulate his temporal conceptions of music. In particular, some of these mental manipulations probably emerged because he was acquainted with analytic geometry and involved perhaps kinetic imagery. I also surmise that it was possible by means of a cross-domain mapping between the left-to-right horizontal schema of time in Western music notation and the independent axis of the Cartesian plane, which often represents time in applied mathematics.

3.3 Blocks vs bubbles

In the paragraph wherein Boulez coined “straight time” and “pulsed time”, he also came with adjectives such as “regular” and “irregular”, or “homogenous” and “non-homogenous”. In my opinion, they are not uncommon for conceptualizing time and do not consequently deserve detailed analysis. There is, however, a last unconventional expression in the composer’s book I have not highlighted yet:

Simple series of fields in which events take place without being tied to more precise values may [...] be used to counter [...] increasing complexity. This idea can be enlarged to arrive at what I call true *time bubbles*, where only the proportions of the macro-structures are defined. (Boulez 1963/1971: 58)

Unlike the previous cases, Boulez did not formulate an explicit opposite term for his “time bubbles”, in French “*bulles de temps*” (Boulez 1963: 62). Still he had introduced before, on several occasions the expression “duration blocks” (Boulez 1963/1971: 55–58), in French “*blocs de durée*” (Boulez 1963: 59–62), within the context of the triangles standing for rhythmic layers I mentioned above. Bubbles are gas cumulations confined within a fluid which usually move, with their shape varying over time. By contrast, I guess, informed by prototype theory (Smith, Osherson, Rips and Keane 1988: 524–525), that most people would probably describe their mental image of a block as a solid object with a neatly defined and rigid prism appearance. In this sense, the sound of bubbles while pouring a fizzy drink surely evokes motion, even with eyes closed, but I put into doubt that it induces the idea of evolving shapes without passing through visual imagery. This aspect is important because Boulez’s description of his musical “bubbles of time” clearly fits with his notion of “amorphous time” quoted above. Thus, a cross-modal origin of the expression becomes evident.

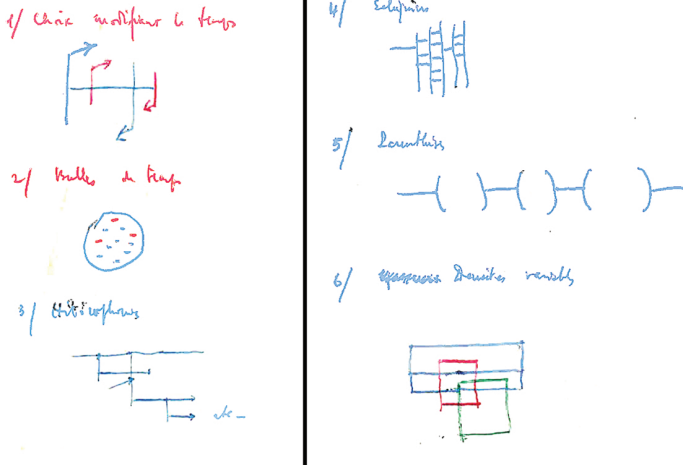


Figure 3. Six categories for time categorization in a sketch (split here into two columns) for *Pli selon pli*. Pierre Boulez Collection. Paul Sacher Stiftung, Basel



Figure 4. *Rhythmisches* (1930) by Paul Klee, oil on burlap. Centre national d’art et de culture Georges-Pompidou, Paris. Photo source: Wikimedia Commons

Just as happened with the “striated time”, Boulez also drew “time bubbles” while composing *Pli selon pli* (1957–1962), a score for soprano and orchestra on Stéphane Mallarmé’s poems. One sketch for this piece (see Figure 3) displays an oval shape for this category in a clear contrast with other more edged outlines standing for further formal conceptions. Some of his latticed shapes bring to mind Swiss painter Paul Klee. I would highlight in particular some affinity between Boulez’s category “*échiquiers*”, which means “chessboards”, and Klee’s *Rhythmisches* (1930, see Figure 4). Many paintings by Klee have musical titles; he was also a talented violinist. Of course, my comparison is not off-topic: Klee was surely the most influential visual artist on the French composer, who devoted a short essay to the painter’s conception of space-time and its connection with music (Boulez 1989).

4. Expressing temporal ideas beyond language

In February 1978, i.e. about a year after the opening of the Centre Pompidou, the IRCAM, a research institution for acoustics and new music depending on that museum and headed by Boulez, organized a workshop entitled *Le temps musical*. The musician provided analytical comments upon five 20th-century musical scores and the way their respective authors conceived time (Boulez 2005: 562–564). In tune with the ideological orientation of the institute by then, which yearned for a rationalization of contemporary musical practices (Born 1995), Boulez invited three philosophers in order to enrich the discussion, namely Michel Foucault, Ronald Barthes, and Gilles Deleuze.⁴ The latter published just two years after one of his most famous essays in which the concepts of “striated” and “smooth” space-time are pervasive (Deleuze and Guattari 1980); he picked again the topic in further works (Deleuze 1998).

Deleuze’s interest in phenomenology was surely at the origin of his borrowings from Boulez (Campbell 2010: 151–153). The way in which somebody borrows and reformulates sophisticated conceptualizations of time is an interesting research topic without doubt; I remain instead attached to the original source. Boulez’s textual exposition of the sense he conceived for his different categories of time was not the only modality involved in its transmission for further interpretation.

4. Several videos of the final debate are hosted in the webpage of the institution: <https://www.ircam.fr/article/detail/sons-dessus-dessous-18-le-temps-musical/>.

4.1 Engraving time: Boulez’s musical notation

The musician planned two extra short chapters and an epilogue for his first book that were finally discarded but later published elsewhere (Boulez 1985/1986: 84–99). The first removed chapter reveals a reaction against the spread of graphic scores since the 50s (Cage 1969). Boulez reminded the passage in Western music, since the end of the 12th century, from neume notation to rhythmic modes and mensural notation – i.e. mechanisms which encoded rhythmic proportions (Apel 1961/1962) –, for denouncing a technical regression. In his own words, “[a]ny notion of graphic transcription gives preference to a vague, amorphous idea of time and completely disregards the idea of time as a pulse, ‘striated’ time” (Boulez 1985/1986: 86).

Some scholars have provided analyses of the rhythmic features in Boulez’s oeuvre (e.g. Gable 1990: 435–444; Campbell 2010: 237–250); my aim is to pay attention to its notational and graphic aspects concerning time representations. For that purpose, I focus now on *Éclat* (1964–1965), his first score for a large ensemble after publishing his early book. After a brief introduction, the pianist has to play a cadenza Boulez wrote with standard rhythmic notation (see Figure 5): the “striated time” is therefore settled. The composer also added some arrows over the note beams, standing for a *rallentando* when they point down and for an *accelerando* when they point up; he pretended to suggest to the player a jerky mood with the French term “*saccadé*”. Boulez opted, consequently, for representing the “curved time” by means of straight arrows; arched ones could have been mistaken as *legato* slurs.

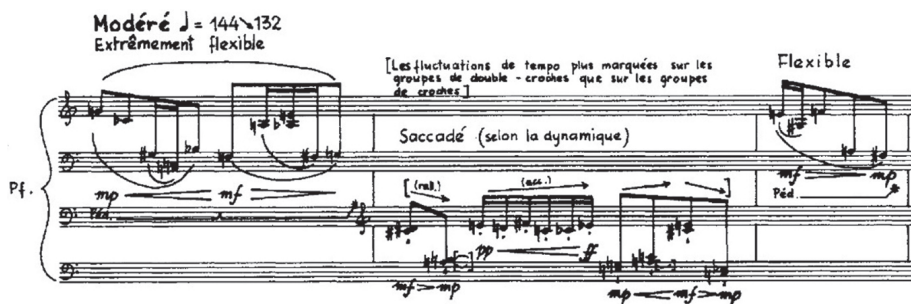


Figure 5. Boulez’s *Éclat* (rehearsal n. 2, measures 3–5). © Copyright 1965 by Universal Edition (London) Ltd., London / UE 17746. Reproduced with permission

Other musicians would have chosen alternative notational solutions, such as a progressive cumulation or distancing of the notes on paper, disregarding the univocal meaning of rhythmic figures. These kinds of choices were the target of Boulez's critique on his peers' notation, but probably any trained musician would rapidly understand it without prior explanation. This notation induces a fictive motion going faster – alternatively slower – and empirical research has shown a correlation with musical *accelerando*, or alternatively *ritardando* (Eitan and Granot 2006). The same happens with the image schemata I drew for Boulez's "curved time" (see Figure 2, d and e), but further outlines are possible. Just consider a horizontal axis for mirroring both schemata: the resulting shapes induce the same cumulation or distancing than the former, but reverse the down-up orientation and vice-versa. Why did Boulez and I have favored arrows and curves pointing towards the same direction for the same purposes? I guess the answer also comes from the last study I mentioned: Western people tend to associate the perception of ascending pitches with accelerated motion, and "ascending pitches", "*hauteurs ascendantes*" in French, is an expression related to the vertical image schema of notation. As a matter of fact, it is quite easy to recall music examples within the Western art music repertoire in which ascending progressions accelerate or descending ones go slower and slower, but harder to find excerpts when these criteria are swapped. In essence, I postulate that Boulez's arrows are an outcome, maybe unconscious, of the conventional image schemata for time and for pitches interacting.

The composer also made room in *Éclat* for several passages wherein his "smooth time" is unfolded. Its first occurrence (see Figure 6) condenses the most important notational features that are exploited in the whole score. Two categories of rhythmic figures are found as confronted poles: on the one hand, whole and double-whole notes standing for long but unfixed durations and, on the other hand, eight-notes or even shorter figures standing for extremely short ones but demanding synchronization. In addition, several black isolated noteheads are used when the harpist has to play independently. Since there is no implicit time signature, the conductor has to distribute the time lapses between successive entries which must be unequal, as explicated by the French expression "*intervalles très irréguliers*". At first glance, it seems to be visually counterintuitive because Boulez displayed the chef signals by means of almost equidistant proportions. He was aware of a potential measuring effect that could be inferred by sight (Boulez 1985/1986: 86–87); I hence surmise that he probably settled equal spatial proportions for avoiding an unwanted influence of seeming temporal proportions.

3. **Libre, espace**

Sur signe du chef commencer par l'une des 4 figures et achever le cycle.
Donner les signes à des intervalles très irréguliers, en dens de scie

4. **Large**

Sur signe du chef commencer à l'un des points "marqués" d'une flèche et continuer, circulairement jusqu'au point de départ (que l'on ne répète plus).

Lent, régulier

[Indépendamment des autres instruments]

(M.d. du chef)

disparaître peu à peu non simultanément sur le geste du chef (m.s.)

PF. C.E.I. Harpe Vibr. Mand. Cymb.

Figure 6. Boulez's *Éclat* (rehearsal n. 3 and 4: Measures 1–2). © Copyright 1965 by Universal Edition (London) Ltd., London / UE 17746. Reproduced with permission

4.2 Enacting time: Boulez conducting

In his early book, the composer provided one of his most cited aphorisms: “in smooth time, time is filled without counting; in striated time, time is filled by counting” (Boulez 1963/1971: 94); translated from “*dans le temps lisse, on occupe le temps sans le compter; dans le temps strié, on compte le temps pour l’occuper*” (Boulez 1963: 107). Although the aphorism would seem to point again towards the dynamic attending theory, measuring time duration is often a quite more unconscious task, even for other species (Hopson 2003), than usually believed. Nevertheless, this feature becomes central in the context of joint performance for successful coordination.

Within a distributed situation, people communicate their thoughts on music in multimodal ways. Image schemata and metaphors are uttered by speech and gesture, for instance, when teaching music (Haviland 2007; Chuang 2012), rehearsing (Mak 2016), or developing musical devices (Besada 2018). The conducting

technique stands as a paradigmatic case of gestural communication in the context of musical practice: it encompasses deictic indications, multiple spatial schemata for distributing pulsations, and a large variety of metaphoric and iconic gestures conveying musical expression (Boyes Braem and Bräm 2000). Enacting time (Gallagher 2011) is a crucial task for conductors, in particular when non-standardized representations of musical time must be bodily transmitted to the musicians.

Boulez often conducted his own pieces, and had therefore to find a solution for enacting his “smooth time”. In one of the discarded chapters for his early book, he matched, roughly speaking, dynamic structures with “striated time” and static structures with “smooth time” (Boulez 1985/1986: 91). Performers were somehow at his mercy during these periods of stasis, as no pulse can be inferred from his scores in these sorts of passages. The composer once described this scenario, in a documentary about *Éclat*, like “almost maneuvering puppets”, as the lack of scrupulous temporal expectancy “gives to the performance a kind of tension” (Boulez in Scheffer 1994).

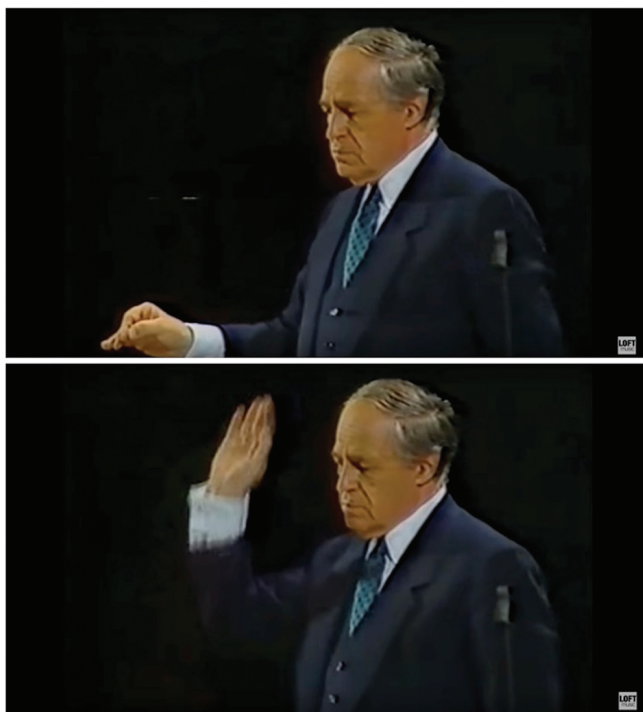


Figure 7. Two video stills from Boulez’s performance of *Répons* with the Ensemble intercontemporain (source: <https://www.youtube.com/watch?v=JhQ2AZsK7Os> © LOFTmusic), Salzburg Festival 1992. Timing: Upper image 01:59; lower image 2:00

I intend, however, to focus on his piece *Répons* (1981–1984) for six soloists, large ensemble, and electronics, since the same issue arises and there is a very nice video recording with Boulez conducting. After a concise but agitated introduction, a quite long passage unfolds several periods of “smooth time” which are separated by one or a few measures with precise time signatures standing for the “striated time”. Boulez did not take a baton for conducting, he considered that the naked hand was more precise for conveying complex pulsations in the contemporary repertoire (Vermeil 1989/1996: 65). The antagonism of precision and indeterminacy was bodily noticeable when he conducted, as I highlight with two screenshots (see Figure 7) of the video mentioned above. There is just a lapse of about one second between both stills: during the “smooth time” period, his right hand is pretty curved while the arm remains tense but almost motionless; by contrast, the hand is outstretched while the arm performs the unambiguous trajectory of a time signature in the context of “striated time”.

5. A provisional model

Through the last sections I have discussed several conceptualizations of time ideated by Boulez, as well as how they were incorporated in modalities beyond language by means of musical notation and bodily actions. Despite the sophistication which is found in some of his theoretical descriptions, my intention was to show their link with the more general capacities of human beings for recognizing pulse and patterns across different perceptual modalities, and with several image schemata already shaped within the cultural milieu where Boulez belonged. In this sense, his ideations can be immediately related to some metaphorical categories which have been deeply explored by cognitive linguists. For instance, “smooth time” and “striated time” fall within the spatial metaphors of time while highlighting the qualities of a surface. Similarly, “bubbles of time” and “duration blocks” are expressions depending on containers as image schemata, but the focus here is on their physical shape and properties. This emphasis on the qualities of the surface and the containers is precisely what makes Boulez’s conceptualizations extremely creative.

Even at the risk of falling into inductivism, I would like to conclude with a plausible generalization. I adopt for this purpose an ecological perspective for both time and music. I align first with James J. Gibson’s idea that “time and space are concepts, abstracted from the percepts of events and surfaces” (1975: 299). Time would be a conceptual outcome based on our experience with multiple dynamic processes. Second, I consider that musical time would be, first and foremost, a conceptual outcome of our musical experience. In this sense, I recall Christopher Small’s notion of musicking, which encompasses any kind of performance: composing, playing,

singing, and listening to music. According to him, “music is not a thing [...] but an activity” (Small 1998: 2). My following argument is, in addition, supported by the accounts of a multisensory processing of musical rhythm (Russo 2019: 223–226).

We are unceasingly involved in and surrounded by dynamic processes; music, through its many facets, is one of them. Our sensory nervous system is routinely confronted with multiple patterned signals, coming from music for instance. These experiences, their cross-modal comparisons, and the acquisition of cultural knowledge about the concept “time” as an abstraction lead us to forge our personal conceptions of time and in particular musical time. Trained musicians, and specifically composers, devote much more effort than average people to consciously reflect upon musical time, which tends to result in highly creative conceptualizations and representations. This is a goal-oriented and proactive task, aimed at developing their own musical practices in diverse multimodal ways. By doing so, the cycle is retriggered: these novel conceptualizations of musical temporality may enlarge the shared cultural acquis and affect new musical experiences.

Funding

Funding support has been provided by the Ramon y Cajal programme of the Spanish Research Agency (AIE) and the European Social Fund (ref RYC2020-028670-I). I warmly thank the staff of the Paul Sacher Stiftung and Áurea Domínguez for their valuable help concerning the sketches which are reproduced in this chapter.

References

- Alossa, N., & Castelli, L. (2009). Amusia and musical functioning. *European Neurology*, 61(5), 269–277. <https://doi.org/10.1159/000206851>
- Alpers, P. (1980). “Musical time” and music as an “art of time”. *The Journal of Aesthetics and Art Criticism*, 38(4), 407–417.
- Apel, W. (1962). *The notation of polyphonic music: 900–1600*. Cambridge, MA: The Mediaeval Academy of America. (Original work published 1961 as *Die notation der polyphonen musik: 900–1600*)
- Barsalou, L. W. (1999). Perceptual symbol systems. *Behavioral and Brain Sciences*, 22(4), 577–660. <https://doi.org/10.1017/S0140525X99002149>
- Besada, J. L. (2018). Sharing and enacting cognitive metaphors in musical distributed contexts: A case study from IRCAM. In R. Parncutt & S. Sattmann (Eds.), *Proceedings of ICMPC15/ ESCOM10* (pp. 77–82). Graz: University of Graz.
- Besada, J. L., Barthel-Calvet, A.-S., & Pagán Cánovas, C. (2021). Gearing time towards musical creativity: Conceptual integration and anchoring in Xenakis’ *Psappa*. *Frontiers in Psychology*, 11, 611316. <https://doi.org/10.3389/fpsyg.2020.611316>

- Besada, J. L., & Pagán Cánovas, C. (2020). Timelines in spectral composition: A cognitive approach to musical creativity. *Organised Sound*, 25(2), 142–155. <https://doi.org/10.1017/S1355771820000059>
- Bigand, E., Madurell, F., Tillmann, B., & Pineau, M. (1999). Effect of global structure and temporal organization on chord processing. *Journal of Experimental Psychology: Human Perception and Performance*, 25(1), 184–197. <https://doi.org/10.1037/0096-1523.25.1.184>
- Born, G. (1995). *Rationalizing culture: IRCAM, Boulez, and the institutionalization of the musical avant-garde*. Berkeley, Los Angeles, & London: University of California Press. <https://doi.org/10.1525/9780520916845>
- Boroditsky, L. (2000). Metaphoric structuring: Understanding time through spatial metaphors. *Cognition*, 75(1), 1–28. [https://doi.org/10.1016/S0010-0277\(99\)00073-6](https://doi.org/10.1016/S0010-0277(99)00073-6)
- Boulez, P. (1963). *Penser la musique aujourd'hui*. Paris & Mainz: Gonthier & Schott. (Original work published 1963 as *Musikdenken heute 1*, Darmstädter Beiträge zur Neuen Musik 5)
- Boulez, P. (1971). *Boulez on music today* (S. Bradshaw & R. R. Bennett, Trans.). London: Faber & Faber. (Original work published 1963)
- Boulez, P. (1986). *Orientations* (J.-J. Nattiez, Ed., M. Cooper, Trans.). London: Faber & Faber. (Original work published 1985 as *Points de repère*, revised edition)
- Boulez, P. (1989). *Le pays fertile: Paul Klee* (P. Thévenin, Ed.). Paris: Gallimard.
- Boulez, P. (2005). *Regards sur autrui: Points de repère II* (J.-J. Nattiez & S. Galaise, Eds.). Paris: Christian Bourgois.
- Boulez, P., Changeux, J.-P., & Manoury, P. (2020). *Enchanted neurons: The brain and music* (G. Weiss, Trans.). Paris & New York: Odile Jacob. (Original work published 2014 as *Les Neurones enchantés. Le cerveau et la musique*)
- Boyes Braem, P., & Bräm, T. (2000). A pilot study of the expressive gestures used by classical orchestral conductors. In K. Emmorey & H. Lane (Eds.), *The signs of language revisited: An anthology to honor Ursula Bellugi and Edward Klima* (pp. 143–167). Mahwah: Lawrence Erlbaum.
- Bresciani, J.-P., Dammeier, F., & Ernst, M. O. (2008). Tri-modal integration of visual, tactile and auditory signals for the perception of sequences of events. *Brain Research Bulletin*, 75(6), 753–760. <https://doi.org/10.1016/j.brainresbull.2008.01.009>
- Brown, S. (2000). The “musilanguage” model of music evolution. In N. L. Wallin, B. Merker & S. Brown (Eds.), *The origins of music* (pp. 271–301). Cambridge, MA: MIT Press.
- Burgoon, J. K. (1993). Interpersonal expectations, expectancy violations, and emotional communication. *Journal of Language and Social Psychology*, 12(1–2), 13–21. <https://doi.org/10.1177/0261927X93121003>
- Cage, J. (1969). *Notations*. New York: Something Else Press.
- Campbell, E. (2010). *Boulez, music and philosophy*. Cambridge: Cambridge University Press.
- Casasanto, D., & Boroditsky, L. (2008). Time in the mind: Using space to think about time. *Cognition*, 106(2), 579–593. <https://doi.org/10.1016/j.cognition.2007.03.004>
- Chuang, Y.-C. (2012). Gestures, language, and what they reveal about thought: A music teacher’s use of metaphor in Taiwan. In F. MacArthur, J. L. Oncins-Martínez, M. Sánchez-García & A. M. Piquer-Piriz (Eds.), *Metaphor in use: Context, culture and communication* (pp. 261–284). Amsterdam: Benjamins. <https://doi.org/10.1075/hcp.38.19chu>
- Collins, D. (2005). A synthesis process model of creative thinking in music composition. *Psychology of Music*, 33(2), 193–216. <https://doi.org/10.1177/0305735605050651>
- Collins, D. (2007). Real-time tracking of the creative music composition process. *Digital Creativity*, 18(4), 239–256. <https://doi.org/10.1080/14626260701743234>

