COGNITIVE

LITERARY

SCIENCE

Dialogues between Literature and Cognition

Edited by

MICHAEL BURKE &
EMILY T. TROSCIANKO

Cognitive Literary Science

COGNITION AND POETICS

Cognition and Poetics (CAP) fosters high quality interdisciplinary research at the intersection of cognitive science, literature, the arts, and linguistics. The series seeks to expand the development of theories and methodologies that integrate research in the relevant disciplines to further our understanding of the production and reception of the arts as one of the most central and complex operations of the human mind. CAP welcomes submissions of edited volumes and monographs in English that focus on literatures and cultures from around the world.

Series Editors:

Alexander Bergs, University of Osnabrück

Margaret H. Freeman, Myrifield Institute for Cognition and the Arts

Peter Schneck, University of Osnabrück

Achim Stephan, University of Osnabrück

Advisory Board:

Mark Bruhn, Regis University Denver, CO, USA

Peer Bundgard, Aarhus University, Denmark

Michael Burke, University College Roosevelt Middelburg, The Netherlands

Wallace Chafe, University of California Santa Barbara, USA

Barbara Dancygier, University of British Columbia Vancouver, Canada

Frank Jäkel, Universität Osnabrück, Germany

Winfried Menninghaus, Freie Universität Berlin, Germany

Keith Oatley, University of Toronto, Canada

Jan Slaby, Freie Universität Berlin, Germany

Reuven Tsur, Tel Aviv University, Israel

Mark Turner, Case Western Reserve University Cleveland, OH, USA

Simone Winko, Georg-August-Universität Göttingen, Germany

Dahlia Zaidel, University of California Los Angles, USA

Cognitive Approaches to Early Modern Spanish Literature
Isabel Jaén and Julien Jacques Simon

Cognitive Literary Science: Dialogues between Literature and Cognition
Edited by Michael Burke and Emily T. Troscianko

COGNITIVE LITERARY SCIENCE

Dialogues between Literature and Cognition

Edited by Michael Burke
  and
Emily T. Troscianko

OXFORD
UNIVERSITY PRESS

To our partners, for their patience

CONTENTS

ACKNOWLEDGEMENTS

CONTRIBUTORS

Alexander Bergs joined the Institute for English and American Studies at Osnabrück University in 2006, when he became Full Professor and Chair of English Language and Linguistics. His research interests include language variation and change, constructional approaches to language, the role of context in language, and cognitive poetics. His works include several authored and edited books (*Social Networks and Historical Sociolinguistics* [2005], *Modern Scots* [2005], *Constructions and Language Change* [2008], *Contexts and Constructions* [2009]), one textbook on *Synchronic English Linguistics* (2012) and one on *Historical Linguistics* (co-authored with Kate Burridge, 2016), as well as the two-volume *Handbook of English Historical Linguistics* (edited with Laurel Brinton, 2012). He has taught at the universities of Düsseldorf, Bonn, Santiago de Compostela, Catania, and Wisconsin-Milwaukee, and has organized several international workshops and conferences. Apart from several terms as Director of the Institute of English and American Studies, as Dean of the Faculty of Linguistics and Literatures, and as member of the University Senate, he is one of the founding directors of the Research Cluster for Cognition and Poetics at Osnabrück University.

Brian Boyd is University Distinguished Professor in English, Drama, and Writing Studies at the University of Auckland. He is best known for his work on Vladimir Nabokov—a biography, critical books, and editions, most recently of *Letters to Véra* (Penguin, 2014, and Knopf, 2015) and hundreds of articles—and on literature, evolution, and cognition, including *On the Origin of Stories: Evolution, Cognition, and Fiction* and *Why Lyrics Last: Evolution, Cognition, and Shakespeare's Sonnets* (Harvard, 2009 and 2012) and the co-edited *Evolution, Literature, and Film: A Reader* (Columbia, 2010). He has written on literature from Homer to the present, on comics and film, on literary theory and translation, and on art, philosophy, and science. His work has won awards on four continents and has been published in 19 languages. He is currently writing a biography of philosopher Karl Popper.

Michael Burke is Professor of Rhetoric at University College Roosevelt (Utrecht University). He is the author of *Literary Reading Cognition and Emotion: An Exploration of the Oceanic Mind* (2011). He has published numerous chapters and articles on the topic of cognitive literary science. His areas of interest also include classical rhetoric, stylistics, and pragmatics.

James Carney is Senior Research Associate in Psychology at Lancaster University. He previously held a Marie Curie Fellowship and a Junior Research Fellowship (with Linacre College) at the Department of Experimental Psychology, University of Oxford. Other appointments have included working as a lecturer in English literature at University College Cork and the University of Limerick. His research interests centre on the application of insights from the cognitive and experimental sciences to culture, broadly conceived. To date, this has resulted in studies of literature, religion, mythology, popular culture, poetics, and narrative in a wide variety of scholarly journals.

Richard J. Gerrig is a professor of psychology at Stony Brook University. Gerrig's research focuses on cognitive psychological aspects of language use. One line of work examines the mental processes that underlie efficient communication. A second research programme considers the cognitive and emotional changes readers experience when they are transported to narrative worlds. His book *Experiencing Narrative Worlds* was published by Yale University Press in 1993. Gerrig is a Fellow of the Society for Text & Discourse, the American Psychological Association, and the Association for Psychological Science. He is the editor of the *Journal of Memory and Language*.

Raymond W. Gibbs Jr. is Distinguished Professor of Psychology at the University of California, Santa Cruz. He is the author of *Poetics of Mind: Figurative Thought, Language and Understanding* (1994), *Intentions in the Experience of Meaning* (1999), *Embodiment and Cognitive Science* (2006), and, with Herb Colston, *Interpreting Figurative Meaning* (2012). His newest book is *Metaphor Wars: Conceptual Metaphor in Human Life* (2015). He is also editor of *The Cambridge Handbook of Metaphor and Thought* (2008) and the journal *Metaphor and Symbol*.

Marcus Hartner is lecturer in English Literature at Bielefeld University in Germany, where he is also part of a research project on Contemporary Fictions of Migration. His main research interests include literary theory, cognitive approaches to narrative, and the study of both contemporary and early modern literature and culture. In the field of cognitive narratology his work has focused primarily on blending theory, the sociopsychological underpinnings of character construction, and the dynamics of

character interaction. Among his publications are *Perspektivische Interaktion im Roman: Kognition, Rezeption, Interpretation* [The Interaction of Perspectives in the Novel: Cognition, Reception, Interpretation] (de Gruyter, 2012) and a co-edited volume on *Blending and the Study of Narrative: Approaches and Applications* (de Gruyter, 2012).

David Herman, who has taught at institutions that include North Carolina State University, Ohio State University, and, most recently, Durham University in the UK, is working to bring ideas from narrative studies into dialogue with scholarship on animals and human–animal relationships. His current projects include an edited collection titled *Animal Comics: Multispecies Storyworlds in Graphic Narratives* (forthcoming from Bloomsbury in 2017) and a monograph on *Narratology Beyond the Human* (in progress).

Patrick Colm Hogan is a professor in the English Department at the University of Connecticut, where he is also on the faculty of the Program in Cognitive Science. He is the author of nineteen books, including *How Authors' Minds Make Stories* (Cambridge University Press, 2013) and *Beauty and Sublimity: A Cognitive Aesthetics of Literature and the Arts* (Cambridge University Press, 2016).

Arthur M. Jacobs is Professor of Experimental and Neurocognitive Psychology and founding director of the Dahlem Institute for Neuroimaging of Emotion (D.I.N.E.) at the Freie Universität Berlin (FUB). As part of the highly interdisciplinary Languages of Emotions project at the FUB, Professor Jacobs led a team investigating the Affective and Aesthetic Processes of Reading. He is (co-)author of more than 250 scientific publications in the fields of reading research, psycholinguistics, affective neuroscience, and neurocognitive poetics, including the book *Gehirn und Gedicht* [Brain and Poetry] (2011).