- Coulson, S., & Pagán Cánovas, C. (2013). Understanding timelines. *Journal of Cognitive Semiotics*, 5(1–2), 198–219. <https://doi.org/10.1515/cogsem.2013.5.12.198>
- Decroupet, P. (2003). Comment Boulez pense sa musique au début des années soixante. In P. Alberà (Ed.), *Pli selon Pli de Pierre Boulez: Entretien et études* (pp. 49–57). Geneva: Contrechamps. Open-access: <https://books.openedition.org/contrechamps/1843>. <https://doi.org/10.4000/books.contrechamps.1843>
- Deleuze, G. (1998). Boulez, Proust, and time: “Occupying without counting”. *Angelaki: Journal of Theoretical Humanities*, 3(2), 69–74. <https://doi.org/10.1080/09697259808571985>
- Deleuze, G., & Guattari, F. (1980). *Mille plateaux: Capitalisme et schizophrénie*. Paris: Minuit.
- Donin, N., & Féron, F.-X. (2012). Tracking the composer’s cognition in the course of a creative process: Stefano Gervasoni and the beginning of *Gramigna*. *Musicae Scientiae*, 16(3), 262–285. <https://doi.org/10.1177/1029864912448328>
- Donin, N., & Theureau, J. (2006). Theoretical and methodological issues related to long term creative cognition: The case of musical composition. *Cognition, Technology and Work*, 9(4), 233–251. <https://doi.org/10.1007/s10111-007-0082-z>
- Eitan, Z., & Granot, R. Y. (2006). How music moves: Musical parameters and listeners’ images of motion. *Music Perception*, 23(3), 221–248. <https://doi.org/10.1525/mp.2006.23.3.221>
- Gable, D. (1990). Boulez’s two cultures: The post-war European synthesis and tradition. *Journal of the American Musicological Society*, 43(3), 426–456. <https://doi.org/10.2307/831742>
- Gallagher, S. (2011). Time in action. In C. Callender (Ed.), *The Oxford handbook of philosophy of time* (pp. 420–438). New York: Oxford University Press.
- Gentner, D., Imai, M., & Boroditsky, L. (2002). As time goes by: Evidence for two systems in processing space-time metaphors. *Language and Cognitive Processes*, 17(5), 537–565. <https://doi.org/10.1080/01690960143000317>
- Gibson, J. J. (1975). Events are perceivable but time is not. In J. R. Fraser & N. Lawrence (Eds.), *The study of time II* [Proceedings of the 2nd Conference of the ISST, Lake Yamakana] (pp. 295–301). Berlin: Springer. https://doi.org/10.1007/978-3-642-50121-0_22
- Goldman, J. (2011). *The musical language of Pierre Boulez: Writings and compositions*. Cambridge: Cambridge University Press
- Gunter, T. C., Friederici, A. D., & Schriefers, H. (2000). Gender and semantic expectancy: ERPs reveal early autonomy and late interaction. *Journal of Cognitive Neuroscience*, 12(4), 556–568. <https://doi.org/10.1162/089892900562336>
- Haviland, J. (2007). Master speakers, master gesturers: A string quartet master class. In S. D. Duncan, J. Cassell & E. Levy (Eds.), *Gesture and the dynamic dimension of language: Essays in honour of David McNeill* (pp. 141–172). Amsterdam: Benjamins. <https://doi.org/10.1075/g5.1.16hav>
- Hopson, J. W. (2003). General learning models: Timing without a clock. In W. H. Meck (Ed.), *Functional and neural mechanisms of interval timing* (pp. 25–62). Boca Raton, FL: CRC Press. <https://doi.org/10.1201/9780203009574.ch2>
- Huron, D. (2006). *Sweet anticipation: Music and the psychology of expectation*. Cambridge, MA: MIT Press. <https://doi.org/10.7551/mitpress/6575.001.0001>
- Iddon, M. (2013). *New music at Darmstadt: Nono, Stockhausen, Cage, and Boulez*. Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9781139519571>
- Imberty, M. (2005). *La musique creuse le temps. De Wagner à Boulez: Musique, psychologie, psychanalyse*. Paris: L’Harmattan.
- Imberty, M., & Capogreco, N. (2004). Repères pour une problématique du temps en musique au cours du XX^e siècle. *Musicae Scientiae*, 8(1-suppl), 71–87. <https://doi.org/10.1177/102986490400805106>

- Johnson, M., & Larson, S. (2003). “Something in the way she moves”: Metaphors of musical motion. *Metaphor & Symbol*, 18(2), 63–84. https://doi.org/10.1207/S15327868MS1802_1
- Jones, M. R. (1976). Time, our lost dimension: Toward a new theory of perception, attention, and memory. *Psychological Review*, 83(5), 323–335. <https://doi.org/10.1037/0033-295X.83.5.323>
- Jones, M. R. (2016). Musical time. In S. Hallam, I. Cross & M. H. Thaut (Eds.), *The Oxford handbook of music psychology* (2nd ed.) (pp. 125–141). Oxford: Oxford University Press.
- Keller, P. (1999). Attending in complex musical interactions: The adaptive dual role of meter. *Australian Journal of Psychology*, 51(3), 166–175. <https://doi.org/10.1080/00049539908255354>
- Koelsch, S. (2013). *Brain and Music*. Chichester: Willey-Blackwell.
- Kosonen, K., & Raisamo, R. (2006). Rhythm perception through different modalities. In *Proceedings of Eurohaptics 2006* (pp. 365–370).
- Kozak, M. K. (2020). *Enacting musical time: The bodily experience of new music*. New York: Oxford University Press. <https://doi.org/10.1093/oso/9780190080204.001.0001>
- Krumhansl, C. L. (1995). Effects of musical context on similarity and expectancy. *Systematische Musikwissenschaft*, 3(2), 211–250.
- Langacker, R. W. (1987). *Foundations of cognitive grammar, vol I: Theoretical prerequisites*. Stanford, CA: Stanford University Press.
- Large, E. W., & Jones, M. R. (1999). The dynamics of attending: How people track time-varying events. *Psychological Review*, 106(1), 119–159. <https://doi.org/10.1037/0033-295X.106.1.119>
- Large, E. W., & Kim, J. C. (2019). Musical expectancy. In P. J. Rentfrow & D. J. Levitin (Eds.), *Foundations in music psychology: Theory and research* (pp. 221–263). Cambridge, MA: MIT Press.
- Mak, S. Y. (2016). String theory: An ethnographic study of a professional quartet in Hong Kong. *Intégral*, 30, 53–65.
- Meyer, L. B. (1956). *Emotion and meaning in music*. Chicago: University of Chicago Press.
- Mithen, S. J. (2005). *The singing Neanderthals: The origins of music, language, mind and body*. Cambridge, MA: Harvard University Press.
- Murphy, G. L. (1988). Comprehending complex concepts. *Cognitive Science*, 12(4), 529–562. https://doi.org/10.1207/s15516709cog1204_2
- Nattiez, J.-J. (2004). *The battle of Chronos and Orpheus: Essays in applied musical semiology* (J. Dunsby, Trans.). New York: Oxford University Press. (Original work published 1993 as *Le combat de Chronos et Orphée*)
- Osherson, D. N., & Smith, E. E. (1982). Gradedness and conceptual conjunction. *Cognition*, 12(3), 299–318. [https://doi.org/10.1016/0010-0277\(82\)90037-3](https://doi.org/10.1016/0010-0277(82)90037-3)
- Palmer, C., & Zamm, A. (2017). Interactions in ensemble music performance: Empirical and mathematical accounts. In M. Lessaffre, P.-J. Maes & M. Leman (Eds.), *The Routledge companion on embodied music interaction* (pp. 370–379). London: Routledge. <https://doi.org/10.4324/9781315621364-41>
- Patel, A. D. (2008). *Music, language, and the brain*. New York: Oxford University Press.
- Pérez-Sobrinó, P., & Julich, N. (2014). Let’s talk music: A corpus-based account of musical motion. *Metaphor & Symbol*, 29(4), 298–315. <https://doi.org/10.1080/10926488.2014.948800>
- Piata, A. (2018). *The poetics of time: Metaphors and blends in language and literature*. Amsterdam: Benjamins. <https://doi.org/10.1075/ftl.3>
- Pressing, J. (1999). The referential dynamics of cognition and action. *Psychological Review*, 106(4), 714–747. <https://doi.org/10.1037/0033-295X.106.4.714>
- Reiner, T. (2000). *Semiotics of musical time* [Berkeley Insights in Linguistics and Semiotics 43]. Bern: Peter Lang.

- Repp, B. H. (2005). Sensorimotor synchronization: A review of the tapping literature. *Psychonomic Bulletin and Review*, 12(6), 969–992. <https://doi.org/10.3758/BF03206433>
- Repp, B. H., & Su, Y. H. (2013). Sensorimotor synchronization: A review of recent research (2006–2012). *Psychonomic Bulletin and Review*, 20(3), 403–452. <https://doi.org/10.3758/s13423-012-0371-2>
- Rosch, E. (1973). Natural categories. *Cognitive Psychology*, 4(3), 328–350. [https://doi.org/10.1016/0010-0285\(73\)90017-0](https://doi.org/10.1016/0010-0285(73)90017-0)
- Rosch, E. (2011). “Slow lettuce”: Categories, concepts, fuzzy sets, and logical deduction. In R. Bělohlávek & G. L. Klir (Eds.), *Concepts and fuzzy logic* (pp. 89–120). Cambridge, MA: MIT Press.
- Rosch, E., & Mervis, C. B. (1975). Family resemblances: Studies in the internal structure of categories. *Cognitive Psychology*, 7(4), 573–605. [https://doi.org/10.1016/0010-0285\(75\)90024-9](https://doi.org/10.1016/0010-0285(75)90024-9)
- Russo, F. (2019). Multisensory processing of music. In M. H. Thaut & D. A. Hodges (Eds.), *The Oxford handbook of music and the brain* (pp. 212–234). Oxford: Oxford University Press.
- Savage-Rumbaugh, S., & Lewin, R. (1994). *Kanzi: The ape at the brink of the human mind*. New York: Willey & Sons.
- Scheffer, F. (Director). (1994). *Éclat* [Film]. Allegri & Avro.
- Schreiber, E. (2016). Skelett der Zeit. Körper des Klanges. Die organische Metapher in Schriften und Werk von Gérard Grisey. In M. Kunkel (Ed.), *Les espaces sonores: Stimmungen – Klanganalysen – spektrale Musiken* (pp. 78–96). Friedberg: Pfau.
- Sloboda, J. A. (1985). *The musical mind: The cognitive psychology of music*. Oxford: Oxford University Press.
- Small, C. (1998). *Musicking: The meanings of performing and listening*. Middletown, CT: Wesleyan University Press.
- Smith, E. E., Osherson, D. N., Rips, L. J., & Keane, M. (1988). Combining prototypes: A selective modification model. *Cognitive Science*, 12(4), 485–527. https://doi.org/10.1207/s15516709cog1204_1
- Talmy, L. (1996). Fictive motion in language and “ception”. In P. Bloom, M. A. Peterson, L. Nadel & M. F. Garrett (Eds.), *Language and space* (pp. 211–276). Cambridge, MA: MIT Press.
- Vermeil, J. (1996). *Conversations with Boulez: Thoughts on conducting* (C. Naish, Trans.) Portland: Amadeus Press. (Original work published 1989 as *Conversations de Pierre Boulez sur la direction d'orchestre*)
- Wynne, C. D. L. (2008). Aping language: A skeptical analysis of the evidence for nonhuman primate language. *Skeptic*, 13, 10–14.
- Zadeh, L. A. (1965). Fuzzy sets. *Information and Control*, 8(3), 338–353. [https://doi.org/10.1016/S0019-9958\(65\)90241-X](https://doi.org/10.1016/S0019-9958(65)90241-X)
- Zbikowski, L. M. (2002). *Conceptualizing music: Cognitive structure, theory, and analysis*. New York: Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780195140231.001.0001>
- Zbikowski, L. M. (2017). *Foundations of musical grammar*. New York: Oxford University Press. <https://doi.org/10.1093/oso/9780190653637.001.0001>

Physical and imaginary landmarks in English time gestures

Daniel Alcaraz Carrión

University of Wisconsin-Madison

In this chapter I discuss several creative instances of time co-speech gestures in English obtained from a repository of television news. I argue that, even though time gestures tend to follow certain patterns in their form, speakers may deviate, giving rise to more creative instances with a more complex meaning. The chapter begins with a brief introduction to the relation between speech and gesture, with a focus on temporal cognition, and timelines. Then, I discuss the notion of creativity in gesture research. I analyze five examples of time gestures that fall under three main categories: the *ad hoc* creation of imaginary timelines, the inclusion of physical items to the time construal and the emotional and pragmatic component of facial gestures.

Keywords: material anchor, spatial metaphor, television news, timelines

1. Introduction

1.1 What is a gesture?

A gesture can be broadly defined as any movement performed with any body part (Cienki 2008). McNeill (2005) states that the main features that distinguish a gesture from other type of human kinetics (such as body language) it is that they are willful, they can be performed with any body parts as well as abstractions from our body, such as the gaze, and they have a communicative intention. Gestures need to deliberately manifest expressiveness and they need to have a certain degree of voluntary control. Body movements that fit this criterion can be further subdivided in four categories following *Kendon's Continuum* (Kendon 1980, 1988; adapted from McNeil 1992), which distinguishes four main types of gestures:

Gesticulation->pantomime->emblem->sign languages

Gesticulations refer to hand movements that require the obligatory presence of speech, while pantomimes depict objects or actions with no necessary presence of speech. Emblems are gestures with a fixed form and meaning, such as the “thumbs up” gesture in Western cultures, while sign languages constitute a whole linguistic system on their own. Since the aim of this chapter is to present creative realizations of temporal co-speech gestures in English, I refer to Kendon’s gesticulations. Emblems are not included due to the fixed nature of both their form and function as well as their independence from speech, nor I include creativity in sign languages, even though there is a considerable amount of research on time gestures (see Schermer and Koolhof 1990; Engberg-Pedersen 1999; Emmorey 2001; Wilcox 2002; Nilsson 2016) as well as the role and importance of creativity in sign language (Stanzione et al. 2013; Sutton-Spence 2017).

Gesticulations receive their meaning in conjunction with the speech they co-occur with, giving rise to spontaneous gestures with certain semantic and structural regularities (McNeil 1992, 2005; Cienki and Mittelberg 2013). They are patterned in relation to speech (Kendon 2004), being linked to tone units and syllables, as well as establishing a semantic coherence with the verbal message (McNeill 1992) by adding a parallel or complementary nuance. These gesture realizations can often be divided in three smaller phases of gesture movement, which constitute a Gesture Unit (Kendon 2004). This first and third stage, known as preparation and retraction respectively, are optional phases that the speaker can perform to ready their hands and to return to a rest position. The second stage is known as the stroke, considered to be the “content-bearing part of the gesture” (McNeill 1992: 375), and performed with a higher “quality of effort” (McNeill 1992: 376) than the rest of the gesture phases. The stroke is considered to be the core component necessary for a gesture unit (Kendon 2004) and it has become the focus of attention of researchers when looking at conceptualization patterns through co-speech gestures (Calbris 1990, 2003; Cienki 1998, 2005, 2008) and more particularly in time gesture research (Núñez and Sweetser 2006; Cooperrider and Núñez 2009; Casasanto and Jasmin 2012). The analysis of the creative temporal gesture realizations that I present in this chapter focuses on the stroke phase of several gesticulations that co-occur with temporal language, which I refer to as *co-speech gesture* or *time gesture*. But first, it is necessary to specify the features of time gestures.

1.2 Time gestures

Time is a universal phenomenon experienced by all humans tightly linked with the spatial domain. Time and space often co-occur, being experientially close (Galton 2011). The experiential (and cognitive) link between these two domains has been studied across disciplines, including language (see Moore 2000, 2006, 2011, 2014;

Evans 2004, 2013), psychology (Santiago et al. 2007, 2008; Walker et al. 2013, 2014), and gesture (Núñez and Sweetser 2006; Cooperrider and Núñez, 2009; Casasanto and Jasmin 2012). One of the most common ways to represent time by means of space in English is through the use of timelines. Timelines are an essential component for the mapping of time using a physical structure. Many authors argue that timelines are more than simple space-time mappings, and that they have become core structures of our cognitive ability, which are essential for time conceptualization, giving rise to the Mental Timeline theory (Santiago et al. 2007; Ishihara et al. 2008; Müller and Schwarz 2008; Vallesi et al. 2008, 2011; Weger and Pratt 2008; Di Bono et al. 2012; Zorzi et al. 2012; Coulson and Pagán Cánovas 2014). Through the use of timelines, temporal concepts would acquire inherently spatial properties: time is represented along a spatial continuum similar to a line, the orientation of the timeline and its direction signal different points in time, while different points in the timeline refer to different points in time.

Through the domain of gesture, speakers are able to physically represent time construals by using their hands, providing temporal concepts with non-temporal properties such as directionality, orientation, axuality or motion (Galton 2011). Research on time conceptualization in the gesture domain has been extensive across languages and cultures: French (Calbris 1990), Mandarin Chinese (Gu et al. 2013, 2017; Gu 2018; see Chapter 9 in this volume), Aymara (Núñez and Sweetser 2006), Yupno (Núñez et al. 2012), Yucatec Maya (Le Guen and Balam 2012) or speakers of Nheenghatú (Floyd 2016).

The first study that referred to English time gestures was conducted by Cienki (1998), who observed that English speakers often followed a left-to-right direction when gesticulating about time, locating the past on their left and the future on their right. This pattern was later confirmed by Casasanto and Jasmin (2012), as well as by Walker and Cooperrider (2016), who also observed that English speakers located past times behind them and future times in front of them. Psycholinguistic evidence also supports the idea that temporal concepts (e.g. past and future) are linked to particular axes and directionalities in English. Word-processing tasks suggest that past concepts are categorized faster when located on the left or behind the speaker, while future concepts are categorized faster when located on the right or in front of the speaker (Torralbo et al. 2006; Weger and Pratt 2008), while other studies link forward motion to future-related thinking and backwards motion to past-related thinking (Miles et al. 2010a, 2010b; Hartmann and Mast 2012). Another body of research suggests that this directionality is in fact linked to writing direction: people that read and write from left-to-right arrange time in the same direction, while people that read and write from right-to-left arrange time accordingly (Tversky et al. 1991; Fuhrman et al. 2011; Ouellet et al. 2010; Casasanto and Bottini 2010; Bottini et al. 2015).

More recent studies have investigated time gestures in English through the use of big data (Alcaraz 2019; Valenzuela et al. 2020; Pagán Cánovas et al. 2020). In this line of research we can observe which are the most frequent formal features of time gestures (e.g., direction, axis), allowing us to establish how a *standard* time gesture in English would be performed. The most frequent location in which a time gesture is performed is the lateral axis (70% of the total data reported by Pagán Cánovas et al. 2020), with speakers often performing single stroke to the left when using temporal language that referred to the past (e.g., *distant past*, *earlier than*, *back in those days*) and performing a single stroke to the right when using temporal language that referred to the future (e.g., *future ahead of us*, *near future*, *later than*). There was also the possibility for speakers to produce a co-speech gesture when talking about the duration of an event (e.g., *from start to finish*, *during the debate*), producing a two-stroke gesture that signaled two points in space, locating the beginning and the end of the event.

Quantitative and qualitative gesture research, as well as psycholinguistic experiments, point at the same direction: English speakers' gestures locate the past on the left/behind and the future on the right/in front of them, often employing a single stroke. But in some occasions, speakers need to express a more complex temporal idea, or add another dimension to the temporal construal that is not possible with a conventional temporal gesture. In these occasions, speakers often employ highly creative gestures, that sometimes deviate from the patterns and features that were thought to be core to their meaning.

2. Creativity in (temporal) gestures

What does it mean for a gesture to be creative? Cienki and Mittelberg (2013: 231–233) argue that creative gestures are characterized by “being used for a particular purpose” and “[being] more effortful” in comparison to other co-speech gestures. That is, a creative gesture would present a different function and/or a different form from its non-creative counterparts. These differences in form are usually presented with the use of greater dynamicity in the gesture realizations, with gestures presenting a higher degree of movement; the use of a more extensive gesture space, with gestures being produced beyond the shoulder-with or above the neck; and the coordination with other embodied aspects of production, with co-speech gesture being accompanied by other bodily movements, such as torso rotation, facial gestures or head tilting (Cienki and Mittelberg 2013).

Concerning the function of creative gestures, Cienki and Mittelberg (2013: 241–248) observe that creative gestures can also be used to “elaborate an idea over an extended stretch of discourse”. They argue that one of the most common ways to

achieve this is through the use of catchments, a term adopted by McNeill (2005) to refer to the recurrent use of the same gestural form over a portion of the speaker's discourse. Another function attributed to creative gesture realization is the synthesis of ideas conveyed by the speech, by which the speaker can employ the manual gestures as a material anchor for quickly conveying complex ideas (Cienki and Mittelberg 2013; Parrill and Sweetser 2004; Williams 2008). This would be often seen with the use of metonymy, metaphor or conceptual blending. The final function detected by Cienki and Muller (2013) on creative gestures was that they could also reflect the speaker's attitude towards the accompanying speech. This could be achieved by the inclusion of facial gestures, exaggerated movements or the inclusion of other body parts (Cienki and Muller 2013).