Karin Kukkonen is Associate Professor in Comparative Literature at the University of Oslo and Academy of Finland Postdoctoral Research Fellow. She has published on cognitive approaches to comics and graphic novels (*Contemporary Comics Storytelling*, 2013) and embodied and probabilistic cognitive approaches to literary narrative, as well as on the 18th-century novel. Her forthcoming monograph *A Prehistory of Cognitive Poetics: Neoclassicism and the Novel* brings the neoclassical criticism of the 17th and 18th centuries (which was informed by the 'new science' of the time) into conversation with today's cognitive approaches to literature. In a project funded by the Academy of Finland, Kukkonen is currently pursuing research on how the rise of embodied strategies of style and narration

in the 18th-century novel contributed to the immersive, gripping nature of the genre.

David S. Miall received his doctoral degree from the University of Wales at Cardiff, after which he taught for 10 years at the College of St Paul & St Mary in Cheltenham. He moved to Canada in 1989 and took up a position in the Department of English in 1990, specializing in literature of the British Romantic period. His research interests include empirical study of literary reading—a field in which he has collaborated with Don Kuiken in Psychology since 1990. The first of several federal grants for this research was awarded in 1992, the latest in April 2008. In addition to his book *Literary Reading: Empirical and Theoretical Studies* (2006), he is the author of over 140 chapters and scholarly articles. He became Emeritus Professor on his retirement in 2012. He now resides in France.

Micah L. Mumper is a doctoral candidate in the Cognitive Science program at Stony Brook University. He is advised by Dr. Richard Gerrig. Using a combination of behavioural and self-report methodologies, he studies how readers' global and moment-by-moment experiences of fictional worlds influence narrative impact. In particular, his research considers how basic cognitive processes support comprehension, how reading may benefit social-cognitive abilities, how narratives affect readers' moral judgements, as well as how fiction influences real-world attitudes and behaviours.

Keith Oatley read Natural Sciences at Cambridge and did a PhD at University College London. With Maja Djikic and Raymond Mar, he has been involved in developing the psychology of fiction, a movement in which literary analyses are combined with empirical and theoretical research in psychology. His work has included the relation of reading to writing fiction, exploration of how literary works enable people to transform themselves, and research on how reading fiction encourages empathy with others. Among his books on fiction is *Such Stuff as Dreams* (2011). He has also published three novels, the first of which won the Commonwealth Writers Prize for Best First Book. His most recent book is a novella combined with psychological analyses, *The Passionate Muse* (2012).

Caroline Pirlet is now working as a management consultant in Frankfurt/Main. During her time as a PhD candidate at the International Graduate Center for the Study of Culture (GCSC) in Giessen, Germany, she was a visiting scholar with Project Narrative at Ohio State University (Columbus, OH). Her research has focused on the affective dimension of understanding narratives, and reception-orientated cognitive-narratological approaches in particular. She co-authored the entry Narratology in *English and American*

Studies (with Monika Fludernik, ed. Martin Middeke et al., 2012), contributed to *Unnatural Narratives—Unnatural Narratology* (ed. Jan Alber and Rüdiger Heinze, 2011), and reviewed Patrick Hogan's *Affective Narratology* (*Germanisch-Romanische Monatsschrift*, 2013). She is currently gaining further qualifications as a business coach and doing independent research on emotions and narrative coaching.