Taking this criterion as a starting point, I consider creative temporal gestures those realizations that deviate in either any of the formal (e.g. direction, distance, dynamicity) or functional (e.g. elaboration, speaker's attitude) gesture features from the more prototypical co-speech gestures discussed in 2.2.

The dataset employed in this chapter is part of an already existing temporal gesture dataset (Alcaraz 2019; Pagán et al. 2020; Valenzuela et al. 2020). This database includes around 1600 video clips of temporal co-speech gestures from American television news programs. These clips were obtained from the NewsScape library, a multimodal television news archive that includes more than 350,000 television news programs and more than 500,000 hours of television from 2004 up until the present day, created by the Red Hen Lab, co-directed by Francis Steen and Mark Turner. The communicative contexts present in these video clips include conversations between two people (interviewer and interviewee), discussions over an open table (with two or more interlocutors), as well as communication to the audience through the camera (news anchors and weather forecast presenters).

2.1 Creation and manipulation of imaginary timelines

The first set of examples of creative temporal co-speech gestures that I discuss have in common the *ad hoc* creation of imaginary timelines as well as their manipulation. The two temporal gesture examples I refer to are performed in synchronization with demarcative temporal expressions (e.g. *from start to finish*, *from beginning to end*), which are employed to convey the meaning of temporal duration by pinpointing the location of the start and the end of the temporal event (Figure 1; Valenzuela and Alcaraz 2020).

Temporal co-speech gestures that co-occur with demarcative expressions generally follow a left-to-right pattern, locating the start of the event on the left and the end of the event on the right. This is often represented through a single sweeping stroke that goes from left to right or a two-stroke gesture in which speakers pinpoint

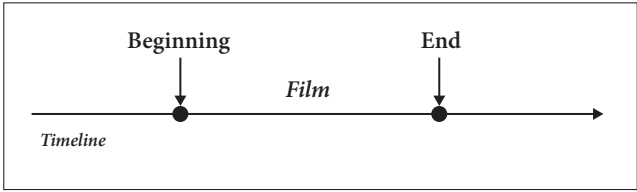


Figure 1. Mental representation of demarcative expressions

two locations in space, the *beginning* and the *end* of the temporal event (Alcaraz 2019; Pagan Cánovas et al. 2020). Through these co-speech gestures, speakers physically represent a timeline, which serves as a material anchor for the temporal construct (Hutchins 2005).

These imaginary timelines are often ephemeral, being created and dismissed within just a few seconds. However, and this is when the creative component comes into place, there are times in which the interaction with these timelines becomes “more effortful” and acquire a “particular purpose” (Cienki and Mittelberg 2013); speakers manipulate the imaginary timelines opportunistically to emphasize or further develop the temporal construal. Consider the following example in which the speaker creates and interacts with an imaginary timeline pinpointing several (temporal) locations with up to six different strokes during a time span of fifteen seconds.

- (1) I think, well, that’s the Jewish story—exactly.¹ [From genesis to revelation (P).² There are people who wrote the word of God that we honor and love under Egyptian oppression, (S1)³ Syrian oppression, (S2) Babylonian oppression, (S3) Persian oppression, (S4) Greek oppression, (S5) Roman oppression (S6)] so that their understanding of... (2008-04-26 KCET Bill Moyers Journal, extracted from the NewsScape Library).



Figure 2. Preparation (P) phase

-
1. [...] = Gesture unit
 2. P = Preparation
 3. S1 = Stroke 1, S2 = Stroke 2...

In this example, the speaker is talking about the Jewish history from a religious point of view. The first movement that he performs could be considered to be the preparation of the subsequent set of strokes he will perform and it takes place in synchrony with the structure “from genesis to revelation” (P). He moves his left hand leftwards and rests it on the table, with his palm facing inwards, while he moves his right hand rightwards with the palm in the same position, also resting on the table. Through this movement, the speaker sets the boundaries of the imaginary timeline, in which the “genesis” is located where his left hand is, while the “revelation” is located in his right hand (Figure 2).

Once the extent of the timeline is defined, he begins manipulating and interacting with it to convey further temporal information. He performs a total of six different chopping-like strokes with his left hand at different locations of the space comprehended between both hands (Figure 3), while his right hand remains stationary (S1-S5). These strokes are synchronized with speech, being performed after the speaker mentions the different civilizations’ that oppressed the Jewish community. The last stroke is performed with both hands, also with a downwards motion and keeping the handshape but adding also a slight rightwards motion (S6), extending the length of the timeline (perhaps due to the need of more space to signal the last event).



Figure 3. From top left to bottom right: S1, S2, S3, S4, S5 and S6

In addition to the hand motion, there are three moments in which the speaker’s gaze is directed towards his own gesture. The speaker’s gaze starts directed towards his interlocutor, but then it changes to his own gesture during the preparation. Then it changes again to look at his interlocutor for a brief moment to look at his own hands during the first stroke. After maintaining his gaze on his left hand during

more than four seconds, the speaker looks again to his interlocutor during strokes 2–4, and then he performs another auto fixation in stroke 4, to finally look at his interlocutor during the remaining strokes. Gaze fixation has been argued to be linked to the semantic properties of the gesture (Beattie and Shovelton 1999, 2001) or the viewpoint that the speaker is taking when performing the gesture (McNeill 1992; Beattie and Shovelton 2001). In this case, the auto fixations that take place could serve as a way to guide the interlocutors' attention towards the hand gesture, as suggested by Gulberg and Holmqvist (2002) and Beattie (2010).

This example follows the prototypical conventions of time gestures, using the lateral axis to place the start of the event on the left and its end on the right, but it stands out as a more creative gesture realizations thanks to the high levels of interaction with the imaginary timeline to further develop the temporal concept. While most of the temporal gestures are employed to signal more general concepts like the past, the future or a relation of anteriority/posteriority, the speaker creates and manipulates a timeline during fifteen seconds to set and develop the sequence of temporal events referred to in speech. This is achieved through the use of more dynamic gestures, covering a large portion of the speaker's gestural space, as well as the frequent use of catchments (McNeill 2005) within the discursive fragment. The result of this gesture realization is the creation of an imaginary graphic timeline, similar to the ones employed to visualize events through history (Davis 2012), with clearly defined temporal boundaries (set during the preparation stage) and the location of the temporal events that take place within that period through the subsequent strokes that pinpoint the location of the events in the timeline, graphically representing the succession of the events.

Another instance of interaction with imaginary timelines through co-speech gestures can be observed in Example (2). In this case, we can see a news anchor that introduces a report on a homicide case to the audience, creating an imaginary timeline but interacting with it in different ways through two different gesture units:

- (2) I want to take you through this. [As (S1) it (S2) happened (S3)] from [(P) beginning (S4) to end (S5)]. So there is this report that's been done by one of our best, Jim Acosta.
(2009-06-11 CNN Newsroom, extracted from the NewsScape library).

Two different gesture units that employ the same timeline can be observed in this example. The first gesture unit (Figure 4) presents a series of three chopping-like gestures while the speaker says "as it happened". He rises his right hand with an open palm facing inwards to the height of his shoulder, and performs the chopping motion while moving his hand to the right.

Immediately after performing the last chopping gesture, he performs the next gesture unit (Figure 5), synchronized with the temporal structure "from beginning



Figure 4. From left to right, S1, S2 and S3

to end". First, the speaker prepares the gesture by moving his right hand back to the left, to a similar location to the one in which he performed the first chopping gesture (S1). After that, he performs a sweeping gesture with a rightwards motion, maintaining the shape of the hand, until he reaches the same location of the third chopping gesture he performed during the first gesture unit. The gesture unit finishes with one last stroke, in which the speaker performs one last downward chopping gesture at the same location.



Figure 5. From left to right, P, S4 and S5

In both gesture units, the speaker locates the start of the event on the left, while the end of the event is on his right, following the canonical direction of time in English. However, the event is represented differently in each of the gestures, while maintaining the same spatial properties of the imaginary timeline in both occasions.

It could be hypothesized that these two gesture units are representing two slightly different conceptualizations of the same temporal event, the homicide. In the first gesture unit, the speaker establishes the boundaries of the timeline by locating the start and end of the timeline, while also indicating the middle with another gesture. Since the presenter wants to "take [us] through this as it happened", his hands gestures may be making reference to the different succession of events that took place. In the second gesture unit, however, he covers the extent of the timeline with a sweeping gesture, indicating its end point with another gesture, perhaps no longer indicating the individual steps; the succession of events that took place during the homicide, but rather to the whole picture *from beginning to end*. Regardless of the possible interpretations for the meaning of the gestures

the speaker performs, the imaginary timeline he creates in the air during the first gesture unit remains present to be further used for the next gesture unit. Rather than being two individual gesture units with a left to right motion, these co-speech gestures create and interact with an *ad hoc* timeline within a few seconds. The frequent use of the catchments (chopping gesture) adds up to the idea that this is a more creative realization of a temporal gesture.

2.2 Inclusion of physical items

The second group of creative time gesture realizations involve cases in which speakers include physical items to the gesture, or employ gestures to refer to physical items located in the immediate communicative context. These items, which I refer to as *props*, are often employed as physical representations of a temporal event, often by means of metonymy. Consider the following example: here an interviewee is responding to some questions regarding Steve Jobs' management as the head of Apple to the presenter sitting over a table:

- (3) They chose to go with one company, AT&T. Because they—because Steve Jobs, the head of Apple, is very famous for wanting [to control, (S1) from start (S2) to finish (S3),] the design of his products—the hardware, the software, [the whole thing (S4),] and AT&T was the company that... (2007-06-30 KCET Charlie Rose, extracted from the NewsScape Library).

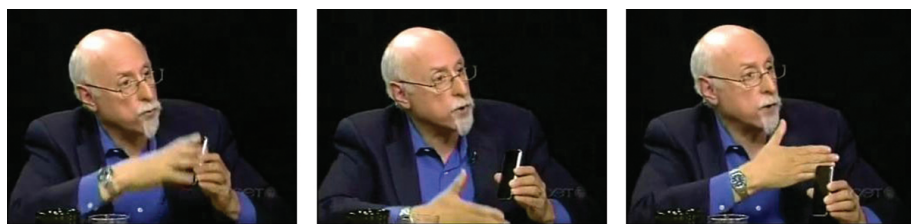


Figure 6. From left to right S1, S2 and S3

While giving this answer, the interviewee holds a mobile phone in vertical position with his left hand (Figure 6). Meanwhile, he performs several gestures with his right, free hand (mostly beat gestures), touching the mobile phone. After a few seconds, at the same time he says “control”, he performs a top-down gesture over the phone with his open right hand while rising his left hand (S1). Immediately after, he performs a series of two chopping-like gestures (S2, S3) with his right hand when uttering “from start to finish”: the first one to his right, touching the table with a downwards motion, and the second one to his left, rising his hand over the mobile phone he is still holding with his left hand.

The resulting temporal gesture presents some core differences in the gesture form from the more prototypical temporal gestures. Timeline gestures are often located along the lateral axis. However, the timeline that is represented in this example (through S2 and S3) presents is diagonal, combining the lateral and the vertical axis. Even though previous research has reported the use of mixed timelines in temporal gestures with the lateral and sagittal axes (Walker and Cooperrider 2016), the use of diagonal timelines through the combination of the vertical and the lateral axis is indeed rare. Another fundamental difference of the form of the gesture is how the conventional flow of time is modified in the gesture sequence in two different ways. First, the directionality of the time gesture, which often follows a left-to-right pattern (See Section 2.2), is reversed in this instance, locating the past events on the right of the speaker and future events on his left. Secondly, the presence of a vertical component makes the resulting timeline not to have only a right-to-left orientation, but also a down-up one, in which the start of the event is located below and the end of the event above. The result of this gesture is a diagonal timeline with a bottom-right to top-left direction.

These modifications in the form of the time gesture are likely caused by the inclusion of the physical prop (the phone) in the construal, which becomes a fundamental part of the gesture and its function. The speaker performs several gestures using the phone at several stages during this discursive section: he makes a top-down gesture when talking about the “control of the product” (S1), he uses the phone as the “finish” of the design process (S3) and he gestures over the phone when referring to “the whole thing” (S4). In all these instances the phone could be a metonymical reference to the result of the design process of the companies’ products, while the different gestures that are performed are aiming to further emphasize this idea. Moving to the sequence of temporal gestures, from “start” (S2) “to finish” (S3), the speaker first signals to an empty space on his right to indicate start of the design process, the initial phase of the production where there is no physical product. Immediately after, he gestures over the phone when mentioning the finish of the design process: the phone is employed as an anchor to signal the end of the process he is referring to. The end, the *finish* of Steve Jobs’ design is the item that he is showing. The phone is a core element physically present in the timeline that has a specific purpose: to metonymically indicate the end point of the companies’ design procedure. The inclusion of the physical prop to the temporal construal adds up to the idea that timelines are indeed extremely flexible and can be opportunistically adapted to the speaker’s needs (Pagán Cánovas and Valenzuela 2017; Alcaraz Carrión 2019; Valenzuela et al. 2020). While time gestures often follow some conventions in both axis and direction, these patterns can be easily bended if the speaker finds a good reason to do so. In this case, the presence of the physical prop on the speaker’s left hand is likely influencing the direction of the

subsequent gestures; if the phone had been held on his right hand, the resulting temporal gesture would have likely had a more conventional left-to-right direction.

In this example, the prop is included in the timeline, being physically held by the speaker. However, it is not necessary for the props to be directly included in the gesture realization. The speaker can also employ other body movements, such as pointing gestures or gaze, to fixate the attention of the interlocutor(s) towards the prop they want to include in the construal, like in the following example:

- (4) I didn't read the book, I don't know what else is in there so I don't know if it begins [from the origin (S1) of man until the future, (S2) or if it is specific to that day (S3)].
(KOCE Charlie Rose, 25-10-2012)



Figure 7. From top left to right, S1, S2 and S3

The communicative situation in this case is very similar to the one in the previous gesture, with one person being interviewed by the presenter over a table. In fact, the setting is the same, since the clip belongs to the same program (Charlie Rose), but with a different camera angle (Figure 7). In this case, the conversation is focused over the contents of a book that is on the table, close to the presenter. The speaker, the woman on the left, starts the clip by maintaining her right hand, with the palm facing upwards, directed towards the location of the book. When saying “begins”, she fixates her gaze on the book, likely to bring the interlocutors’ attention to the prop (Gulberg and Holmqvist 2002; Beatie 2010), and right after she performs a stroke with her right hand pointing at the book (S1) while saying “from the origin”.

After that, she moves her whole arm to the right, presumably keeping similar hand shape (open palm facing upwards), although this is not fully visible since the hand disappears from the camera angle, while saying “until the future” (S2). Finally, she brings her hands together with both palms facing upwards and performs several strokes in a rapid fashion pointing at the book, fixating her gaze while saying “if it is specific to that day”.

Similarly to the previous case, we find that there are several formal features in this gesture realization that differ from the more common left-to-right time gesture pattern. First, the speaker employs the sagittal axis for the first stroke of the gesture unit (S1), and then she switches to the lateral axis for the second stroke (S2). Inevitably, the directions of both strokes are also different: the first gesture being produced away-from-the-body and the second one to the right of the speaker. Rather than being a combination of both axes, it seems that the speaker is using each axis for a specific purpose. The “origin of man” is accompanied by a forward pointing gesture likely due to the location of the prop (the book), locating the past in front of the speaker, while the second part of the gesture places “the future” with a rightwards gesture, following the more common future-right pattern. The result is radically different from other standard time gestures: there is no longer a front-back/left-right contraposition of temporal periods; the gesture unit is performed according to the location of the book, which becomes the central element of the construal. Differently to the previous example, in which the prop was physically held by the speaker, this case shows how items that are present in the surroundings of the communicative exchange can also be used as material anchors for temporal construals by means of pointing or gaze fixation, modifying the common formal gesture patterns in time gestures.

In terms of function, S1 and S3 in the gesture unit are employed to refer to the book present in the table, similarly to a pointing gesture. The speaker states that she doesn’t know what time period the book covers, performing two pointing gestures when mentioning two possible temporal start points: “the origin of man” and “that specific day”. Even though the speech is making reference to two different temporal periods, she uses in both cases the same physical prop to refer to the starting point through pointing gestures. Unlike the previous cases (Examples 1, 2 and 3), in which both the start and the end of the timeline remain consistent through the construal, here the speaker is able to change the temporal reference within a second while referring to the same prop. The second stroke (S2) follows the more prototypical patterns of temporal gestures, placing the future time on the right of the speaker.

Even though further research is required, as well as a higher number of examples, it seems time gestures are not limited to the use of the hands. Speakers are also able to employ physical items or to create them *ad hoc* to incorporate them in the temporal construal. What is more, the inclusion of these elements may alter

the canonical direction of time, combining axes or even reversing the flow of time. The picture that emerges is that, even though time gestures tend to follow a specific pattern (Casasanto and Jasmin 2012; Alcaraz 2019; Pagán Cánovas et al. 2020), speakers are able to deviate from it and to opportunistically include, create and develop new elements to the construal. The deviation from the more prototypical properties of time gestures, the online inclusion of contextual elements and the clear aim of these gesture instances, give rise to creative gesture realizations that are spontaneously and purposefully employed in television communicative exchanges.

2.3 Facial expression and time gestures

Facial expressions have been reported to be tightly linked with semantic and syntactic functions present in speech (Ekman, Sorenson and Friesen 1969), as well as to foreshadow the speaker's stance (Kidwell 2013). Moreover, a large body of research discusses the key role of facial gestures in the expression of emotion (Tomkins 1962, 1963; Ekman, Sorenson, and Friesen 1969; Izard 1971; Susskind and Anderson 2008; Rives Bogart et al. 2013), as well as a plethora of experiments (to mention a few: Rinn 1984; Matsumoto et al. 2008; Rives Bogart et al. 2013; Mancini et al. 2018). These facial gestures are often interrelated with speech and other kinds of gesticulations (Busso and Shrikanth 2007; Özkul et al. 2012), so it is likely to expect that this interrelation may also take place when conveying temporal information.

The previous two sections have covered examples in which the creative component of the temporal gesture was caused by modification in their form or function due to the inclusion of props into the construal. In this third, last section, I briefly present one gesture instance that, even though it can be regarded as a conventional time gesture, is accompanied with facial expressions that elaborate and further develop the temporal gesture, adding an emotional and pragmatic component to the time construal. It is not my aim, however, to provide a detailed analysis on the emotions that could be conveyed through the facial expressions, but rather to describe these more creative gesture realizations in time conceptualization that result from the interrelation between speech, hand gesture and facial expressions.

This example places the speaker on a sofa having a conversation with three other interlocutors and, at some point, she performs a time gesture accompanied with several facial expressions:

- (5) People that did not watch him in the 80s, they didn't realize everything we see on Late night television and daytime was him (David Letterman). And we see now and people that, you know, are around now that [weren't (S1) around back (S2) in those (S3) days (S4)] don't understand how much of an influence, and each of these artist...
- (2015-05-19 CNN New Day,
extracted from the NewsScape Library).



Figure 8. From top left to bottom: Before the gesture with not facial expression, start of S1 with facial expression, end of S1 with facial expression

The speaker is talking about how influential David Letterman has been for US television through the 80s, and then she moves to discuss that younger generations that did not watch him do not understand his importance (Figure 8). She holds some documents with her left hand, which is resting on her knees, while she performs several small beat gestures close to her shoulder with her right hand while holding a pen. Just when she says “weren’t”, she performs up to four strokes in a quick succession with her right hand, extending her fingers and moving them to the left. As she performs the first stroke, she also tilts her head leftwards and performs several small movements with it to the left. Her facial expression also changes while she performs this gesture: her eyebrows change from being in resting position to being raised upwards; her eyes become wide open and she shifts her gaze from the interlocutor to the top left; and finally, she performs a grimace with her lips.

The time gesture that the speaker performs presents no special features: she performs several strokes to the left, moving almost exclusively her wrist, as well as head movements while talking about “back in those days”, being congruent with the canonical direction of time (past-left). However, this sequence of gestures is synchronized with changes in the speakers’ facial expression that, I suggest, may be adding a more complex nuance to the temporal construal. It is very difficult to provide an exact description of the emotion or stance the speaker is conveying through that facial expressions: eyebrow movement is often related to interpersonal attitudes such as dominance or superiority, negation, questioning, or regulators in the flow of conversation (Ricci Biiti 2013) and eyes are often related to emotions such as happiness, sadness or surprise (Ekman and Friesen 1969). The meaning of the facial expression is open for debate: it could try to indicate surprise, complicity

with the interlocutors, or it could even indicate that she is recalling an event related to “back in those days”, since diagonal eye movement is reported to be related to past or future oriented thinking (Haartman et al. 2014). This facial gesture could also be interpreted as a way of adding a comical remark to the statement the speaker has made. In this case, rather than an emotional component, the facial gesture would be adding a pragmatic layer (the one of humor) which co-occurs with the time hand gesture. The result of the gesture-speech-face co-occurrence would result into a very different time construal in which each semiotic component adds a different layer (with a different purpose) to the construal. The interplay between speech, gesture and facial expression give rise to a more creative realization of time gesture, adding more complex meanings that go beyond the temporal component.

3. Conclusion

Research on English time gestures has so far focused on detecting the recurrent formal patterns that characterize these gesticulations. Temporal gestures are often located on the lateral axis, and speakers usually move their hands to the left when talking about the past and to the right when referring to the future. However, there are instances in which speakers decide to deviate from this pattern or to develop more complex ideas within the time construal. In these cases, speakers employ more creative realizations of time gestures that are more effortful, involve greater dynamicity and fulfil a specific purpose. The creative time gesture realizations analyzed in this chapter are divided in three different groups: gestures that involve the *ad hoc* creation and manipulation of an imaginary timeline; gestures that include (or refer to) physical items in the immediate communicative context, often granting them a temporal meaning, and gesture realizations that are performed in synchrony with other body movements, such as facial gestures. These creative gesture realizations are employed throughout spontaneous conversations and, rather than standing out from the rest of gestures, they are integrated and combined with other gesticulation through the communicative process.

References

- Alcaraz Carrión, D. (2019). *Time gestures: Time conceptualisation in English with evidence from gestures in a multimodal corpus*. PhD dissertation, Lancaster University, UK.
<https://doi.org/10.17635/lancaster/thesis/567>
- Beattie, G., & Shovelton, H. (1999). Mapping the range of information contained in the iconic hand gestures that accompany spontaneous speech. *Journal of Language and Social Psychology*, 18(4), 438–462. <https://doi.org/10.1177/0261927X99018004005>
- Beattie, G., & Shovelton, H. (2001). An experimental investigation of the role of different types of iconic gesture in communication: A semantic feature approach. *Gesture*, 1(2), 129–149. <https://doi.org/10.1075/gest.1.2.03bea>
- Beattie, G., Webster, K., & Ross, J. (2010). The fixation and processing of the iconic gestures that accompany talk. *Journal of Language and Social Psychology*, 29(2), 194–213. <https://doi.org/10.1177/0261927X09359589>
- Bottini, R., Crepaldi, D., Casasanto, D., Crollen, V., & Collignon, O. (2015). Space and time in the sighted and blind. *Cognition*, 141, 67–72. <https://doi.org/10.1016/j.cognition.2015.04.004>
- Busso, C., & Narayanan, S. (2007). Interrelation between speech and facial gestures in emotional utterances: A single subject study. *Audio, Speech, and Language Processing*, 15, 2331–2347. <https://doi.org/10.1109/TASL.2007.905145>
- Calbris, G. (1990). *The semiotics of French gestures*. Bloomington: Indiana University Press.
- Calbris, G. (2003). From cutting an object to a clear cut analysis: Gesture as the representation of a preconceptual schema linking concrete actions to abstract notions. *Gesture*, 3(1), 19–46. <https://doi.org/10.1075/gest.3.1.03cal>
- Casasanto, D., & Bottini, R. (2010). Can mirror-reading reverse the flow of time? In T. S. Hölscher (Ed.), *Spatial cognition, vol. II* (pp. 1342–1347). Berlin Heidelberg: Springer. https://doi.org/10.1007/978-3-642-14749-4_28
- Casasanto, D., & Jasmin, K. (2012). The hands of time: Temporal gestures in English speakers. *Cognitive Linguistics*, 23(4), 643–674. <https://doi.org/10.1515/cog-2012-0020>
- Cienki, A. (1998). Metaphoric gestures and some of their relations to verbal metaphoric expressions. In J.-P. Koenig (Ed.), *Discourse and cognition: Bridging the gap* (pp. 189–204). Stanford, CA: Center for the Study of Language and Information.
- Cienki, A. (2005). Gesture and the question of literal versus non-literal reference. In B. Lewandowska-Tomaszczyk (Ed.), *The literal and nonliteral in language and thought* (pp. 281–298). Bern: Peter Lang.
- Cienki, A. (2008). Why study metaphor and gesture? In A. Cienki (Ed.), *Metaphor and gesture* (pp. 5–25) Cambridge: Cambridge University Press. <https://doi.org/10.1075/gs.3.04cie>
- Cienki, A., & Mittelberg, I. (2013). Creativity in the forms and functions of spontaneous gesture with speech. In T. Veale, K. Feyaerts & C. Forceville (Eds.), *The agile mind: Multidisciplinary study of a multifaceted phenomenon* (pp. 231–252). Berlin: Mouton de Gruyter. <https://doi.org/10.1515/9783110295290.231>
- Cooperrider, K., & Núñez, R. (2009). Across time, across the body: Transversal temporal gestures. *Gesture*, 9(2), 181–206. <https://doi.org/10.1075/gest.9.2.02coo>
- Coulson, S., & Pagán Cánovas, C. (2014). Understanding timelines: Conceptual metaphor and conceptual integration. *Journal of Cognitive Semiotics*, 1–2, 198–219.
- Davis, S. B. (2012). History on the line: Time as dimension. *Design Issues*, 28, 4–17.

- Di Bono, M., Casarotti, M., Prifitis, K., Gava, L., Umiltà, C., & Zorzi, M. (2012). Priming the mental timeline. *Journal of Experimental Psychology: Human Perception and Performance*, 38(4), 838–842.
- Ekman, P., & Friesen, W. V. (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>
- Ekman, P., Sorenson, E. R., & Friesen, W. V. (1969). Pan-cultural elements in facial displays of emotion. *Science*, 164(3875), 86–88. <https://doi.org/10.1126/science.164.3875.86>
- Emmorey, K. (2001). Space on hand: The exploitation of signing space to illustrate abstract thought. In M. Gattis (Ed.), *Spatial schemas and abstract thought* (pp. 147–174). Cambridge, MA: MIT Press.
- Engberg-Pedersen, E. (1999). Space and time. In J. Allwood & P. Gärdenfors (Eds.), *Cognitive semantics: Meaning and cognition* (pp. 131–152). Amsterdam: John Benjamins. <https://doi.org/10.1075/pbns.55.07eng>
- Evans, V. (2004). *The structure of time*. Amsterdam: John Benjamins. <https://doi.org/10.1075/hcp.12>
- Evans, V. (2013). *Language and time: A cognitive linguistics approach*. Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9781107340626>
- Floyd, S. (2016). Modally hybrid grammar?: Celestial pointing for time-of-day reference in Nheengatú. *Language*, 92(1), 31–64. <https://doi.org/10.1353/lan.2016.0013>
- Fuhrman, O., McCormick, K., Chen, E., Jiang, H., Shu, D., Mao, S., & Boroditsky, L. (2011). Cross-cultural differences in mental representations of time: Evidence from an implicit non-linguistic task. *Cognitive Science*, 35, 1305–1328. <https://doi.org/10.1111/j.1551-6709.2011.01193.x>
- Galton, A. (2011). Time flies but space does not: Limits to the spatialization of time. *Journal of Pragmatics*, 43(3), 695–703. <https://doi.org/10.1016/j.pragma.2010.07.002>
- Gu, Y. (2018). *Chinese hands of time: The effect of language and culture on temporal gestures and spatio-temporal reasoning*. Utrecht: LOT Publisher.
- Gu, Y., Mol, L., Hoetjes, M. W., & Swerts, M. G. J. (2013). What can Chinese speakers' temporal gestures reveal about their conception of time? In *Proceedings of TiGeR 2013*. Available at: <http://tiger.uvt.nl/list-of-accepted-papers.html>
- Gu, Y., Mol, L., Hoetjes, M., & Swerts, M. (2017). Conceptual and lexical effects on gestures: The case of vertical spatial metaphors for time in Chinese. *Language, Cognition and Neuroscience*, 32(8), 1048–1063. <https://doi.org/10.1080/23273798.2017.1283425>
- Gullberg, M., & Holmqvist, K. (2002). Visual attention towards gestures in face-to-face interaction vs. on screen. In I. Wachsmuth & T. Sowa (Eds.), *Gesture and sign language in human-computer interaction* (pp. 206–214). Berlin: Springer. https://doi.org/10.1007/3-540-47873-6_23
- Hartmann, M., & Mast, F. (2012). Moving along the mental time line influences the processing of future related words. *Consciousness and Cognition*, 21, 1558–1562. <https://doi.org/10.1016/j.concog.2012.06.015>
- Hartmann, M., Martarelli, C. S., Mast, F. W., & Stocker, K. (2014). Eye movements during mental time travel follow a diagonal line. *Consciousness and Cognition*, 30, 201–209. <https://doi.org/10.1016/j.concog.2014.09.007>
- Hutchins, E. (2005). Material anchors for conceptual blends. *Journal of Pragmatics*, 37, 1555–1577. <https://doi.org/10.1016/j.pragma.2004.06.008>
- Ishihara, M., Keller, P., Rossetti, Y., & Prinz, W. (2008). Horizontal spatial representations of time: Evidence for the STEARC effect. *Cortex*, 44(4), 454–461. <https://doi.org/10.1016/j.cortex.2007.08.010>
- Izard, C. E. (1971). *The face of emotion*. New York: Appleton-Century-Crofts.

- Kendon, A. (1980). Gesture and speech: Two aspects of the process of utterance. In M. R. Key (Ed.), *Nonverbal communication and language* (pp. 207–227). Berlin: Mouton de Gruyter.
- Kendon, A. (1988). How gestures can become like words. In F. Poyatos (Ed.), *Cross-cultural perspectives in nonverbal communication* (pp. 131–141). Boston: Hogrefe & Huber Publishers.
- Kendon, A. (2004). *Gesture: Visible action as utterance*. Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9780511807572>
- Kidwell, M. (2013). Framing, grounding and coordinating conversational interaction: Posture, gaze, facial expression and movement in space. 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, vol. I* (pp. 100–112). Berlin: Mouton de Gruyter. <https://doi.org/10.1515/9783110261318.100>
- Le Guen, O., & Pool Balam, L. I. (2012). No metaphorical timeline in gesture and cognition among Yucatec Mayas. *Frontiers in Psychology*, 3, 271. <https://doi.org/10.3389/fpsyg.2012.00271>
- Mancini, G., Biolcati, R., Agnoli, S., Andrei, F., & Trombini, E. (2018). Recognition of facial emotional expressions among Italian pre-adolescents, and their affective reactions. *Frontiers in Psychology*, 9, 1303. <https://doi.org/10.3389/fpsyg.2018.01303>
- Matsumoto, D., Yoo, S. H., Fontaine, J., Anguas-Wong, A., Arriola, M., Ataca, B., Bond, M., Boratav, H., Breugelmans, S., Cabecinhas, R., Chae, J., Chin, W., Comunian, A., DeGere, D., Bley, L., Djunaïdi, A., Fok, H., Friedlmeier, W., Ghosh, A. & Grossi, E. (2008). Mapping expressive differences around the world: The relationship between emotional display rules and individualism versus collectivism. *Journal of Cross-Cultural Psychology*, 39, 55–74. <https://doi.org/10.1177/0022022107311854>
- McNeill, D. (1992). *Hand and mind*. Chicago: University of Chicago Press.
- McNeill, D. (2005). *Gesture and thought*. Chicago: University of Chicago Press. <https://doi.org/10.7208/chicago/9780226514642.001.0001>
- Miles, L., Karpinska, K., Lumsden, J., & Macrae, C. N. (2010a). The meandering mind: Vection and mental time travel. *PLOS ONE*, 5(5), e10825. <https://doi.org/10.1371/journal.pone.0010825>
- Miles, L., Nind, L., & Macrae, C. (2010b). Moving through time. *Psychological Science*, 21(2), 222–223. <https://doi.org/10.1177/0956797609359333>
- Moore, K. (2000). Spatial experience and temporal metaphors in Wolof: Point of view, conceptual mappings, and linguistic practice. PhD dissertation, University of California at Berkeley, US.
- Moore, K. (2006). Space-to-time mappings and temporal concepts. *Cognitive Linguistics*, 17(2), 199–244. <https://doi.org/10.1515/COG.2006.005>
- Moore, K. (2011). Ego-perspective and field-based frames of reference: Temporal meanings of FRONT in Japanese, Wolof and Aymara. *Journal of Pragmatics*, 43(3), 759–776. <https://doi.org/10.1016/j.pragma.2010.07.003>
- Moore, K. (2014). *The spatial language of time metaphor, metonymy and frames of reference*. Amsterdam: John Benjamins. <https://doi.org/10.1075/hcp.42>
- Müller, D., & Schwarz, W. (2008). “1-2-3”: Is there a temporal number line? Evidence from a serial comparison task. *Experimental Psychology*, 55(3), 143–150. <https://doi.org/10.1027/1618-3169.55.3.143>
- Núñez, R., Cooperrider, K., Doan, D., & Wassmann, J. (2012). Contours of time: Topographic construals of past, present, and future in the Yupno valley of Papua New Guinea. *Cognition*, 124(1), 25–35. <https://doi.org/10.1016/j.cognition.2012.03.007>
- Nilsson, A. L. (2016). Embodying metaphors: Signed language interpreters at work. *Cognitive Linguistics*, 27(1), 35–65. <https://doi.org/10.1515/cog-2015-0029>

- Núñez, R., & Sweetser, E. (2006). With the future behind them: Convergent evidence from Aymara language and gesture in the crosslinguistic comparison of spatial construals of time. *Cognitive Science*, 30(3), 1–49. https://doi.org/10.1207/s15516709cog0000_62
- Ouellet, M., Santiago, J., Israeli, Z., & Gabay, S. (2010). Is future the right time? *Experimental Psychology*, 57(4), 308–314. <https://doi.org/10.1027/1618-3169/a000036>
- Özkul, S., Bozkurt, E., Asta, S., Yemez, Y., & Erzin, E. (2012). Multimodal analysis of upper-body gestures, facial expressions and speech. In L. Devillers et al. (Eds.), *Proceedings of the 4th International Workshop on Corpora for Research on Emotion Sentiment and Social Signals* (pp. 77–81). Available at: <https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.639.6777&rep=rep1&type=pdf/>
- Pagán Cánovas, C., & Valenzuela, J. (2017). Timelines and multimodal constructions: Facing new challenges. *Linguistic Vanguard*, 3(1), 20160087. <https://doi.org/10.1515/lingvan-2016-0087>
- Pagán Cánovas, C., Valenzuela, J., Alcaraz Carrión, D., Olza, I., & Ramscar, M. (2020). Quantifying the speech-gesture relation with massive multimodal datasets: Informativity in time expressions. *PLOS ONE*, 15(6), e0233892. <https://doi.org/10.1371/journal.pone.0233892>
- Parril, F., & Sweetser, E. (2004). What we mean by meaning: Conceptual integration in gesture analysis and transcription. *Gesture*, 4(2), 197–219. <https://doi.org/10.1075/gest.4.2.05par>
- Ricci Bitti, P. R. (2013). Facial expression and social interaction. 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, vol. II* (pp. 1342–1349). Berlin: Mouton de Gruyter.
- Rinn, W. (1984). The neuropsychology of facial expression: A review of the neurological and psychological mechanisms for producing facial expressions. *Psychological Bulletin*, 95(1), 52–77. <https://doi.org/10.1037/0033-2909.95.1.52>
- Rives Bogart, K., Cole, J., & Briegel, W. (2013). On the consequences of living without facial expression. 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, vol. II* (pp. 1969–1982). Berlin: Mouton de Gruyter.
- Santiago, J., Román, A., Ouellet, M., Rodríguez, N., & Pérez-Azor, P. (2008). In hindsight, life flows from left to right. *Psychological Research*, 74(1), 59–70. <https://doi.org/10.1007/s00426-008-0220-0>
- Santiago, J., Lupiáñez, J., Pérez, E., & Funes, M. (2007). Time also flies from left to right. *Psychonomic Bulletin & Review*, 14(3), 512–516. <https://doi.org/10.3758/BF03194099>
- Schermer, T., & Koolhof, C. (1990). The reality of time-lines: Aspects of tense in Sign Language of the Netherlands (SLN). In S. Prillwitz & T. Vollhaber (Eds.), *Current trends in European sign language research* (pp. 295–305). Hamburg: Signum.
- Stanzione, C., Perez, S. M., & Lederberg, A. (2013). Assessing aspects of creativity in deaf and hearing high school students, *The Journal of Deaf Studies and Deaf Education*, 18(2), 228–241. <https://doi.org/10.1093/deafed/enso43>
- Susskind, J. M., & Anderson, A. K. (2008). Facial expression form and function. *Communicative & Integrative Biology*, 1(2), 148–149. <https://doi.org/10.4161/cib.1.2.6999>
- Sutton-Spence, R. (2017). Constructing visual images in creative sign language in solo and collaborative performance: Space and embodiment. *African Studies*, 76(3), 360–380. <https://doi.org/10.1080/00020184.2017.1346346>
- Tomkins, S. S. (1962). *Affect, imagery, consciousness, vol. I: The positive affects*. New York: Springer.
- Tompkins, S. S. (1963). *Affect, imagery, consciousness, vol. II: The negative affects*. New York: Springer.

- Torralbo, A., Santiago, J., & Lupáñez, J. (2006). Flexible conceptual projection of time onto spatial frames of reference. *Cognitive Science*, 30(4), 745–757.
https://doi.org/10.1207/s15516709cog0000_67
- Tversky, B., Kugelmass, S., & Winter, A. (1991). Cross-cultural and developmental trends in graphic productions. *Cognitive Psychology*, 23 (4), 515–557.
[https://doi.org/10.1016/0010-0285\(91\)90005-9](https://doi.org/10.1016/0010-0285(91)90005-9)
- Valenzuela, J., & Alcaraz Carrión, D. (2020). Temporal expressions in English and Spanish: Influence of typology and metaphorical construal. *Frontiers in Psychology*, 11, 543933.
<https://doi.org/10.3389/fpsyg.2020.543933>
- Valenzuela, J., Pagán Cánovas, C., Olza, I., & Alcaraz Carrión, D. (2020). Gesturing in the wild: Spontaneous gestures co-occurring with temporal demarcative expressions provide evidence for a flexible mental timeline. *Review of Cognitive Linguistics*, 18(2), 289–316.
<https://doi.org/10.1075/rcl.00061.val>
- Vallesi, A., Binns, M., & Shallice, T. (2008). An effect of spatial-temporal association of response codes: Understanding the cognitive representations of time. *Cognition*, 107(2), 501–527. <https://doi.org/10.1016/j.cognition.2007.10.011>
- Vallesi, A., McIntosh, A., & Stuss, D. (2011). How time modulates spatial responses. *Cortex*, 47, 148–156. <https://doi.org/10.1016/j.cortex.2009.09.005>
- Walker, E., Bergen, B., & Núñez, R. (2013). Investigating spatial axis recruitment in temporal reckoning through acoustic stimuli and non-spatial responses. *UC San Diego CRL Technical Report*, 25, 1–10.
- Walker, E., Bergen, B., & Núñez, R. (2014). Disentangling spatial metaphors for time using non-spatial responses and auditory stimuli. *Metaphor & Symbol*, 29, 316–327.
<https://doi.org/10.1080/10926488.2014.948801>
- Walker, E., & Cooperrider, K. (2016). The continuity of metaphor: Evidence from temporal gestures. *Cognitive Science*, 40(2), 481–495. <https://doi.org/10.1111/cogs.12254>
- Weger, U., & Pratt, J. (2008). Time flies like an arrow: Space-time compatibility effects suggest the use of a mental timeline. *Psychonomic Bulletin & Review*, 15(2), 426–430.
<https://doi.org/10.3758/PBR.15.2.426>
- Wilcox, S. (2002). The iconic mapping of space and time in signed languages. In L. Albertazzi (Ed.), *Unfolding perceptual continua* (pp. 255–281). Amsterdam: John Benjamins.
<https://doi.org/10.1075/aicr.41.12wil>
- Williams, R. (2008). Gesture as a conceptual mapping tool. In A. Cienki & C. Müller (Eds.), *Metaphor and gesture* (pp. 55–92). Amsterdam: John Benjamins.
<https://doi.org/10.1075/gs.3.06wil>
- Zorzi, M., Bonato, M., Treccani, B., Scalabrini, G., Marenzi, R., & Priftis, K. (2012). Neglect impairs explicit access to the mental number line. *Frontiers in Human Neuro-science*, 6(125), 1–12.

Time in Chinese hands

Gesture and sign

Yan Gu

University College London / University of Essex

This chapter examines how Chinese people (Mandarin monolinguals; Mandarin-English bilinguals; deaf Chinese Sign Language (CSL) signers; Mandarin learners of CSL) use gestures and signs to creatively represent time. All groups spatialize time on the lateral, vertical, and sagittal axes, but differ in their choices of axes and directions of movements. For instance, Mandarin-English bilinguals produce more vertical time gestures in Mandarin than in English. Mandarin speakers can produce past-in-front and past-at-back gestures, whereas CSL deaf signers only exploit past-at-back signs. Mandarin learners of CSL perform more past-at-back gestures than Mandarin-speaking non-signers. In short, cultural, linguistic, and bodily experiences can jointly shape how Chinese people express time creatively in different modalities.

Keywords: bimodal bilinguals, Chinese Sign Language, Mandarin, time spatialization

1. Introduction

Humans are creative in terms of expressing time. For instance, people can use spatial representations such as old-fashioned clocks, hourglasses, calendars, or sundials to represent the abstract concept of time (e.g., Casasanto and Boroditsky 2008). In ancient China, people also took advantage of natural and biological phenomena such as the crowing of cocks and the location of the sun to track the time of a day, and they exploited water (clepsydra) and fire (duration of burning an incense stick) to estimate the temporal durations of events. Apart from such cultural inventions, languages (both spoken and signed) can powerfully express time, particularly, through spatial metaphors. For instance, people not only talk about time spatially (e.g., a *long* time; looking *back* to the *past*), but also employ gestures or signs to visually position time in space.

There is no doubt that the way people spatialize time differs across cultures and languages (e.g., Boroditsky and Gaby 2010; Bylund and Athanasopoulos 2017; Moore 2011; Sullivan and Bui 2016; see reviews by Bender and Beller 2014; Núñez and Cooperrider 2013). Take the conception of the future for instance: People with an Anglo-Saxon background typically conceptualize the future as *ahead* of them (e.g., Miles et al. 2010; Ulrich et al. 2012), whereas the Aymara and Moroccans conceptualize the future as *behind* them (Núñez and Sweetser 2006; de la Fuente et al. 2014). Additionally, the future is towards the *left* for Hebrews (Fuhrman and Boroditsky 2010), moves to the *west* direction for Pormpuraaw people (Boroditsky and Gaby 2010), goes *uphill* for Yupno speakers (Núñez et al. 2012), and can run *downwards* for Chinese (Boroditsky 2001), etc.