Merja Polvinen is a research fellow at the Helsinki Collegium for Advanced Studies. Her work focuses on interdisciplinary approaches to literature, literature and the natural sciences (*Reading the Texture of Reality: Chaos Theory, Literature and the Humanist Perspective*, 2008), and cognitive approaches to literary representation. She is co-editor of *Rethinking Mimesis* (2012) and has recently published articles in the *Journal of Literary Semantics* and *Interdisciplinary Literary Studies*. Polvinen is also a member of the network Narrative and Complex Systems (University of York), board member of the Finnish Society for Science Fiction and Fantasy Research, and co-organizer with Karin Kukkonen of the Cognitive Futures in the Humanities conference in Helsinki in June 2016.

Emily T. Troscianko (http://www.troscianko.com) is a Research Associate in the Faculty of Medieval and Modern Languages at the University of Oxford, and in 2014–2015 was a Knowledge Exchange Fellow at the Oxford Research Centre in the Humanities, collaborating with Beat, the leading UK eating disorders charity. The book from her doctoral thesis, *Kafka's Cognitive Realism*, came out with Routledge in 2014, and she is now working at the intersection of the cognitive and medical humanities, while co-authoring, with Susan Blackmore, the third edition of the psychology textbook *Consciousness: An Introduction* (forthcoming 2018).

Andreas Wirag is a PhD student at the Teaching & Learning Processes (UpGrade) Graduate School at Koblenz-Landau University. As a secondary schoolteacher of foreign languages and a university lecturer, he empirically investigates the interface of cognitive approaches, literature, and language education. He is currently working towards his PhD thesis on the employment of prototype theory in second language vocabulary acquisition.

Cognitive Literary Science

Introduction

A Window on to the Landscape of Cognitive Literary Science

EMILY T. TROSCIANKO AND MICHAEL BURKE

In 2013, we asked what the prospects were for the field of cognitive literary studies not only offering tangible benefits for our understanding of literature (which it has and continues to do) but also starting to think of itself, and be thought of by others, as able to offer benefits back to the cognitive sciences that inform it. In our special issue of the *Journal of Literary Semantics* (Burke and Troscianko, 2013), we included four examples of work that made this recursive move back to the scientific side: papers on parallel processing and consciousness, affect and artifice, the imagination across the disciplinary divide, and the neuroscience of rhetorical style were followed by a coda from a neuroscientist asking 'Can literary studies contribute to cognitive neuroscience?' (and concluding yes).

Over the past few years, it has been gratifying to see a subtle but distinct shift in the tone of many contributions to the cognitive-literary field: not across the board, but more conspicuously now than before, researchers working with cognitive concepts, findings, and debates seem to be engaging with them more in the spirit of confident give and take. Not that there is anything wrong with applying a relevant idea from another field judiciously to a question in another: this kind of work can be exciting and illuminating. It is probably also the most sensible first step in an encounter between disciplines: find something (probably something quite solidly documented)

from 'the other side' that speaks to a question you already had, or something that opens your eyes to a question you had never quite thought of, and see where it takes you. This 'simple' strategy of cross-disciplinary application is in practice often not very simple at all, and if it takes you as far as a new insight into an issue of text or response that had previously been opaque, this in itself is already a real achievement. That should not be forgotten when we tell ourselves that one-directional 'borrowing' isn't enough; it is already a lot.

Quite often, though, it happens that along the way, the act of applying one thing to another actually makes you rethink the thing (the theory or method) being applied. In the most basic sense, new evidence for something (like, say, the characteristics of autobiographical memory as evidenced in a fictional evocation of memory or a reader's response to it) always tells us more about that thing—and when the evidence comes from something as unlike the standard experimental psychology or neuroscience protocols as a work of literary fiction, it would be surprising if something qualitatively new were not learnt about memory or whatever it might be.

In more emergent areas of scientific inquiry, the likelihood of reciprocal benefit is greater still: if a subfield explicitly acknowledges its own works in progress, it automatically opens up space for input from other areas. This is one of the things that makes the cognitive-literary dialogue so promising in the first place: there is so patently so much still to be learned in so many and varied corners of the cognitive-scientific field, as well as the literary one, that nearly everything is still up for grabs.