In this chapter, I aim to shed some light on how, among the diverse range of human space-time mapping methods, Chinese people creatively convey time in language using different modalities (speech, gesture, and sign). I focus on Chinese people's linguistic expressions of timelines, including analyses of different populations (monolinguals, bilinguals, deaf signers, and bimodal bilinguals). These analyses reveal how the Chinese culture, language, and bodily experience of signing can shape people's conceptualization of time. Specifically, I first introduce space-time metaphors created by Chinese people in Mandarin language, followed by a review of recent studies on Mandarin speakers' temporal gestures, and a discussion on whether Mandarin-English bilinguals create different gestures about time between speaking in Mandarin and English. Then, I present how time is creatively expressed in Chinese Sign Language (CSL) and compare the differences in space-time mappings between Mandarin and CSL. Finally, following the comparison, I show how the bodily experience of CSL can influence Mandarin learners of CSL's co-speech temporal gestures.

2. Mandarin space-time metaphors

Like other languages, Mandarin Chinese has spatial language to metaphorically represent time, the mappings of which can deviate from Western space-time mappings. The most well-known one is the employment of vertical spatial metaphors to indicate a timeline running from top to down. Specifically, the spatial words 上/*shàng* (literally 'up') and 下/*xià* (literally 'down') are used to express the conceptions of *early* and *late*. For example, 上上周/*shàng-shàng zhōu* (literally 'up up week') means the week before last week, while 下周/*xià zhōu* (literally 'down week') refers to next week.

Despite its fame, vertical mapping only accounts for about 23.54% to 32.8% of Mandarin space-time metaphors, whereas sagittal temporal metaphors account for the majority (according to corpus surveys, 67.2%, Chen, 2007; 76.46%, Yang and

Sun, 2017). The corpus surveyors termed sagittal temporal metaphors as *horizontal* spatial metaphors, but using the term sagittal metaphors for time is more precise as Mandarin does not have left-right space-time metaphors, and the sagittal temporal metaphors employ overt sagittal words of spatial *front* (前/*qián*) and *back* (后/*hòu*) for the conceptions of *before/past* and *after/future*.

- (1) a. 前天/*qián-tiān*,
front day
'the day before yesterday',
后天/*hòu-tiān*
back day
'the day after tomorrow'
- b. 以前/*yǐ-qián*,
to front,
'before, past',
- c. 今后/*jīn-hòu*
today back
'future'

Importantly, as shown in Example (1a–1b), these temporal expressions are not ambiguous in that they can only refer to time. Hence such Mandarin sagittal metaphors for time suggest past-in-front/future-at-back space-time mappings (termed as EARLIER-TIMES IN-FRONT-OF LATER-TIMES METAPHOR in Xiao et al. 2018, and Yu 2012).

By contrast, the use of 前/*qián* (*front*) to express *future* and 后/*hòu* (*back*) to express *past* in Mandarin is rather rare.¹ According to a corpus survey (Peng 2012), in modern Chinese only 2.75% of the temporal use of 后/*hòu* refers to *early/before*. In ancient Chinese (before Late Middle Chinese), 前/*qián* (*front*) was only used to express the concept of *past* and 后/*hòu* (*back*) was only used to express the concept of *future* (Xu 2016).

Nevertheless, Mandarin does not exclusively use lexical cues to associate past with front, but also has the option to use words that suggest that the future is in front, and is similar to speakers of other future-in-front languages in this way (e.g., English: The future is *ahead* and the past is *behind*). As shown in Example (2), the Mandarin temporal expressions 过去/*guò qù* ('pass go', past) and 未/将来/*wèi/jiāng lái* ('hasn't come yet/will come', future) are also commonly used to convey the conception of the past and future. These metaphors suggest future-in-front/past-at-back mappings (Xiao et al. 2018; Yu 2012).

1. When 前/*qián* (*front*) is used in the word 前途/*qián-tú* (literally 'front path', meaning future career), it is metaphorically regarded as an expression for the conception of future.

- (2) a. 展/*zhǎn* 望/*wàng* 未/*wèi* 来/*lái*
 unfold gaze-into-distance hasn't come
 'Looking far ahead/into the future.'
- b. 回/*huí* 首/*shǒu* 过/*guò* 去/*qù*
 turn-around head pass go
 'Looking back to the past.'

3. Time in Chinese gestures

3.1 Temporal gestures in Mandarin monolinguals

When talking about time, speakers often produce temporal gestures, in which temporal references are made along the body's sagittal/vertical/lateral axes (e.g., Casasanto and Jasmin 2012; Cienki 1998; Cooperrider and Núñez 2009). The idea of using gesture to represent time is in line with the embodied cognition theory, which proposes that conceptual representations are largely grounded in sensorimotor experiences (Glenberg and Kaschak 2002), and that representations are activated and often instantiated in the forms of gestures (Hostetter and Alibali 2008). In other words, the way in which one thinks of time in space may be revealed by their gestural representation. There are an increasing number of studies on the relationship between speakers' gestures and their spatialization of time (e.g., Bostan et al. 2016; Bylund et al. 2020; Li 2018; Pagán-Cánovas et al. 2020; Walker and Cooperrider 2016), showing that the way people gesture about time may be vastly different across cultures and languages (e.g., Floyd 2016; Kita et al. 2001; Le Guen and Pool Balam 2012; Núñez et al. 2012; Rodríguez 2019; Sullivan and Bui 2016; Valenzuela and Alcaraz 2020).

It has been shown that Mandarin speakers can use gestures to metaphorically represent time laterally, vertically, and sagittally (Chui 2011, 2018; Gu et al. 2013, 2017, 2019a; Li 2018). Among the three axes, a large proportion (about 50%–60%) of temporal gestures used by Mandarin speakers are produced on the lateral axis (PAST IS LEFT; FUTURE IS RIGHT), whereas only about 26%–30% are produced on the vertical axis (PAST IS UP; FUTURE IS DOWN) and 12.5%–20.5% are produced on the sagittal axis (PAST IS FRONT/BACK; FUTURE IS BACK/FRONT, Gu et al. 2013, 2019a; Li 2018).

Note that there is no lateral space-time metaphor in Mandarin spoken language, and the past-to-left/future-to-right space-time mappings are mostly influenced by the left-to-right writing direction. Interestingly, this influence is so strong that Mandarin speakers may gesture laterally even when they are sometimes verbally speaking sagittal space-time metaphors. As a result, despite Mandarin sagittal

space-time metaphors being widely used in the expression of time, the proportion of sagittal gestures by Mandarin speakers is rather small. Thus, there is a disassociation between temporal language and temporal gestures (Casasanto 2016).

Li (2018) described that, on the sagittal axis, Mandarin speakers overall tend to gesture according to the future/later-in-front mappings, which also seems to suggest a mismatch between sagittal gestures and temporal language (but the study did not consider the linguistic wordings accompanying the sagittal gestures). A possible account proposed for such a dissociation is people's cultural attitudes toward time. According to the *Temporal-focus Hypothesis* (de la Fuente et al. 2014), Moroccan Arabic speakers, who place more value on tradition, are more past-focused and tend to gesture the past as *ahead* of and the future as *behind* them, even though their language only has future-in-front mappings. Chinese people are found to be slightly future-focused (Gu et al. 2019b) and their general preference of future-in-front gestural mappings may be due to their cultural temporal focus.

Nevertheless, there is also evidence showing that Mandarin vertical and sagittal metaphors for time can in fact influence speakers' temporal gestures. For instance, Gu et al. (2019a) set up an experiment to study Mandarin speakers' co-speech temporal gestures, in which lexical choices of Mandarin time expressions were elicited in three types. Specifically, the authors compared Mandarin speakers' gestures when they spoke vertical spatial metaphors (e.g., 上周/*shàng zhōu*, literally 'above week', meaning last week) or sagittal spatial metaphors for time (前天/*qián-tiān*, literally 'front day', meaning the day before yesterday) with gestures from when they spoke neutral temporal words that did not contain any spatial metaphor (e.g., 昨天/*zuó-tiān*, meaning yesterday). The results of their regression analysis showed that the concurrent temporal words influenced Mandarin speakers' choice of axis for temporal gestures. Mandarin speakers were significantly more likely to produce vertical temporal gestures when uttering vertical spatial metaphors for time, and more likely to produce sagittal temporal gestures when uttering sagittal spatial metaphors for time, in comparison to when uttering neutral temporal words.

On the sagittal axis (about 20.5% of whole temporal gestures), Mandarin speakers produce both future-in-front/past-at-back (50.96%) and future-at-back/past-in-front (49.04%) temporal gestures. Despite this, the movement direction of sagittal temporal gestures is also affected by the Mandarin past-in-front/future-at-back space-time metaphors. For example, the majority of the sagittal gestures were past-in-front/future-at-back (70.83%) when Mandarin speakers were uttering overt past-in-front/future-at-back temporal words, whereas the proportion was significantly lower (30.36%) when they were speaking other temporal words (Gu et al., 2019b). In short, space-time metaphors have an immediate impact on speakers' creation of temporal gestures.

In addition to studying the spontaneous temporal gestures that are ecologically more valid and efficient, researchers have also investigated Mandarin speakers' forced pointing gestures (e.g., participants were asked explicitly by the experimenters to deliberately point in space to indicate the concept of *future*, *last week*, or *yesterday*, etc.). Unsurprisingly, Mandarin speakers still gesture on 3D timelines, but the use of such temporal gestures is more congruent with the concurrent temporal expressions than with spontaneous co-speech gestures (Lai and Boroditsky 2013; Fuhrman et al. 2011; Li 2018). For example, 80% and 83.3% of the deliberate gestures on the vertical and sagittal axes were congruent with the axis mappings suggested by the linguistic metaphors (Li 2018).

Apart from looking at Mandarin monolinguals' spontaneous or forced pointing gestures, researchers have also made a comparison between two languages, e.g. by exploring the gestural expression of time in Mandarin and English by bilinguals. Such research has focused on the vertical timeline. Below I present how Mandarin-English bilinguals creatively express time in two languages.

3.2 Do Mandarin-English bilingual speakers gesture about time differently in Mandarin and English?

A growing body of evidence from behavioral experiments (e.g., Boroditsky 2001; Yang and Sun 2016), co-speech gesture (Gu et al. 2017) and eye movements (Zheng, et al. 2020) has shown that Mandarin speakers have a different vertical conceptualization of time than English speakers. Specifically, Mandarin speakers can often think of time vertically, with the *past above* and *future below*.² Compared to Mandarin speakers, English speakers think of time vertically less often, and the mental orientation of the vertical timeline of English speakers is usually realized as one whereby the FUTURE IS UP and the PAST IS DOWN (e.g., Boroditsky 2001; Fuhrman et al. 2011; Hendricks and Boroditsky 2017).

2. Xiao et al. (2018) reported results that showed a possibility of the reversed pattern for Mandarin speakers, with *up* for the *future* and *down* for the *past*. However, their results may be interpreted in a different way as the stimuli used in their study can be considered biased. For example, the stimuli of past concepts were mostly related to a person's stage of being an infant/child, and the stimuli of the future were mostly about being an adult/old person. These stimuli had a conceptual mapping that LESS (length, age, number) IS DOWN, and MORE IS UP (Lakoff and Johnson 1980). Additionally, there were vertical spatial metaphors in the stimuli of *past* concepts such as 呱呱坠地/*gū gū zhuì dì* (literally, 'crying and falling to the ground', meaning delivery of new-borns) that suggested a downward motion. Thus, it is difficult to tell in their study whether the vertical mappings that PAST IS DOWN are due to the conceptualization of time or to some other imagistic thinking or number-space mapping.

Unlike Mandarin, the use of vertical spatial metaphor for time in English is neither prevalent nor systematic (e.g., Boroditsky 2001; Casasanto 2016; Lakoff and Johnson 1980). For example, English rarely has vertical spatial metaphors with a mapping of LATE/FUTURE IS DOWN apart from cases like the house has been handed down from generation to generation, implying that the younger generation is below the old. Additionally, English speakers can say the *upcoming week* (suggesting a mapping in which the FUTURE IS UP), but it is not grammatical to say the *downcoming week*.

Given that time conceptions with Mandarin vertical spatial metaphors have different, non-vertical, lexical correlates in English (e.g., above week in Mandarin, last week in English), if the choice of language influences speakers' vertical conceptualization, one would expect Mandarin-English speakers to gesture more vertically when speaking Mandarin than English, especially for words with a lexical trigger in Mandarin. Alternatively, if it is the case that Mandarin speakers have a long-lasting (habitual) vertical thinking of time (regardless of being shaped by the cultural vertical writing direction or the vertical space-time metaphors), one would assume that they can also gesture about time vertically, irrespective of whether they speak English or Mandarin.

To test these hypotheses, Gu et al. (2017) have investigated how lexical choices of vertical spatial metaphors affected Mandarin-English late bilinguals' production and perception of gestures in Mandarin and English. In an experiment that was ostensibly set up as a test of speakers' short-term memory and addressees' long-term memory, Mandarin-English bilinguals were asked to remember each word list shortly after they had seen them twice, then to tell and explain the words as explicitly as possible to addressees who were told to "remember as many descriptions of the speaker as possible for a later memory test". Several of the wordlists were time expressions consisting of vertical spatial metaphors or neutral words (without containing any spatial metaphors). All participants took part twice in the experiment, once in Mandarin and once in English (counterbalancing sequences) with an interval of ten days between tests. Gestures were not mentioned at any moment.

It was found that Mandarin-English late bilinguals produced vertical temporal gestures spontaneously, both in Mandarin and in English. The between-language comparisons showed that the bilinguals produced more vertical gestures when talking about Mandarin time conceptions with vertical spatial metaphors than when talking about time conceptions in the corresponding English translations (no spatial lexicons) whereas the number of vertical gestures for the neutral time expressions (e.g., yesterday) was not different between the two languages. For example, Gu et al. (2017) provided an example of the same participant who produced vertical gestures for time expressions of *last week* and *next week* in Chinese but produced lateral gestures for *yesterday* and *tomorrow* in Chinese and for *last week* and *next week* in English (Figure 1).

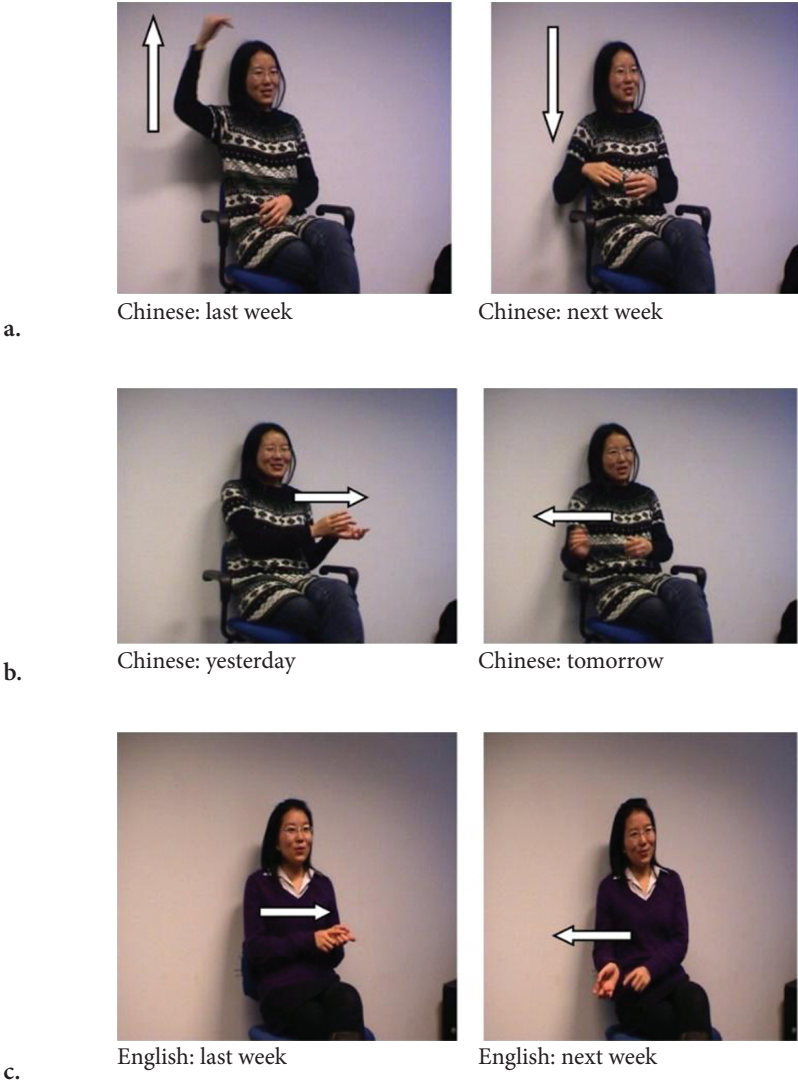


Figure 1. Gestures of *last week* and *next week* in Chinese, and *yesterday* and *tomorrow* in Chinese, and *last week* and *next week* in English by the same participant (reprinted from Gu et al. 2017)

Furthermore, in a gesture perception study, Gu et al. (2017) examined whether Mandarin-English bilingual observers prefer vertical gestures for phrases with explicit vertical spatial metaphors (e.g., 上周/*shàng-zhōu*, last week) over vertical gestures for neutral time expressions that do not have such an explicit spatial indicator (e.g., 昨天/*zuó-tiān*, yesterday), and additionally whether there would be

perceptual differences in that respect between Mandarin and English (e.g., 上周(literally ‘up week’) vs. last week, 昨天(literally ‘yesterday’) vs. yesterday). Participants were provided with a number of silent clips (not necessarily about time) in which an actor was performing gestures, each accompanied with a text instruction above the clip. For instance, a sentence was shown as “[t]he person is asked to perform body language that indicates the time directions of *last week* and *next week* symbolically”. The clip below the sentence showed the actor who first pointed to his left side and then to the right side (lateral gesture plane) or, in a counterbalanced version, pointed upward and downward (vertical gesture plane) to indicate the time conceptions of *last week* and *next week*. Participants were asked to judge the extent to which the gestures in the clip expressed the instruction correctly. Late Mandarin-English bilinguals did the tasks once in Mandarin and once in English with an interval of a week. It was shown that they preferred vertical gestures to lateral gestures when perceiving time references with vertical spatial metaphors. This bias towards vertical gestures still existed when they perceived the corresponding English translations of Mandarin vertical space-time metaphors, but to a significantly lesser extent. Nevertheless, there was no such bias towards vertical gestures when they perceived time references without spatial metaphors.

In short, with a comparison between Mandarin and English, bilinguals produced and perceived temporal gestures differently in the vertical time expressions but not in the neutral time expressions. The parallel between the production and perception data seems to suggest that in addition to the habitual time conceptualization, the online linguistic encoding possibilities of time conceptions also have an influence on the production and perception of temporal gestures.

So far, I have discussed the creativity of time in spoken languages and gestures in Mandarin speakers. However, users of a signed language can create different ways of expressing time, which I present in the remainder of the chapter.

4. Time in Chinese Sign Language

4.1 Temporal expressions in CSL

Similar to gestures, it is visible that sign languages make use of space to express time (e.g., Nilsson 2016; Wilcox 2002), but with more creativity in terms of using space and body. Various elements such as lexical items, specific markers (e.g., not yet, finished), pointings, hand holds, or non-manual behavior (e.g., facial expressions; body movements) can be used to express time in sign languages, and the metaphorical representation of time, as timelines is an unavoidable starting point in any description of temporal marking (Sinte 2013).

Unlike spoken languages/gestures, there are many timelines in most sign languages; e.g., Danish Sign Language has four timelines (Engberg-Pedersen 1999) and Dutch Sign Language has five timelines (Schermer and Koolhof 1990). The sequence and deictic timelines are some of the concepts suggested for certain directions in space used to convey time in signed languages. In American Sign Language (ASL), for instance, the sequential timeline can be parallel to signers' body and extends laterally, representing earlier to later time periods, and it can also be used when signers refer to a sequence of ordered events (Emmorey 2001). The deictic use of the back-to-front-timeline to refer to past, present, and future was first found in ASL and has also been described for many other sign languages such as British Sign Language (Brennan 1983), French Sign Language (Maeder and Loncke 1996), and Spanish Sign language (Cabeza Pereiro and Fernández Soneira 2004) (see a review in Sinte 2013).

Research on temporal expressions in Chinese Sign Language (CSL),³ however, is very limited. Zheng (2009) made the first attempt by interviewing four deaf signers about temporal signs, based on which she described that CSL deaf signers could employ the sagittal (future-in-front/past-at-back), vertical (future-to-down/past-to-up) and lateral (earlier-to-left/later-to-right) timelines. Nevertheless, the big variations among the small number of deaf signers made it hard to draw a clear conclusion. Additionally, Wu and Li (2012) surveyed temporal expressions in a CSL dictionary, and also identified these three timelines but claimed that the conception of PAST/FUTURE time at the lateral timeline can be either mapped to the left or right, though the past-to-right/future-to-left mappings appear more frequently. However, such observations are completely based on several CSL words in citation forms in the standardized dictionary, which are not representative of the natural sign language used by Chinese deaf signers.

Recently, Lin and Gu (submitted) reported the first systematic investigation on temporal expressions in CSL based on a naturalistic corpus. The study looked into more than 2000 temporal expressions totally produced by 72 deaf signers when they were interacting freely with other deaf people. The results showed that time in CSL can be creatively expressed using a part of the body, iconicity, numeral incorporation, and timeline-based signs. For example, MORNING, NOON and AFTERNOON are expressed by touching the chin in different ways, and days of the week are expressed by a dominant arm extension near the armpit with number fingers (except for SUNDAY, which is a fake catching on the nose). The conception of TIME/HOUR and the

3. In addition to the Tibet Sign Language, CSL primarily has the northern (Beijing) and southern (Shanghai) variations, which sometimes can be mutually unintelligible (Fischer and Gong 2010). CSL has now been accepted by the general public, and is widely used in education, on television and by interpreters in China (Yang 2015).

four seasons are expressed with iconicity (e.g., the sign for TIME/HOUR imitates the shape of the watch or clock; SPRING is represented by signing a breeze through the face). The calendar time is simply expressed by finger numbers such as 1-9-8-6. The sequence of events or age order can be represented by the use of points-to-fingers (e.g. pointing to the thumb for first, index for second, or little fingers for finally), each of the points-to-finger formed the temporal connectives in CSL and could be patterned to put a conversation in order (Lin and Gu 2022). Additionally, deictic time such as PAST, NOW and FUTURE, as well as time adverbials (e.g., JUST, ALWAYS, AGO) are realized through timelines. The corpus study found that sagittal, vertical, and lateral timelines account for the largest part of time expressions in CSL.