And up for grabs does not mean the literary people are coming in and grabbing stuff the scientists would rather keep for themselves. It's easy, working in an area where the most obvious method has seemed to be the application/borrowing one, to come unthinkingly to the conclusion that no one on 'the other side' cares what you do. This impression is bolstered by the practical facts that departments and journals and funding bodies tend to adhere to the disciplinary boundaries, so the opportunities for researchers in different fields simply to come across your work can be limited. Nevertheless, researchers tend to become researchers because they are generally curious, open-minded people, and our experience is that this applies unequivocally to those trained in the empirical method: for people who run experiments as an everyday part of life, the point is to have questions and enjoy figuring out how to pose them in answerable ways and then trying to answer them, all the while knowing that your knowledge will never be absolute.

A few weeks ago, one of us (Troscianko) spoke to someone at a cognitive classics conference in Oxford who had been involved in an event bringing

together psychologists with humanities scholars, and who reported that one of the scientists had said to her at some point during the event, 'It's obvious what we get out of it, but why would literary people want to collaborate with us?' Ironically enough, this is what humanities researchers seem to think most of the time too. It seems that for whatever combination of perfectly explicable reasons—institutional habit, intellectual insecurity, the allure of the greener grass everywhere else—both 'sides' have concluded that, well, they would quite like to collaborate with the other, but the other would never be interested in reciprocating.

It's very easy (for us) to enumerate all the reasons why the humanities end up thinking this: the apparent status imbalance, the consequent feeling of being under-appreciated, the consequent feelings of defensiveness . . . But it's a shame, because all this conspires against giving it a go, whatever 'it' may mean in any given context: emailing that person whose paper you liked but didn't quite understand, setting up lunch to talk about your very hazy ideas for an experiment, inviting someone from slightly academically further afield to speak at your seminar series. This is especially sad if the scientists do in fact really value the qualitative depth or conceptual subtlety apparent in our work—but we never get to find out.

However, if you're reading this book, you are probably one of the people who does do these things and continues to do them because you see that they are worthwhile—if only in making your working day more stimulating. We know there are a lot of you out there, and we are not going to pretend that this volume is in any sense representative of cognitive literary research as a whole, except insofar as it showcases the sheer variety and creativity of our field.

Most of our contributions are single-authored chapters, and the two exceptions are co-authored by researchers from the same field, but we imagine (and in many cases know) that they are all based on energetic and careful conversation with people from that 'other side': at conferences and seminars, in common rooms and over lunches, by email, and even through periods working closely with people trained very differently, in open-minded lab groups or interdisciplinary institutes. In the rest of this introduction, we try to draw out some of the commonalities and differences between the topics tackled and the angles adopted by our contributors; there are thematic threads to be traced and recurrent patterns of perspective and method. But our guide in conceiving this volume was not thematic or method-specific; it was structural in a broad disciplinary sense.

Many of our contributors took part in a symposium on Science and Literary Criticism (Burke and Troscianko, 2012) which we held at St John's College, Oxford, in the spring of 2012. The talks given there were as diverse

as the title suggests, and the small size of the event combined with the variety of topics and backgrounds meant we were able to have intimate conversations about the promise and problems of the field. We talked about the 'laboratory liability' and what experiments can really be expected to teach us; about how systems of theoretical knowledge interact; about all the timescales from the evolutionary to the neural; about how much interpersonal variability there really is; about expertise and the blank-slate reader, normality and averaging, introspection and the unconscious, rigour and fidelity. Questions about disciplinary balance and reciprocity have been with us since, and the idea for this book was to try to instantiate both.

In this spirit, the three parts of the book present the three main iterations on ways of working in the cognitive-literary field. In the first part, which would often be thought of as cognitive literary studies proper, literary scholars draw on some aspect of cognitive science to offer a new viewpoint on literature or literary reading. In the second, literary scholars use literary materials or conceptual frameworks to contribute to cognitive-scientific debates. In the third, cognitive scientists engage with literature and literary-critical methods to shed light on questions in their home disciplines and/or those in literary studies. Arguably for total symmetry there should have been four parts, but in practice we found that the contributions from cognitive scientists tended in any case to have a dual focus: casting light on the literary phenomena and on the cognitive. So separating them out would have felt a little artificial.

In 2013, we suggested the term 'cognitive literary science' for a form of cognitive literary studies that takes its place assertively beneath the capacious cognitive-science umbrella, giving and receiving in equal measure—maybe so it stops even feeling like exchange, and starts feeling simply like what we do. Originally our thought was that Part I here might not quite count as part of cognitive literary science thus defined, but as should become clear in the following survey, it now seems right and important to see all three variations on cognitive literary research as integral to what a grown-up 'CLSci' will look like.

Of course, the argument could be made that this model makes the inherently limiting assumption that everyone will be working on their own and that every individual researcher has only one 'home' discipline. Clearly neither of these things need or should be true. Collaborative work that in its everyday practices crosses the divide or even forgets that the divide exists is one of the best ways of making interdisciplinarity meaningful. And many people have eclectic and active enough academic backgrounds that pigeonholing them by department makes little sense. But even where these things are the case, perhaps there is still something to be said for the rough

outlines of our structures; perhaps, especially while the field is still relatively young, the directional currents can still on the whole be discerned, and can tell us interesting things when we stop to look at them.

In the spirit of learning through careful observation, the remainder of this introduction will be devoted to an overview of the following chapters that asks broad questions about some of the similarities and differences between our contributions. We will not give a blow-by-blow summary of what each chapter. Instead, it has been interesting to reflect, at the end of a long editorial process, on the composition of the book and what it might tell us about the present and future of the field. Again, we make no claims to representativeness, but 15 chapters in 3 parts offer a decent-sized window on to the state of CLSci in 2016: where, right now, are our colleagues applying cognitive-literary approaches, to what purpose, with what methods and assumptions? Is it even possible to generalize at all?

We will start with a few simple questions.

— *Who?* Our contributors range from established to mid- and early-career scholars, working in the United Kingdom, the United States, Canada, New Zealand, Germany, Finland, and Norway, originally trained in literary studies, linguistics, and experimental and neurocognitive psychology, and now practising at the interesting intersections of those fields and others.

— *What?* Broadly speaking, the topics being addressed in our chapters are the ones we would expect to see. The current Big Six cognitive-literary topics—embodiment, emotion, immersion, mental imagery, simulation, and social cognition—are salient in the majority of the chapters. Even when the focus of inquiry is something less ubiquitous and more specific, like the sublime in David Miall's chapter or the fantastic in Karin Kukkonen's, the conceptual underlay is still shaped by those major themes. The three exceptions are perhaps the two chapters on different aspects of readerly pattern extraction (by Alexander Bergs and Brian Boyd), and James Carney's chapter on construal level theory and science fiction. The latter proposes hypotheses about psychological distance and abstraction that certainly touch on empathy and emotion more broadly, but subordinates them to questions about the foregrounding of human agency through specific stylistic means. The role of feedback and predictive processing, which Kukkonen describes as 'still vastly under-represented in cognitive literary studies', makes an appearance in two other chapters—briefly in Caroline Pirlet and Andreas Wirag's, and centrally in Emily Troscianko's—and feels like one that could play an important connective role in the future of the field, with clear relevance to topics like the interplay between memory and

emotion discussed by Patrick Hogan or between immersion and reflection as explored by Merja Polvinen. If, as Andy Clark predicts, predictive coding turns out to kick off one of 'the major intellectual events of the early twenty-first century' (2013, p. 21), then it seems likely that CLSci will get in on the act. But then, we are currently keen on this, so our predictions may be revealing primarily of our 'priors'.