Interestingly, the creativity of expressing time is also evident in the distribution of timeline signs. Lin and Gu (submitted) discovered that there is a surprisingly asymmetric distribution of space-time mappings on each axis. Specifically, CSL only has past-to-backward but few future-to-forward mappings, only has future-to-downward but rare past-to-upward mappings, and on the lateral axis there are mostly future-to-left but few past-to-right mappings. Such timeline patterns are different from what has been reported in the previous case study or dictionary survey of CSL (cf. Wu and Li 2012; Zheng 2009), and deviate from the symmetric distribution of timelines in spoken Mandarin and gestures. Such deviation is also found in the frequency of using each axis, i.e., CSL signers most often use the sagittal axis for past concepts whereas they mainly use the vertical axis for future concepts. The lateral axis is used the least in CSL.

Furthermore, the creativity of CSL timelines is shown in the temporal movement direction in that CSL seems to have different temporal movement directions than Mandarin speech and gesture. On the sagittal axis, Mandarin speech and gestures have both past-in-front and past-at-back mappings whereas CSL only exploits the past-at-back mappings. Specifically, CSL has two types of sagittal temporal signs to express the conception of past. Firstly, it can be signed toward the back of the right shoulder (Figure 2a), thus indicating past-at-back mappings. Secondly, a sign of a person-classifier (A handshape formed by both hands) is located in a neutral space near a signer as a time reference point, and then the dominant hand is drawn back (Figure 2b). The back of the person-classifier is symbolized as the past. Although this type of sign for PAST is located in front of a signer, the concept of earlier/before is always signed behind the time reference point, which makes it remarkably different from the Mandarin earlier/past-in-front mappings.



Figure 2. Two types of temporal signs to express the conception of PAST in CSL

Additionally, on the lateral axis, despite it being observed that young CSL users may have some past-to-left mappings that are influenced by the literacy and writing direction, most deaf CSL users produce signs with future-to-left mappings which are opposite in direction compared to Mandarin temporal gestures (future-to-right). Such future-to-left mappings in CSL are mostly shaped by the frequent forms of TILL, DAY, and LIVING that start from the right side to the left side. Interestingly, such a dominant direction (right to left) will be mirrored (left to right) if the concepts are signed with the left hand (e.g. for left-handed signers, Lin and Gu, submitted).

In short, Mandarin speakers use gestures to represent time laterally, vertically, and sagittally, and CSL users also creatively exploit signs for this purpose but can differ from Mandarin speech and gestures on sagittal and lateral axes. Therefore, it is interesting to investigate the temporal gestures by Mandarin speakers who have sign language experience (Mandarin-CSL bimodal bilinguals), as they share a similar Chinese culture to non-signers but have acquired CSL which exploits different TIME-SPACE mappings than Mandarin.

4.2 Does bodily experience of CSL influence Mandarin speakers' co-speech temporal gestures?

Previous research suggests that gestures and signs stem from the same manual articulation system, and that there is an interaction between a signed language production system and the co-speech gesture production system (Brentari et al. 2012; Emmorey et al. 2008). For instance, the acquisition of a sign language as a second language may affect the production of co-speech gestures or facial expressions when bimodal bilinguals speak in their first language (Pyers and Emmorey 2008). Additionally, studies have shown that American Sign Language (ASL)-English bilinguals may have a higher co-speech iconic gesture rate than English non-signers (Casey and Emmorey 2009; Casey et al. 2012; Weisberg et al. 2020).

Given that Mandarin speakers gesture most frequently on the lateral axis, whereas signers use the lateral axis the least, and given that Mandarin temporal gestures and CSL temporal signs can have different timeline directions both on the sagittal and lateral axes, if gesture production and sign production systems are interconnected (e.g. Emmorey et al. 2008) in a way that Mandarin-CSL bimodal bilinguals are accustomed to performing manual movements in certain axes or directions, bimodal bilinguals are expected to have more sagittal and vertical temporal gestures but fewer lateral temporal gestures than Mandarin speakers who are non-signers. Additionally, focusing on the timeline direction at the sagittal and lateral axis, Mandarin-CSL bilinguals are expected to have fewer past-in-front/future-at-back and past-to-left/future-to-right gestural mappings than Mandarin-speaking non-signers.

To this end, Gu et al. (2019b) have investigated the effects of CSL on Mandarin speakers' temporal gestures by comparing spontaneous temporal gestures of late bimodal bilinguals (Mandarin learners of CSL) and non-signing Mandarin speakers. Participants' spontaneous gestures were elicited via a wordlist definition task in which they had to explain a number of words (including temporal expressions) to non-signing addressees (same as the production of gesture experiment in Gu et al. 2017). Indeed, the results showed that first late bimodal bilinguals displayed a different distribution of temporal gestures on the three axes than the non-signers. For instance, bimodal bilinguals were significantly less likely to produce lateral temporal gestures (29.72% vs. 48.72%) whereas they tended to produce more sagittal ones (37.26% vs. 20.51%) than the non-signers.

As for the timeline direction on the sagittal axis, late bimodal bilinguals were less likely to produce past-in-front/future-at-back temporal gestures than the non-signers (16.48% vs. 49.04%). When uttering Mandarin past-in-front metaphors (e.g. 前天/*qián-tiān*, literally 'front day', meaning the day before yesterday),

72.34% of the sagittal temporal gestures by Mandarin-speaking non-signers were the past-in-front temporal gestures, whereas the proportion by late bimodal bilinguals was only 22.22% and the majority of sagittal temporal gestures were instead produced according to the future-in-front mapping (77.78%). Thus, late bimodal bilinguals produced a different direction of sagittal gestures than non-signers even when both groups were uttering the same overt past-in-front space-time metaphors in their first language (as shown in Figure 3).

On the assumption that spontaneous gesture is a visible embodiment of cognition (Hostetter and Alibali 2008) that provides a window into people’s mental space-time mapping (e.g., Casasanto and Jasmin 2012; Cienki 1998; Núñez and Sweetser 2006; Walker and Cooperrider 2016), the authors claim that bodily



Figure 3. Spontaneous gestures of *this year*, *last year* and *the year before last year* in Mandarin by a Mandarin-speaking non-signer (top), and gestures of *the year before last year*, and *the year after next year* in Mandarin by a late Mandarin-CSL bimodal bilingual (bottom). Figure reprinted from Gu (2018)

experience of sign language can not only impact the nature of co-speech gestures, but also spatio-motoric thinking and abstract space-time mappings. The claim has been further supported by a recent study on Chinese deaf participants (Gu et al., submitted). When Chinese deaf signers were presented with the 3D temporal diagram shown in Figure 4 (adapted from de la Fuente et al. 2014), they were asked to place a *future* and a *past* event in one of the two boxes, either in *front* or *behind* the character (the task was done once in CSL and once in Mandarin print). Given that previous research suggests that people's sagittal space-time mappings are also influenced by their cultural attitudes toward time (e.g. Callizo-Romero et al. 2020; de la Fuente et al. 2014; Li and Cao 2018), participants' values towards time were also collected. The results showed that irrespective of whether the instruction language of the task was in CSL or Mandarin, deaf signers were significantly more likely to place the *future* event in the *front* box compared to Mandarin speakers, while controlling for their values toward time. Furthermore, the study showed that deaf signers' age of acquisition of CSL and CSL proficiency levels are significant predictors of their sagittal space-time mappings, indicating that bodily experience of CSL timelines does have an influence on their conceptualization of time.

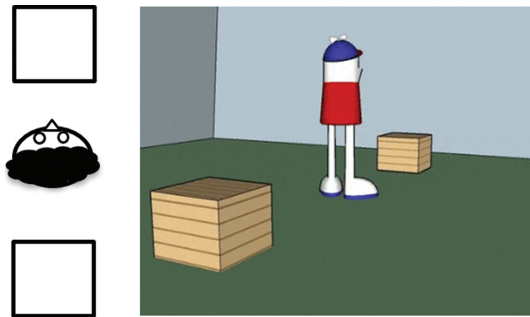


Figure 4. Left: Schematic illustration of de la Fuente et al. (2014)'s temporal diagram task. Right: A still picture from the 3D animated video of Experiment 1 in Gu et al. (submitted)

Finally, it needs to be pointed out that these studies on deaf or hearing signers have mostly focused on the sagittal axis and have not looked into the lateral timeline direction. Especially since CSL has mainly future-to-left mappings but deaf CSL signers also have the left-right reading direction (future-to-right mappings), it is worth further investigating whether Chinese deaf signers have a different lateral conceptualization of time than Chinese non-signers and how the acquisition of CSL influences a signer's mental space-time mappings.

5. What shapes the creation of time in Chinese hands?

5.1 The creativity of vertical space-time mappings

There is no doubt that Chinese people can talk, gesture and sign about time vertically. However, what remains controversial is the reason why they conceptualize time vertically (see a review by Chen and O'Seaghdha 2013). On the one hand, it has been found that the Chinese vertical writing direction in the old days can shape Mandarin speakers' vertical thinking (Bergen and Chan Lau 2012; Chen et al. 2015; Chen 2007; Fuhrman et al. 2011). For instance, vertical writing has been widely found in the bronze inscription on ancient antiques in China. The bronze inscription was one of the most historic writings found in Chinese history (in Shāng Dynasty, about 1200 B. C.; Boltz 2000). The texts were inscribed vertically inside or outside a bronze tripod. Gu (2018) speculated that the ancient vertical writing practice may have been shaped by the convenience of inscribing and reading the Chinese characters. If the texts were inscribed laterally, the inscriber and reader would have to keep on walking around the large and heavy bronze objects while inscribing and reading each line of the texts, which in practice would be comparatively less convenient and efficient than inscribing vertically where the writer/reader could just stand still. The tradition of vertical writing and reading may have been preserved and passed down to the ancient Chinese people who began to write on bamboo sticks (China has the largest area of bamboo around the world, and it was a custom that ancient Chinese often wrote on bamboo. Europe and Western America originally did not have bamboo; Kang and Hu 2011). In the long run, the practice of vertical writing and reading may have influenced Chinese people's vertical temporal thinking.

On the other hand, the Mandarin language itself has also been claimed to be responsible for the vertical space-time mappings (Boroditsky 2001; Fuhrman et al. 2011; Lai and Boroditsky 2013). For example, the employment of Mandarin vertical spatial metaphors to express time has been used as a basis for proposals that suggest that these habitual speech patterns may influence thinking online, during linguistic processing. When speakers use certain speech patterns repeatedly, they may form habitual language-specific conceptual schemas (e.g., Boroditsky 2001; Slobin 1996). For Mandarin speakers, the use of vertical spatial metaphors for time may provide them a way of thinking about time vertically.

5.2 The creativity of asymmetric space-time mappings in CSL

Despite CSL also employing 3D timelines to express time, it is unclear why its pattern is so different from Mandarin speech and gestures given that CSL signers and Mandarin speakers share the same Chinese culture. Lin and Gu (submitted) propose an explanation that the ultimate outcome of signing a timeline is a result of interactions between culture, language, and modality experience. For instance, it is understandable that CSL can have a vertical timeline as CSL signers are exposed to the Chinese vertical writing culture. Interestingly, Lin and Gu also find that the space-time mappings in CSL change over generations. Although older signers may sign time with PAST IS UP mappings, younger signers no longer perform such signs.

Additionally, certain signs such as PAST IS BACKWARD or FUTURE IS DOWN have been grammaticalized, thus excluding the need for using an additional sign to map PAST IS UP or FUTURE IS FORWARD. Furthermore, unlike spoken Mandarin, CSL cannot have both PAST IS FORWARD and PAST IS BACKWARD mappings because such opposite mappings on the same timeline for the same concept may lead to an ambiguity in the visual modality of language. In short, culture, language contacts, and modality constraints may have jointly influenced the creativity of CSL timelines.

6. Summary and conclusions

Chinese people use vertical, sagittal, and lateral timelines, and the use of certain timelines can be influenced by the culture such as the vertical and lateral writing direction. Within the Chinese culture, Mandarin-English bilinguals creatively gesture differently about time when speaking Mandarin than when speaking English (e.g., positioning the past above on a vertical axis when speaking Mandarin but putting it to the left on a lateral axis when explaining in English). Additionally, Mandarin speakers can gesture the past to their front and the extent to which they perform past-in-front/future-at-back mappings is sensitive to the wording of Mandarin space-time metaphors. Furthermore, Chinese signers create different timelines than Mandarin speakers, and Mandarin-CSL bimodal bilinguals perform different temporal gestures than Mandarin-speaking non-signers even when they both speak in their first language, Mandarin. All these studies seem to suggest that cultural, linguistic, and bodily experience may jointly shape how Chinese people express time creatively in different modalities.

Of course, people's conceptualization of time can sometimes be flexible (Santiago et al. 2007; Torralbo et al. 2006), and can be influenced by a specific context (Casasanto and Bottini 2014) and individual differences (Duffy et al. 2014; Duffy

and Evans 2017; Saj et al. 2014; Li and Cao 2018, Bylund et al. 2020). However, the weight and respective role of different factors in shaping an individual's space-time mappings are still unclear. Time series analysis of big data sets collecting various related factors longitudinally from a large sample size may offer further insight. In addition, so far, no research has investigated Chinese people's conception of time from a developmental perspective. The few studies on English children have shown that young children's mental timeline can be quite flexible in axes (Tillman et al. 2018) but largely affected by changes in literacy (Stites and Özçalışkan 2021), and their temporal gestures also show great differences compared to adults' (Burns et al. 2019). Given that Chinese people create different ways to conceptualize time than English speakers, it would be interesting to investigate how such abstract concepts for Chinese children, deaf or hearing, are gradually shaped to become language-, modality- or cultural-specific. To better understand this, future research can investigate the topic longitudinally, combining linguistic and non-linguistic approaches. This is not only relevant to our understanding of the multiple creative ways of conceptualizing time within and across cultures, but also has important implications for children's language acquisition of abstract concepts.

References

- Bender, A., & Beller, S. (2014). Mapping spatial frames of reference onto time: A review of theoretical accounts and empirical findings. *Cognition*, 132(3), 342–382.
<https://doi.org/10.1016/j.cognition.2014.03.016>
- Bergen, B., & Chan Lau, T. T. (2012). Writing direction affects how people map space onto time. *Frontiers in Psychology*, 3, 109. <https://doi.org/10.3389/fpsyg.2012.00109>
- Boltz, W. G. (2000). The invention of writing in China. *Oriens Extremus*, 42, 1–17.
- Boroditsky, L. (2001). Does language shape thought?: Mandarin and English speakers' conceptions of time. *Cognitive Psychology*, 43(1), 1–22. <https://doi.org/10.1006/cogp.2001.0748>
- Boroditsky, L., & Gaby, A. (2010). Remembrances of times east: Absolute spatial representations of time in an Australian aboriginal community. *Psychological Science*, 21(11), 1635–1639.
<https://doi.org/10.1177/0956797610386621>
- Bostan, İ., Börütcene, A., Özcan, O., & Gökşun, T. (2016). Temporal expressions in speech and gesture. In A. Papafragou, D. Grodner, D. Mirman & J. C. Trueswell (Eds.), *Proceedings of The 38th Annual Conference of the Cognitive Science Society* (pp. 1871–1876). Austin, TX: Cognitive Science Society.
- Brennan, M. (1983). Marking time in British sign language. In J. Kyle & B. Woll (Eds.), *Language in sign* (pp. 10–31). London: Croom Helm.
- Brentari, D., Nadolske, M. A., & Wolford, G. (2012). Can experience with co-speech gesture influence the prosody of a sign language? Sign language prosodic cues in bimodal bilinguals. *Bilingualism: Language and Cognition*, 15(2), 402–412.
<https://doi.org/10.1017/S1366728911000587>

- Burns, P., McCormack, T., Jaroslawska, A. J., O'Connor, P. A., & Caruso, E. M. (2019). Time points: A gestural study of the development of space–time mappings. *Cognitive Science*, 43(12), e12801. <https://doi.org/10.1111/cogs.12801>
- Bylund, E., & Athanasopoulos, P. (2017). The Whorfian time warp: Representing duration through the language hourglass. *Journal of Experimental Psychology: General*, 146(7), 911–916. <https://doi.org/10.1037/xge0000314>
- Bylund, E., Gygax, P., Samuel, S., & Athanasopoulos, P. (2020). Back to the future? The role of temporal focus for mapping time onto space. *Quarterly Journal of Experimental Psychology*, 73(2), 174–182. <https://doi.org/10.1177/1747021819867624>
- Cabeza Pereiro, C., & Fernández Soneira, A. (2004). The expression of time in Spanish Sign Language (LSE). *Sign Language & Linguistics*, 7(1), 63–82. <https://doi.org/10.1075/sll.7.1.06cab>
- Callizo-Romero, C., Tutnjević, S., Pandza, M., Ouellet, M., Kranjec, A., Ilić, S., Gu, Y., Göksun, T., Chahboun, S., Casasanto, D., & Santiago, J. (2020). Temporal focus and time spatialization across cultures. *Psychonomic Bulletin & Review*, 27, 1247–1258. <https://doi.org/10.3758/s13423-020-01760-5>
- Casasanto, D. (2016). Temporal language and temporal thinking may not go hand in hand. In B. Lewandowska Tomaszczyk (Ed.), *Conceptualizations of time* (pp. 169–186). Amsterdam: John Benjamins. <https://doi.org/10.1075/hcp.52.04cas>
- Casasanto, D., & Boroditsky, L. (2008). Time in the mind: Using space to think about time. *Cognition*, 106(2), 579–593. <https://doi.org/10.1016/j.cognition.2007.03.004>
- Casasanto, D., & Jasmin, K. (2012). The hands of time: temporal gestures in English speakers. *Cognitive Linguistics*, 23(4), 643–674. <https://doi.org/10.1515/cog-2012-0020>
- Casasanto, D., & Bottini, R. (2014). Mirror reading can reverse the flow of time. *Journal of Experimental Psychology: General*, 143(2), 473–479. <https://doi.org/10.1037/a0033297>
- Casey, S., & Emmorey, K. (2009). Co-speech gesture in bimodal bilinguals. *Language and Cognitive Process*, 24(2), 290–312. <https://doi.org/10.1080/01690960801916188>
- Casey, S., Emmorey, K., & Larrabee, H. (2012). The effects of learning American Sign Language on co-speech gesture. *Bilingualism: Language and Cognition*, 15(4), 677–686. <https://doi.org/10.1017/S1366728911000575>
- Chen, J.-Y. (2007). Do Chinese and English speakers think about time differently? Failure of replicating Boroditsky (2001). *Cognition*, 104(2), 427–436. <https://doi.org/10.1016/j.cognition.2006.09.012>
- Chen, J. Y., Friedrich, M., & Shu, H. (2015). The effect of immediate and lifetime experience of reading horizontal and vertical texts on Chinese speakers' temporal orientation. *Journal of Cognition and Culture*, 15(1–2), 1–12. <https://doi.org/10.1163/15685373-12342137>
- Chen, J.-Y., & O'Seaghdha, P. G. (2013). Do Mandarin and English speakers think about time differently? Review of existing evidence and some new data. *Journal of Chinese Linguistics*, 41(2), 338–358.
- Chui, K. (2011). Conceptual metaphors in gesture. *Cognitive Linguistics*, 22(3), 437–458. <https://doi.org/10.1515/cogl.2011.017>
- Chui, K. (2018). Spatial conceptualization of sequence time in language and gesture. *Gesture*, 17(1), 176–195. <https://doi.org/10.1075/gest.00015.chu>
- Cienki, A. (1998). Metaphoric gestures and some of their relations to verbal metaphorical expressions. In J. Koenig (Ed.), *Discourse and cognition: bridging the gap* (pp. 189–204). Stanford, CA: CSLI Productions.

- Cooperrider, K., & Núñez, R. (2009). Across time, across the body: Transversal temporal gestures. *Gesture*, 9(2), 181–206. <https://doi.org/10.1075/gest.9.2.02coo>
- de la Fuente, J., Santiago, J., Román, A., Dumitrache, C., & Casasanto, D. (2014). When you think about it, your past is in front of you: How culture shapes spatial conceptions of time. *Psychological Science*, 25(9), 1682–1690. <https://doi.org/10.1177/0956797614534695>
- Duffy, S. E., Feist, M. I., & McCarthy, S. (2014). Moving through time: The role of personality in three real life contexts. *Cognitive Science*, 38(8), 1662–1674. <https://doi.org/10.1111/cogs.12124>
- Duffy, S. E., & Evans, V. (2017). The top trumps of time: Factors motivating the resolution of temporal ambiguity. *Language and Cognition*, 9(2), 293–315. <https://doi.org/10.1017/langcog.2016.8>
- Emmorey, K. (2001). Space on hand: The exploitation of signing space to illustrate abstract thought. In M. Gattis (Ed.), *Spatial schemas and abstract thought* (pp. 147–174). Cambridge, MA: MIT Press.
- Emmorey, K., Borinstein, H. B., Thompson, R., & Gollan, T. H. (2008). Bimodal bilingualism. *Bilingualism: Language and Cognition*, 11(1), 43–61. <https://doi.org/10.1017/S1366728907003203>
- Engberg-Pedersen, E. (1999). Space and time. In J. Allwood & P. Gärdenfors (Eds.), *Cognitive semantics: meaning and cognition* (pp. 131–152). Amsterdam: John Benjamins. <https://doi.org/10.1075/pbns.55.07eng>
- Fischer, S., & Gong, Q. (2010). Variation in East Asian sign language structures. In D. Brentari (Ed.), *Sign languages* (pp. 502–521). Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9780511712203.023>
- Floyd, S. (2016). Modally hybrid grammar?: Celestial pointing for time-of-day reference in Nheengatú. *Language*, 92(1), 31–64. <https://doi.org/10.1353/lan.2016.0013>
- Fuhrman, O., & Boroditsky, L. (2010). Cross-cultural differences in mental representations of time: Evidence from an implicit nonlinguistic task. *Cognitive Science*, 34(8), 1430–1451. <https://doi.org/10.1111/j.1551-6709.2010.01105.x>
- Fuhrman, O., McCormick, K., Chen, E., Jiang, H. D., Shu, D. F., Mao, S. M., & Boroditsky, L. (2011). How linguistic and cultural forces shape conceptions of time: English and Mandarin time in 3D. *Cognitive Science*, 35, 1305–1328. <https://doi.org/10.1111/j.1551-6709.2011.01193.x>
- Glenberg, A. M., & Kaschak, M. P. (2002). Grounding language in action. *Psychonomic Bulletin & Review*, 9(3), 558–565. <https://doi.org/10.3758/BF03196313>
- Gu, Y., Mol, L., Hoetjes, M. W., & Swerts, M. G. J. (2013). What can Chinese speakers' temporal gestures reveal about their conception of time? In *Proceedings of TiGeR 2013*. Available at: <https://research.tilburguniversity.edu/en/publications/what-can-chinese-speakers-temporal-gestures-reveal-about-their-co>
- Gu, Y., Mol, L., Hoetjes, M., & Swerts, M. (2017). Conceptual and lexical effects on gestures: the case of vertical spatial metaphors for time in Chinese. *Language, Cognition and Neuroscience*, 32(8), 1048–1063. <https://doi.org/10.1080/23273798.2017.1283425>
- Gu, Y. (2018). Chinese hands of time. *The effect of language and culture on temporal gestures and spatio-temporal reasoning*. Utrecht: LOT Publisher.
- Gu, Y., Zheng, Y., & Swerts, M. (2019a). Which is in front of Chinese people, past or future? The effect of language and culture on temporal gestures and spatial conceptions of time. *Cognitive Science*, 43(12), e12804. <https://doi.org/10.1111/cogs.12804>
- Gu, Y., Zheng, Y., & Swerts, M. (2019b). Having a different pointing of view about the future: The effect of signs on co-speech gestures about time in Mandarin-CSL bimodal bilinguals. *Bilingualism: Language and Cognition*, 22(4), 836–847. <https://doi.org/10.1017/S1366728918000652>

- Gu, Y., Lin, H., & Zheng, Y. Q. (submitted). The effect of Chinese Sign Language (CSL) on CSL-Mandarin deaf bilinguals' conceptualization of time.
- Hendricks, R., & Boroditsky, L. (2017). New space-time metaphors foster new non-linguistic representations. *Topics in Cognitive Science*, 9(3), 800–818. <https://doi.org/10.1111/tops.12279>
- Hostetter, A. B., & Alibali, M. W. (2008). Visible embodiment: Gestures as simulated action. *Psychonomic Bulletin & Review*, 15(3), 495–514. <https://doi.org/10.3758/PBR.15.3.495>
- Kang, X. X., & Hu, Y. H. (2011). *Illustrated bamboo species in Shanghai* (Shanghai Zhuzhong Tuzhi / 上海竹种图志). Shanghai Jiao Tong University Press.
- Kita, S., Danziger, E., & Stolz, C. (2001). Cultural specificity of spatial schemas as manifested in spontaneous gestures. In M. Gattis (Ed.), *Spatial schemas and abstract thought* (pp. 115–146). Cambridge, MA: MIT Press.
- Lai, V. T., & Boroditsky, L. (2013). The immediate and chronic influence of spatiotemporal metaphors on the mental representations of time in English, Mandarin, and Mandarin-English speakers. *Frontiers in Psychology*, 4, 1–10.
- Lakoff, G., & Johnson, M. (1980). *Metaphors we live by*. Chicago: University of Chicago Press.
- Le Guen, O., & Pool Balam, L. I. (2012). No metaphorical timeline in gesture and cognition among Yucatec Mayas. *Frontiers in Psychology*, 3, 271. <https://doi.org/10.3389/fpsyg.2012.00271>
- Li, H. (2018). Time on hands: Deliberate and spontaneous temporal gestures by speakers of Mandarin. *Gesture*, 16(3), 396–415. <https://doi.org/10.1075/gest.00002.li>
- Li, H., & Cao, Y. (2018). Karma or immortality: Can religion influence space-time mappings? *Cognitive Science*, 42(3), 1041–1056. <https://doi.org/10.1111/cogs.12579>
- Lin, H., & Gu, Y. (2022). “Hold infinity in the palm of your hand”: A functional description of time expressions through finger configurations based on the naturalistic data of Chinese Sign Language. *Language and Cognition*, 14(1), 61–84. <https://doi.org/10.1017/langcog.2021.22>
- Lin, H., & Gu, Y. (submitted). Back to the past and down to the future: Asymmetric timeline expressions in Chinese Sign Language based on the naturalistic data.
- Maeder, C., & Loncke, F. (1996). Spatial, temporal and temporo-logical notions in French Sign Language: Comparative study of deaf and hearing subjects. *Sign Language Studies*, 90, 38–51. <https://doi.org/10.1353/sls.1996.0006>
- Miles, L. K., Nind, L. K., & Macrae, C. N. (2010). Moving through time. *Psychological Science*, 21(2), 222–223. <https://doi.org/10.1177/0956797609359333>
- Moore, K. E. (2011). Ego-perspective and field-based frames of reference: Temporal meanings of front in Japanese, Wolof, and Aymara. *Journal of Pragmatics*, 43(3), 759–776. <https://doi.org/10.1016/j.pragma.2010.07.003>
- Nilsson, A. L. (2016). Embodying metaphors: Signed language interpreters at work. *Cognitive Linguistics*, 27(1), 35–65. <https://doi.org/10.1515/cog-2015-0029>
- Núñez, R., & Cooperrider, K. (2013). The tangle of space and time in human cognition. *Trends in Cognitive Sciences*, 17(5), 220–229. <https://doi.org/10.1016/j.tics.2013.03.008>
- Núñez, R., Cooperrider, K., Doan, D., & Wassmann, J. (2012). Contours of time: Topographic construals of past, present, and future in the Yupno valley of Papua New Guinea. *Cognition*, 124(1), 25–35. <https://doi.org/10.1016/j.cognition.2012.03.007>
- Núñez, R. E., & Sweetser, E. (2006). With the future behind them: convergent evidence from Aymara language and gesture in the crosslinguistic comparison of spatial construals of time. *Cognitive Science*, 30(3), 401–450. https://doi.org/10.1207/s15516709cog0000_62
- Pagán-Cánovas, C., Valenzuela, J., Alcaraz-Carrión, D., Olza, I., & Ramscar, M. (2020). Quantifying the speech-gesture relation with massive multimodal datasets: Informativity in time expressions. *PLOS ONE*, 15(6), e0233892. <https://doi.org/10.1371/journal.pone.0233892>

- Pyers, J., & Emmorey, K. (2008). The face of bimodal bilingualism: Grammatical markers in American Sign Language are produced when bilinguals speak to English monolinguals. *Psychological Science*, 19, 531–536. <https://doi.org/10.1111/j.1467-9280.2008.02119.x>
- Rodríguez, L. (2019). “Time is not a line”: Temporal gestures in Chol Mayan. *Journal of Pragmatics*, 151, 1–17. <https://doi.org/10.1016/j.pragma.2019.07.003>
- Saj, A., Fuhrman, O., Vuilleumier, P., & Boroditsky, L. (2014). Patients with left spatial neglect also neglect the “Left Side” of time. *Psychological Science*, 25(1), 207–214. <https://doi.org/10.1177/0956797612475222>
- Santiago, J., Lupáñez, J., Pérez, E., & Funes, M. J. (2007). Time (also) flies from left to right. *Psychonomic Bulletin & Review*, 14(3), 512–516. <https://doi.org/10.3758/BF03194099>
- Schermer, T., & Koolhof, C. (1990). The reality of time-lines: Aspects of tense in Sign Language of the Netherlands (SLN). In S. Prillwitz & T. Vollhaber (Eds.), *Current trends in European sign language research* (pp. 295–305). Hamburg: Signum.
- Sinte, A. (2013). Expression of time in French Belgian Sign Language (LSFB). In L. Meurant, A. Sinte, M. Van Herreweghe & M. Vermeerbergen (Eds.), *Sign language research, uses and practices: Crossing views on theoretical and applied sign language linguistics* (pp. 205–235). Berlin: Mouton de Gruyter. <https://doi.org/10.1515/9781614511472.205>
- Slobin, D. (1996). From ‘thought and language’ to ‘thinking for speaking.’ In J. J. Gumperz & S. C. Levinson (Eds.), *Studies in the social and cultural foundations of language, No. 17. Rethinking linguistic relativity* (pp. 70–96). Cambridge University Press.
- Stites, L., & Özçalışkan, Ş. (2021). The time is at hand: Literacy predicts changes in children’s gestures about time. *Journal of Psycholinguistic Research*, 50, 967–983. <https://doi.org/10.1007/s10936-021-09782-3>
- Sullivan, K., & Bui, L. T. (2016). With the future coming up behind them: Evidence that time approaches from behind in Vietnamese. *Cognitive Linguistics*, 27(2), 205–233. <https://doi.org/10.1515/cog-2015-0066>
- Tillman, K. A., Tulagan, N., Fukuda, E., & Barner, D. (2018). The mental timeline is gradually constructed in childhood. *Developmental science*, 21(6), e12679. <https://doi.org/10.1111/desc.12679>
- Torralbo, A., Santiago, J., & Lupáñez, J. (2006). Flexible conceptual projection of time onto spatial frames of reference. *Cognitive Science*, 30(4), 745–757. https://doi.org/10.1207/s15516709cog0000_67
- Ulrich, R., Eikmeier, V., de la Vega, I., Ruiz Fernández, S., Alex-Ruf, S., & Maienborn, C. (2012). With the past behind and the future ahead: Back-to-front representation of past and future sentences. *Memory and Cognition*, 40(3), 483–495. <https://doi.org/10.3758/s13421-011-0162-4>
- Valenzuela, J., & Alcaraz Carrión, D. (2020). Temporal expressions in English and Spanish: influence of typology and metaphorical construal. *Frontiers in Psychology*, 11, 543933. <https://doi.org/10.3389/fpsyg.2020.543933>
- Walker, E., & Cooperrider, K. (2016). The continuity of metaphor: Evidence from temporal gestures. *Cognitive Science*, 40(2), 481–495. <https://doi.org/10.1111/cogs.12254>
- Weisberg, J., Casey, S., Sehyr, Z. S., & Emmorey, K. (2020). Second language acquisition of American Sign Language influences co-speech gesture production. *Bilingualism: Language and Cognition*, 23(3), 473–482. <https://doi.org/10.1017/S1366728919000208>
- Wilcox, S. (2002). The iconic mapping of space and time in signed languages. In L. Albertazzi (Ed.), *Unfolding perceptual continua* (pp. 255–281). Amsterdam: John Benjamins. <https://doi.org/10.1075/aicr.41.12wil>

- Wu, L., & Li, H. (2012). Time-space metaphors in Chinese Sign Language (中国手语中的时间空间隐喻). *Chinese Journal of Special Education*, 150(12), 25–29.
- Xiao, C., Zhao, M., & Chen, L. (2018). Both earlier times and the future are “front”: the distinction between time- and ego-reference-points in mandarin speakers’ temporal representation. *Cognitive Science*, 42(3), 1026–1040. <https://doi.org/10.1111/cogs.12552>
- Xu, D. (2016). Vertical time expressions in ancient Chinese (古汉语里的纵向时间表达). *Linguistics Science*, 15(1), 1–9. <https://hal.archives-ouvertes.fr/hal-01386252>
- Yang, J. H. (2015). Chinese Sign Language. In Jepsen, J. B., De Clerck, G., Lutalo-Kiingi, S. McGregor, W. B. (Eds.), *Sign languages of the world: A comparative handbook* (pp. 177–194). Berlin: Mouton de Gruyter. <https://doi.org/10.1515/9781614518174-012>
- Yang, W., & Sun, Y. (2016). A monolingual mind can have two time lines: Exploring space-time mappings in Mandarin monolinguals. *Psychonomic Bulletin & Review*, 23(3), 857–864. <https://doi.org/10.3758/s13423-015-0964-7>
- Yang, W., & Sun, Y. (2017). English and Mandarin speakers’ mental representations of time: Some new evidence about the language-thought relationship. *Review of Cognitive Linguistics*, 14(2), 385–415. <https://doi.org/10.1075/rcl.14.2.o5yan>
- Yu, N. (2012). The metaphorical orientation of time in Chinese. *Journal of Pragmatics*, 44(10), 1335–1354. <https://doi.org/10.1016/j.pragma.2012.06.002>
- Zheng, X. (2009). A study of signs for non-visual concepts in Shanghai Variety of Chinese Sign Language (上海手语非视觉概念表达研究). PhD Dissertation, Fudan University, China.
- Zheng, Y. Q., Gu, Y., Cozijn, R., & Swerts, M. (2020). Looking downwards to the future: The Chinese mind’s eye in time space. In *Proceedings of the 42nd Annual Conference of the Cognitive Science Society* (2949). Austin, TX: Cognitive Science Society.

EPILOGUE

Creative to whom, and on what basis?

The role of perspective

Alan Cienki

Vrije Universiteit Amsterdam

This epilogue considers creativity from three different perspectives: that of the producer of the expression, of the person paying attention to the expression (the attender) in the same context, and of any attender from a different time and place than that in which the expression was produced. These perspectives are considered in face-to-face interaction and contrasted with mediated interaction. Whether an expression is perceived as creative or not from one of these perspectives depends on what is in that person's scope of relevant behaviors. In addition, frame knowledge is considered in relation to viewing expressions as creative or not. Examples from the chapters in this volume illustrate how these various factors play out in relation to each other.

Keywords: attender, face-to-face interaction, frames, mediated interaction, scope of relevant behaviors

1. Introduction

Creativity in expressions related to time are explored in a range of domains in this volume, from the linguistic (in prosaic as well as poetic uses), including both written and spoken language, to speakers' gestures, to explicitly creative productions beyond the linguistic, such as the composition of pieces of music and film. Fundamental questions raised in the volume concern the similarities and differences between (a) one's experience of time and (b) one's conceptualization of what time is and how it functions, and the variability of both of those across individuals, as well as within any given individual: at different points in time, in different places, and on different time scales (across seconds, hours, days, etc.). The kinds of creativity of time expression that are discussed in the chapters cover quite a range, from what might be called everyday sorts of creativity (such as in word choices) to more extraordinary forms (as in musical composition or cinematography).

One lens through which we can view these various forms of temporal expression is that of the perspective involved with respect to the expression. As explored below, perspective can have to do with whether one is producing/has produced the expression, or whether one is perceiving (mainly hearing or seeing for the examples being considered here) or in general paying attention to the expression. Perspective can also have to do with the framework that one is using for making sense of the expression, be it the knowledge frame, the contextual frame, the historical frame, etc.

2. Three perspectives

Any form of expression (be it produced by the body, as in vocal sounds, or by some product that somebody has made, as in an artwork) can be viewed from (at least) three perspectives or roles. Rather than using categories such as speaker and hearer or artist and audience, I use the overarching labels of *producer* and *attender*. Here they are described adapted from Cienki (2017a: 136; 2018: 61):

1. The producer is a first-person role or perspective (where 'I' am expressing something). It is the one that produces a verbal expression, other sound, or gesture; creates a work of visual art; composes or performs a piece of music; films images; or choreographs or performs dance. (We call all of these forms of expression *expressions*.) This role thus encompasses Goffman's (1981) categories of animator and author.
The other two roles involve those paying attention to someone else's communication or expression. Following Clark (1996: 21), they are called *attenders*. The attender role is considered in terms of two forms.
2. One kind of attender is the observer of the expression in the same live or virtual context in which it was produced (paying attention to 'you' as the one expressing something). This includes the second-person role of the intended addressee in a conversation, but also that of a passer-by, an eavesdropper, etc. (as discussed in Clark 1996: ch. 1).
3. Another kind of attender is the third-person role of one hearing and/or viewing the expression or a recording of it – an attender, at a later time, and likely in a different place, than that in which the expression was produced. (This perspective involves paying attention to 'him, her, or them' expressing something.) For example, a film viewer, a film studies researcher, and a gesture researcher all embody this role in relation to the recorded video they watch (and analyze, in the case of the researchers).

The second-person role is not usually relevant in relation to some producers. For example, an author writing a novel, a play, or a screenplay does not usually have someone watching what they write as they write it. However, a cameraman filming a movie often has others present who may be seeing what s/he is filming in the moment, and these individuals may be considered second-person attenders (imagine one of them saying to the cameraman “I like the angle you used for this shot”). The typical viewing audience for a film, though, would be third-person attenders (e.g. “I love how they shot that last scene”). An audience member in a theater at a play is a second-person attender of the actors, but a third-person attender of the playwright’s composition.

2.1 The scope of relevant behaviors

Those attending to a producer of some kind(s) of expression pay attention to the expressions to varying degrees and variably over time. Similarly, producers themselves pay varying degrees of attention, varying over time, to what they are expressing, even if producers presumably normally pay greater attention to what they are expressing than attenders might. To enable talking about these processes of attention from the point of view of the different perspectives or roles outlined above, I have introduced elsewhere (Cienki 2012, 2015a, 2015b, 2017b) the construct of the scope of relevant behaviors (SRB).

In the context of the present Epilogue, we might think more broadly in terms of the scope of relevant forms of *expression*, but for consistency’s sake, I adhere to the previously introduced term of SRB. The notion can be explained as follows.

Building on work from Relevance Theory (Sperber and Wilson 1986), the selective activation of meaning (Müller 2008; Müller and Tag 2010), and attentional analysis of meaning (Oakley 2009), the claim (Cienki 2012: 155) is that a given producer’s focus on what behaviors to deploy as relevant in a given context, and an attender’s focus on which behaviors of the producer are relevant in a given context, are both variable; this means that the producer’s and attender’s scope can be broader or narrower, involving more or fewer behaviors (e.g., speech+gesture+facial expressions in an emotional context versus just the words spoken in a fact-oriented recitation of items). Presumably when the size of both the producer’s and attender’s scopes are aligned with each other, their communication should be more in sync. But the scope of relevant behaviors is dynamic not only in terms of how it can zoom in or out, but also in that its focus can shift. Whereas for speakers, spoken language in face-to-face interaction arguably constitutes the default focus, the focus can move temporarily from this gravitational center to other behaviors, such as gesture (such as when one is trying to communicate through a soundproof glass wall).

(Cienki 2017c: 7)

Consider the example of someone making a call on their mobile phone while on public transportation (say, a bus or train). They may be gesticulating while talking loudly, much to the consternation of their fellow passengers (unwilling attenders), and if it is not a video call, the interlocutor on the phone (the attender-addressee) will only hear the speaker's voice. The differing SRBs of the producer and second-person attender are pre-determined here by the technology being used: the speaker/producer can hear his own voice and feel (through proprioception) and potentially see his own gestures, but the attender-addressee can only hear the speaker's voice. Even if the second-person attender were on the same public transportation with the speaker, s/he might be looking out the window occasionally to keep track of where they were on their journey and not be visually perceiving many of the producer's gestures. What any individual's SRB encompasses from moment to moment depends upon many factors – not only the attender's degree of attention to the producer (in general and at a given moment), but also the conditions in the environment for communication, the cognitive load the individual is handling at the moment, etc. (Cienki 2020: 84). As a result, the scope of relevant behaviors can thus differ (and probably usually does differ) for producer and attender at any given moment.

We can see that the different forms of creative temporal expressions (and indeed the expression of any domain) play out differently in terms of the three different perspectives, partly according to the contexts in which they appear, relative to the given producer's and attenders' scope of relevant behaviors. The distinctions above play out in rather specific ways if we consider the different kinds of creative expressions of temporality explored in this volume. This is partly a factor of the contexts of interaction in which the expressions are normally used.

3. These perspectives in context

Let us consider the differences between the context of face-to-face interaction versus different kinds of interaction that are mediated in some material or technological way.

3.1 Face-to-face interaction

The producer may add expressive elements to their verbo-gestural temporal expression (such as the facial expressions noted by Alcaraz, this volume), and if attenders see and hear the producer and are from the same or a similar culture, they will be likely to appreciate the creativity as such. However, as noted with the possibility of differing scopes of relevant behaviors, described above, they may not be looking

at the producer at the moment and only listening, and thus may miss out on the creativity involved if the utterance is produced with a neutral intonation pattern. In other cases, the producer may be speaking a foreign language, and may have imported some gestural behaviors from their first language (L1) into the use of their second language (L2). (See Gullberg 2014 on how L1 gestures are carried over for a long time in the acquisition of an L2.) For example, a Chinese L1 speaker may use a gesture for time along the vertical axis, as described by Gu (this volume) when speaking English as L2, yet the English L1 attender may not understand such a gesture as being temporal in reference. They may interpret it in another way, relating to some other aspect of the utterance; for example if the conversation was about a trip that the person took last week, the attender might interpret the upward gesture (that the Chinese speaker used for reference to past time) as expressing something about how big and great the trip was. The attender may see this as a creative gesture, especially if they are not familiar with Chinese language and culture, whereas for the producer, it was a conventional, non-creative means of gesticulating about time (in their L1 culture, carried over to their L2 language use).

The attender may also simply not pay attention to the gesture, taking it as a mistake or strange movement. However, if the markedness of it fits certain criteria, it will be perceived as pleasurable/likeable, and presumably as creative, rather than as problematic or eccentric. One way of characterizing how this might happen can be found in what Giora et al. (2004) propose as the Optimal Innovation Hypothesis. According to this, a stimulus is optimally innovative if it invokes a response that is novel and nonsalient but also “allows for the automatic recoverability of a salient response related to that stimulus so that both responses make sense (e.g., the similarity and difference between them can be assessable)” (p. 116). So the L1 speaker of English may see the Chinese L1 speaker’s vertical gesture for time when speaking English as L2 and catch both the aspect that is salient to them (the height of the gesture, which stood out in what they perceived in their SRB), and the novel (to them) nonsalient relation to time, and appreciate it as something creative and clever.