— *Where?* If we look at the cognitive-scientific disciplines on which our contributors are drawing, we again find the usual suspects of experimental psychology and neuroscience, with a little bit of evolutionary psychology and some philosophy of mind, notably an adapted form of 'heterophenomenology' (David Herman). Herman also brings in ethology and some anthropology, which seems like an obvious area for expansion in CLSci, as do developmental psychology and questions about life-course changes (broached by Richard Gerrig and Micah Mumper, and by Keith Oatley) and the medical/psychiatric realm dealt with by Troscianko. Alexander Bergs and Arthur Jacobs make cognitive (neuro)linguistics central to their chapters, though it does not feature much in the contributions of those outside that field, with the exception of Miall, who explains how EEG findings on functional shift speak to the style of the sublime. There is, though, a disconnect across the field between researchers who adopt a linguistics model and those who do not which continues to feel surprising—it would be nice to see more integration on this front in future. A possible facilitator here could be the field of cognitive stylistics: the linguistic analysis of literary texts conducted through the lens of either cognitive psychology or cognitive linguistics. Another common absence also found here is that of social psychology: like anthropological methods, it tends to be under-represented in CLSci, as it is here (though there is a little discursive psychology in Pirlet and Wirag's chapter).

Is this because when turning to 'science', the inclination is to turn to the 'harder' rather than the 'softer' versions first, because they promise the most solid foundation of empirical validation? Marcus Hartner would warn us that the *principle of autonomy* should make us hesitate before leaping over too many explanatory levels on the path between our home disciplines and those we make connections with. We would also add that a cogent link from the humanities to social psychology can be found in the precepts and principles of classical rhetoric and its modern guises of persuasion and communication studies. Meanwhile, it's clear that for the majority of our contributors, the behavioural and self-report methods of experimental psychology are the natural stepping stone: not too near and not too far. Generally speaking, though, there seems quite a contrast between those contributors who (to oversimplify somewhat) jump straight to the science

and those who ground their arguments in theoretical or empirical work that has already taken place within the cognitive-literary field. That preference will depend on all kinds of factors including subject matter and probably personality, but tracking whether the relative proportions change over time may tell us something about the likely future size, shape, and constitution of CLSci.

Another 'where?' question we might ask, of course, is a cultural-geographic one: where do our contributors' primary texts come from? In this we are, for the obvious pragmatic reasons, fairly Anglocentric, but Kukkonen introduces us to an 18th-century French novella and Jacobs guides us through the word valleys, sentence slopes, verse lifts, and stanza rises of German linguistic beauty, idiom, and poetry. Where time and expertise permit, it would be great to see more cultural-linguistic diversity in future CLSci studies out beyond the main Germanic and Romance languages.

— *When?* The primary texts our contributors discuss range from Longinus, reproducing in the 1st century C.E. a poem by Sappho from 6 centuries earlier (Miall), to three North American novels from 2013 (Gerrig and Mumper). Shakespeare's sonnets win the prize for the most attention, with three contributors considering them. Otherwise, the 20th century is the best represented, as might be expected—but with much less of a focus on high Modernism than has often been the case.

— *Why and how?* These two questions meld somewhat into one, since it's hard to neatly separate out the question being asked from the method used to answering it. The methods adopted by our contributors take in the full range from meta-theoretical overview (Hartner) to theories that encompass facets of the overarching distinction between lyric and narrative (Boyd) or fiction and non-fiction (David Herman); from accounts of genre characteristics (Carney) and rethinkings of disciplinary structures and boundaries (Jacobs, Pirlet and Wirag) to inquiries into literary phenomena like the sublime (Miall) and the fantastic (Kukkonen) or linguistic phenomena like coercion (Bergs); from a question about how a particular cognitive context or individual history changes the reading experience (Gerrig and Mumper, Troscianko) to higher-level ones about why readers (critical and recreational) vary and resemble each other in their responses (Raymond Gibbs) and how reading changes people (Oatley); from a challenge to received ways of thinking about readerly engagement (Polvinen) to a knotty puzzle posed by a specific text (Hogan). It will become clear to you once you read them, though, that these encapsulations are only one way of conveying what the chapters do: we could just as well describe Herman's as a critical survey of the problem of non-human other minds, or Kukkonen's