3.2 Mediated interaction

The script-writer, the music composer, and the choreographer have a special role as producers (in the sense in which that term is being used here). They are normally not seen or heard directly by their intended attenders (the audience). Let us call such producers *creators*. The intended attenders may or may not pick up on what the creator intended. Witness the example of the creative techniques of presenting flashbacks in films, described by Gordejuela (this volume). While presumably most audience members will understand what is being presented with them, in terms of ‘time travel’, some (such as young children, for example) may not; others may simply

have not seen some crucial moments that provide the cues that a flashback is taking place (they might have been talking for a moment to someone next to them in the movie theater and so what happened in the film momentarily fell outside of their SRB) and then they may be confused when they turn their attention back to the screen. Creativity on the creator's part may or may not be creativity for the attender.

Some creative techniques in film rely so cleverly on cognitive techniques that they may not even be noticed very consciously by viewers, but rather be understood intuitively. Take, for example, the scene Coëgnarts discusses (this volume, his Type IV example) wherein a straight razor blade for shaving in one scene, seen in front of the main character's face as he is looking at it, is juxtaposed with a similarly shaped knife in a flashback as seen from the main character's point of view, a knife being held up threateningly by his captor in front of him at a time in the past. The creativity on the part of the creator (involving cuts in film editing that change perspectives while keeping a referent in the same place on the movie screen as a grounding point) can be perceived via everyday techniques of conceptual integration (*à la* Fauconnier and Turner 2002) on the part of the film viewer—perhaps with jarring results as the viewer realizes the shift in time and place being shown. Whether this type of creativity would fit the Optimal Innovation Hypothesis, mentioned above, and be perceived as pleasurable is an empirical question. In sum, creativity by a producer may not be perceived/comprehended by an attender as creativity, and vice versa; the SRBs of the participants on the two sides may not have included or made use of the same expressions to the same ends.

4. Perspectives from frame knowledge

Another form of perspective comes from the frames one is using to understand the context or genre event that one is engaged with at the moment. Witness the example from Gordejuela (this volume) in which a voiceover in a scene in the film version of *Jane Eyre* creates a blend between a conversation in the present and a hide-and-seek scene from the main character's past. The conversation and the act of physically hiding from someone each have their own frame or script of action sequences (in the sense of Schank and Abelson 1977) in which they can be understood. In the film, viewers are expected to invoke both in order to understand the protagonist's emotional state in the present. The blending of a specific conversation with a specific instance of hiding, both involving the same character, makes for a temporal blend that puts some cognitive demands on the attender.

Other cases involve more common forms of linguistic creativity – in the stretching of domains to which words may apply. In the examples presented by Valenzuela and Illán Castillo (this volume), it has to do with extending the use of

verbs in English that refer to manner of motion and using them in a metaphorical sense as an expression of movement in the given utterance in relation to time (to note two of their examples: “As the 20th century marched on” or “as the years blew by”). In the framework of a poem, these might not be taken by frequent readers of (attenders to) poetry as being particularly creative temporal expressions. However to someone in the corporate world reading a report about their business, such lexical choices used there might be interpreted as reflecting a flippant attitude towards the business (e.g. “our profits just kept decreasing as the years flew by”) – a kind of creativity at the Chief Financial Officer’s expense.

5. Closing points

Creativity in expressions of time is only “in” the creative product in a certain sense. Following the cognitive linguistic perspective, the expressions are not containers of meaning, but are cues for constructing meaning (Fillmore 1985; Langacker 1987: 154–163; Turner 1996). As Reddy (1993) made clear, communication is not a matter of transferal of ideas, packaged in words and texts, from one person to another. Rather, expressions (of whatever sort) from some producer provide a set of tools which we, as attenders, can use to make meaning. The meaning we construct is partly a factor of what is in our SRB, partly a matter of what frame(s) of interpretation we invoke, and also other factors.

One of those other factors is expectancy. Expectancy can be seen as a way in which an event frame or script can be engaged in terms of its future orientation. Anticipating that the rest of the typical steps in the frame or script, that you see yourself in, will be carried out provides a specific set of expectations. As Besada (this volume) discusses, expectancy plays an important role in one’s receptiveness to creative expression, helping shape one’s emotional attitude towards what is to come when engaging in a conversation, hearing a piece of music, or taking in other modes and forms of communication.

Another factor is the normativity that comes with expectations that a script in our frame knowledge will be carried out. Normativity plays a formative role with respect to anticipating subsequent moves, acts, or techniques, according to the genre of communicative usage event (Langacker 1988) that one is engaged in. “Temporal expectations in musical performance also come from visual inputs such as reading a score – when it exists – or the gestural and bodily interactions of all performers (Palmer and Zamm 2017) – that may include an eventual conductor”, as Besada (this volume) notes.

Finally, the ways in which we might be creative in our use of temporal and other expressions depends upon a variety of other factors, such as the extent of

our knowledge of shared cultural models (Shore 1996) that we can draw upon and push the boundaries of. In addition, someone employing a broad SRB might refer to certain contextual cues to assess the acceptability of being more creative or not in their own or others' expressiveness. This process can rely on knowledge about one's interactants and what their expectations are, knowledge of the language and culture if one is in a foreign language context – and if one is seeing or listening to (attending to) a work of art, knowledge of the particular creator's oeuvre. The degree of creativity one might employ, or the degree to which one might be open to interpreting expressions as creative, can depend on all of these factors to different degrees.

References

- Cienki, A. (2012). Usage events of spoken language and the symbolic units we (may) abstract from them. In J. Badio & K. Kosecki (Eds.), *Cognitive processes in language* (pp. 149–158). Bern: Peter Lang.
- Cienki, A. (2015a). The dynamic scope of relevant behaviors in talk: A perspective from cognitive linguistics. In *Proceedings of the 2nd European and the 5th Nordic Symposium on Multimodal Communication*. Available at: http://www.ep.liu.se/ecp_article/index.en.aspx?issue=110;article=002
- Cienki, A. (2015b). The notion of the dynamic scope of relevant behaviors in cognitive linguistic theory. In A. A. Kibrik & A. D. Koshelev (Eds.), *Language and thought: Contemporary cognitive linguistics* (pp. 560–573). Moscow: Languages of Slavic Culture.
- Cienki, A. (2017a). Analysing metaphor in gesture: A set of metaphor identification guidelines for gesture (MIG-G). In E. Semino & Z. Demjén (Eds.), *The Routledge handbook of metaphor and language* (pp. 131–147). London: Routledge.
- Cienki, A. (2017b). *Ten lectures on spoken language and gesture from the perspective of cognitive linguistics: Issues of dynamicity and multimodality*. Leiden: Brill.
<https://doi.org/10.1163/9789004336230>
- Cienki, A. (2017c). Utterance Construction Grammar (UCxG) and the variable multimodality of constructions. *Linguistics Vanguard*, 3(s1), 20160048
<https://doi.org/10.1515/lingvan-2016-0048>
- Cienki, A. (2018). Insights for linguistics and gesture studies from film studies: A view from researching cinematic metaphor. In S. Greifenstein, D. Horst, T. Scherer, C. Schmitt, H. Kappelhoff & C. Müller (Eds.), *Cinematic metaphor in perspective: Reflections on a transdisciplinary framework* (pp. 53–68). Berlin: De Gruyter. <https://doi.org/10.1515/9783110615036-004>
- Cienki, A. (2020). A multimodal perspective on MCA: Cues of (possible) metacommunicative awareness. In C. Di Biase-Dyson & M. Egg (Eds.), *Drawing attention to metaphor: Case studies across time periods, cultures and modalities* (pp. 63–92). Amsterdam: John Benjamins.
<https://doi.org/10.1075/ftl.5.04cie>
- Clark, H. H. (1996). *Using language*. Cambridge: Cambridge University Press.
<https://doi.org/10.1017/CBO9780511620539>
- Fauconnier, G., & Turner, M. (2002). *The way we think: Conceptual blending the and mind's hidden complexities*. New York, NY: Basic Books.

- Fillmore, C. J. (1985). Frames and the semantics of understanding. *Quaderni di Semantica*, 6(2), 222–254.
- Giora, R., Fein, O., Kronrod, A., Elnatan, E., Shuval, N., & Zur, A. (2004). Weapons of mass distraction: Optimal innovation and pleasure ratings. *Metaphor & Symbol*, 19(2), 115–141. https://doi.org/10.1207/s15327868ms1902_2
- Goffman, E. (1981). *Forms of talk*. Philadelphia: University of Pennsylvania Press.
- Gullberg, M. (2014). Gestures and second language acquisition. 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*, vol. II (pp. 1868–1875). Berlin: De Gruyter. <https://doi.org/10.1515/9783110302028.1868>
- Langacker, R. W. (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* (pp. 127–161). Amsterdam: John Benjamins. <https://doi.org/10.1075/cilt.50.06lan>
- Müller, C. (2008). What gestures reveal about the nature of metaphor. In A. Cienki & C. Müller (Eds.), *Metaphor and gesture* (pp. 219–245). Amsterdam: John Benjamins. <https://doi.org/10.1075/g5.3.12mul>
- Müller, C., & Tag, S. (2010). The dynamics of metaphor: Foregrounding and activating metaphoricality in conversational interaction. *Cognitive Semiotics*, 6, 85–120. <https://doi.org/10.1515/cogsem.2010.6.spring2010.85>
- Oakley, T. (2009). *From attention to meaning*. Bern: Peter Lang. <https://doi.org/10.3726/978-3-0351-0782-1>
- Palmer, C., & Zamm, A. (2017). Interactions in ensemble music performance: Empirical and mathematical accounts. In M. Lessaffre, P.-J. Maes & M. Leman (Eds.), *The Routledge companion on embodied music interaction* (pp. 370–379). London: Routledge. <https://doi.org/10.4324/9781315621364-41>
- Reddy, M. J. (1993). The conduit metaphor: A case of frame conflict in our language about language. In A. Ortony (Ed.), *Metaphor and thought* (pp. 164–201) (2nd ed.). Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9781139173865.012>
- Schank, R. C., & Abelson, R. P. (1977). *Scripts, plans, goals and understanding: An inquiry into human knowledge structures*. Mahwah: Lawrence Erlbaum.
- Shore, B. (1996). *Culture in mind: Cognition, culture, and the problem of meaning*. Oxford: Oxford University Press.
- Sperber, D. & Wilson, D. (1986). *Relevance: Communication and cognition*. Oxford: Blackwell.
- Turner, M. (1996). *The literary mind*. Oxford: Oxford University Press.

Index

A

- aesthetic 42, 44, 52–53, 55, 74, 148, 153, 155, 164
- affective 22, 42–43, 47
- auditory 148–153, 169–170

B

- Bender, Andrea 15, 210
- blending 4, 42, 46, 69, 134, 148–149, 191, 238
 - blend 71–72, 106, 110, 148, 150, 154–160, 238
 - Blending theory 42, 148
 - see also* Conceptual integration theory
- Bordwell, David 126, 132–133, 147–149
- Boroditsky, Lera 3, 15–16, 42–43, 62, 105, 125, 168, 209–210, 214–215, 224

C

- Casasanto, Daniel 3, 42–43, 62, 104, 125, 168, 188–189, 200, 209, 212–213, 215, 222, 225
- chrono-work 81–89, 92–95
- Cienki, Alan 3, 9, 187–192, 212, 222, 234–236
- cinematic creativity 125, 137
- chronological time 81–84, 86, 96
- Clark, Herbert 3, 15, 43, 62, 234
- clock time 4, 84, 106, 110, 112
- comics 102–103, 105–108, 117, 119 *see also* graphic memoirs
- combinational creativity 42
- compressed time *see* time compression
- conceptual autonomy 64
- conceptual dependence 64
- conceptual integration 41–43, 55, 147–149, 238

- conceptual integration
 - network 4, 43, 53, 62
- Conceptual integration theory 4, 75, 148–149 *see also* Blending theory
- conceptual metaphor *see* Ego-moving metaphor of time, Time-moving metaphor
- Conceptual metaphor theory 2, 75, 101–102
- constructions 5, 17–18, 33–34, 53–54, 63–65, 67, 72, 74–75, 77
- copula constructions 63–67, 72–77
- container schema 127–128, 138, 143
- corpus 15–19, 48–53, 63, 66–67, 166, 210–211, 218–219
- creativity *see* cinematic creativity, combinational creativity, lexical creativity, metaphorical creativity, verbal creativity

D

- Dancygier, Barbara 147, 149–150, 156
- decompression of identity 156, 158–160 *see also* identity connection
- depression 101–104, 106, 108–110, 112–115, 117, 119, 121
- diegetic 106–107, 110, 115, 117, 119–120, 130–131, 151 *see also* extradiegetic, non-diegetic
- duration 46, 103, 105, 108, 117, 119–120, 147–148, 169, 174, 179, 181, 190–191, 209

E

- Ego-moving metaphor of time 3, 21, 43–45, 62, 104, 120

- embodiment 8, 41–42, 47, 75, 163, 222
 - embodied cognition 44, 143, 212
 - embodied semantics 7, 61, 76 *see also* simulation semantics
 - emotion 22, 27, 41, 44, 46, 53–54, 69, 103–105, 110, 112, 116–117, 125, 148, 153, 155, 165, 187, 200–202, 235, 238–239
 - equations 61, 63–68, 73–75, 77
 - predicational equations 65, 68, 77
 - specificational equations 65
 - Evans, Vyvyan 4, 15, 62, 104, 125, 189, 226
 - extradiegetic 120, 131, 148 *see also* diegetic, non-diegetic
 - explicit time 103–104, 106, 110 *see also* implicit time
- ## F
- Fauconnier, Gilles 4, 42–44, 46, 62, 71, 103, 105, 148–150, 153, 238
 - figurative language 42, 44–45, 47, 62–63, 74, 76–77
 - Figure 16, 22, 25, 27, 29 *see also* Theme
 - film 126, 128, 130, 132, 134, 136–143, 147–151, 153, 156–158, 161, 233–235, 237–238
 - flashback 130–131, 133, 134–136, 139, 141, 147–151, 153–161, 237–238
 - frame (of a film or panel) 110, 119, 128, 140–142, 154
 - frame (semantic frame) 15–16, 27, 34, 54, 68, 70–71, 74, 76, 154–155, 160, 233–234, 238–239
 - frozen time 104, 108, 119–120

future 16, 67, 81–96, 104–105,
127, 139–140, 159, 189–190,
194, 197–199, 202, 210–215,
218–223, 225–226

G

gesture 2–3, 5, 105–106,
131, 136, 179–180, 187–202,
209–210, 212–222, 224–226,
234–237
Gibbs, Raymond 41, 65, 74,
76, 125
Goal 16, 20, 22–24, 26, 42–48
see also Path, Source
graphic memoirs 101–102,
108, 112, 114, 119–120 *see also*
comics

I

identity connection 150, 160
see also decompression of
identity
image metaphors 61, 65, 66,
68, 75
image schema 8, 22, 24, 76,
163, 171–174, 178–179, 181
imagery 5, 61, 63, 68, 70,
72–76, 169–170, 174
implicit time 103, 178 *see also*
explicit time

J

joint attention 153

L

Lakoff, George 1, 3–4, 15, 20,
41, 43, 62, 102, 104, 120, 125,
127, 133, 214–215
Langacker, Ronald Wayne
64–65, 170, 239
lateral axis 15, 190, 194, 197,
199, 202, 212, 219–221, 225 *see*
also sagittal axis, vertical axis
lexical creativity 31

M

manner of motion 15–16, 21,
27–31, 43, 47, 239 *see also*
motion
mapping 3–5, 15, 20–21, 26–27,
33, 41–42, 44–46, 52–54,

61–62, 65–66, 68–69, 74–75,
103, 105, 120, 127, 131, 150, 174,
189, 210–215, 218–226
material anchor 172, 187,
191–192, 199
mental simulation 30, 61, 76
mental spaces 148–149, 160,
222–223
metaphor *see* image metaphors,
pictorial metaphors, poetic
metaphors, spatial metaphors
(in comics), spatial metaphors
(of time), visual metaphors
metaphorical creativity 61, 75
metaphorical mapping 3, 61, 65
metonymy 69, 76, 130, 191, 196
motion 3, 5–7, 15–33, 37–39,
41–54, 57, 62, 85, 107, 119, 127,
168, 170–172, 174, 178, 189,
193–196, 214, 239
motion verbs 5–7, 15–21, 24,
27, 28–33, 37, 41, 44–46,
48–51, 53, 57
see also manner of motion
multimodal 5–6, 18, 34, 103,
147–148, 156, 166, 170, 179,
182, 191
music 2, 5–7, 49, 133, 148, 163–
168, 170, 172, 174, 176–179,
181–182, 233–234, 237, 239
musical temporality
163–165, 182
Moore, Kevin 3, 15, 62, 105,
188, 210

N

narrative space 149–156, 158–160
narrative time 5, 8, 147
non-diegetic 148, 151 *see also*
diegetic, extradiegetic
Núñez, Rafael 3, 15–16, 20,
41, 62, 125–127, 188–189, 210,
212, 222

P

past 3, 7–8, 16, 21, 24, 72,
81–86, 89–96, 104–105, 127,
130–131, 133–137, 139–141,
147–161, 189–190, 194, 197,
199, 201–202, 209, 211–214,
218–223, 225, 237–238

Path 3, 7, 15–16, 20–22, 25–26,
33, 42, 46–47, 83, 89–91, 94,
106–107, 159, 211 *see also*
Goal, Source
perspective 9, 21, 53, 104–105,
107, 114, 120, 155, 158, 170,
233–234, 238–239 *see also*
viewpoint
pictorial metaphors 101, 103,
106, 108, 110, 112, 114, 120 *see*
also spatial metaphors (in
comics)
poetic metaphors 4, 61–63, 70
PoetiCog 7, 48–54, 59–61,
63, 66
poetry 2, 5–7, 41, 44, 47–48,
50, 52–55, 62–63, 65–67, 73,
75, 239
political discourse 2, 5–7, 81–82
present 7–8, 81–87, 89–93,
95–96, 127, 130–131, 133–136,
139–141, 147–161, 218, 238
protracted time 103, 108,
119–120

R

Radden, Günter 3, 15, 62, 126
Ricoeur, Paul 82–83, 98

S

sagittal axis 16, 199, 212–213,
219, 221, 223 *see also* lateral
axis, vertical axis
Santiago, Julio 42, 44, 105,
189, 225
sign language 187–188, 209–
210, 217–218, 220–221, 223
simulation semantics 76 *see*
also embodied semantics
sound 117, 129–132, 136–139,
148–149, 151, 153, 166, 234
Source 16, 20–22, 24, 26, 42 *see*
also Goal, Path
source domain 3, 7, 31, 63–64,
66, 75, 77 *see also* target
domain
space 3–5, 15, 21, 26, 33, 43,
45–47, 51–53, 55–56, 62,
101–103, 105–106, 120, 125, 127,
138–139, 176, 181, 188–190, 192,
209–215, 217, 219, 222–226

- space-to-time mappings 15,
46, 51–52
- spatial metaphors (in comics)
106–108, 110, 114–120 *see also*
pictorial metaphors
- spatial metaphors (of time)
45–46, 101, 107, 110, 114–116,
181, 187, 209–211, 213–217, 224
- spatio-temporal metaphors
62, 126, 137, 142 *see also*
spatialization (of time),
Time-as-space metaphor
- spatialization (of time) 3,
41–45, 50–53, 55, 62, 125,
209, 212
- spatialized time 43–44, 46
see also spatial metaphors
(of time), Time-as-space
metaphor
- speech 2, 64, 164–165, 179,
187–188, 191, 193–194,
199–200, 202, 210, 219–220,
224–225, 235
- story time 132, 147
- subjective time 4, 43, 47, 101,
103, 106
- Sweetser, Eve 3, 16, 20, 30, 62,
126–127, 188–189, 191, 210, 222
- T**
- Talmy, Leonard 16, 20, 171
- target domain 3, 63–64, 77, 102,
106 *see also* source domain
- Theme 16 *see also* Figure
- time compression 8, 147, 153,
158–159
- time perception 4, 6, 43, 47,
101–102, 106, 121
- timeline 3, 8, 26, 43, 91, 94,
105, 107, 120, 171–172, 187,
189, 191–199, 202, 210, 214,
217–219, 221, 223, 225–226
- time units 4, 7, 17–18, 43–52
- time measurement units *see*
time units
- Time-as-space metaphor
45–47, 60 *see also*
spatialization (of time),
spatial metaphors (of time)
- Time-moving metaphor 3, 17,
43, 62, 104
- Traugott, Elizabeth Closs 3,
15, 43, 62
- Turner, Mark 4, 42–44, 46, 62,
71, 102–103, 105, 120, 148–150,
153, 191, 238–239
- V**
- verbal creativity 61–63, 66
- vertical axis 16, 197, 212, 219,
225, 237 *see also* lateral axis,
sagittal axis
- viewpoint 5, 43, 153, 155–159,
160, 164, 166, 169, 194
viewpoint compression
8, 147, 150, 156–157
- visual metaphors 101–102, 106
see also pictorial metaphors,
spatial metaphors (in comics)

In recent years, the study of the conceptualization of time has seen a considerable growth, providing a basis for exploring the cognitive foundation of metaphor. But if metaphorical representations of time are established in the cognitive system, how are they manipulated when humans are engaged in creative expression? This is the question that the present volume addresses, on the assumption that by interrogating creativity, new insights into our understanding of time may be gained. Our view of creativity, which informs the ten chapters that compose this volume, endorses not only the extraordinary instances found in poetry and the arts (cinema, music, graphic novels, etc.), but also its more 'mundane', everyday manifestations that appear in ordinary language use, political discourse, or TV news. Spanning across modalities (verbal, pictorial, auditory, and gestural), the exemplary expressions herein are intended to reflect the richness and diversity vis-à-vis the creativity of time representations while also pointing to the common underpinnings that motivate and constrain creativity.

ISBN 978 90 272 1159 0



9 789027 211590

John Benjamins Publishing Company