as a case study on the probabilistic models of the Bayesian reader. But the variety of scales and scopes of questions asked and evidence presented, approached with deductive and/or inductive methods, all with their own rationales and priorities, makes clear that there really is no single template for a standard CLSci publication: we could hardly be any further from, say, a field in which all anyone does is apply a scientific finding to the reading of a single text to generate a new interpretation. This can be and is done brilliantly, but there are a myriad other options for researchers in the field, and it is heartening to see the inventiveness keep growing. Sceptics may say that this heterogeneity is the field's fatal flaw, but it must also be its forte.

When it comes to the use of primary literary texts, too, there is a huge range of strategies, from more or less close readings of just one or a very few texts to high-level surveys of general characteristics of a large number of texts or analysis of numerous small text fragments, to chapters that do not discuss specific texts at all. Interestingly, the closest reading and the very broadest argument go hand in hand in Boyd's chapter on the contrast between narrative and lyric; here the specifics of textual patterning are analysed at the lowest level to provide evidence for the ultra-high-level hypothesis about the levels of effort required for cognitive pattern extraction. And while for the most part the texts considered are literary prose fiction, poetry, and drama, Kukkonen brings in discussion of the links between literature and visual art, and Herman compares and contrasts fictional and non-fictional accounts of non-human minds.

Having exhausted the 'Five Ws and an H', our next set of questions relates to the currents and tensions of interdisciplinarity: in the shifts or mergings between disciplines, is consensus emerging or not, what happens to terminology, to what extent are attitudes critical or embracing or both at once, and are people worrying about the interdisciplinary or just getting on with it?

There are some striking points of convergence in our contributors' conclusions—Bergs and Boyd on the centrality of pattern recognition in (literary) reading, as already noted, or Oatley and Polvinen on the nature of literature as cognitive training. There are some areas of divergence too, whether in differing attitudes to things like measures of transportation (compare Gerrig and Mumper with Polvinen), or in thinking about whether contrasting attitudes to texts manifest through simultaneity or vacillation (compare Polvinen and Kukkonen). We see these differences not as incompatibilities, but as excellent starting points for future exchange.

In many of the chapters, there seems to be an easy interplay between concepts and terms deriving from the cognitive and the literary side—cognitive frames and natural narratology, construal level and characterization,

the P600 response and the sublime—with established terms of literary reference clearly still serving useful purposes when put in dialogue with others that have quite different histories and conventions. The use of certain cognitive terms indicates that there is still a lot of fluidity in the conceptual systems in use: Oatley, for instance, uses inferencing, theory of mind, and simulation in an inclusive way that the more terminologically hard-line might say one shouldn't. Who knows where the scientific and memetic competition will take us in the end. Perhaps surprisingly, though, no one suggests that we need to replace existing concepts with new ones designed specifically for cognitive-literary purposes: although there is plenty of critical engagement with the definitions and/or implications of well-known concepts—like heterophenomenology in Herman, or aesthetic illusion in Polvinen—the tendency here seems to be to work with the terms we have inherited rather than offering up new ones.

On the matter of critique, we might expect the contributions in our second part—literary scholars offering something back to the sciences—to be the most overtly critical of scientific practices and frameworks, and this turns out to be the case: Hogan remarks on the limitations of lab-based experiments, for example, Polvinen on the problems with thinking computationally about the imagination, and Herman not only on the need to rethink narratology with the help of philosophy and anthropology but also on how elements of that philosophy can and should be rethought with the help of literary insights. By contrast, though, both Kukkonen and Troscianko apply feedback or prediction principles quite uncomplicatedly to the study of literature, but both with the aim of advancing the study of the cognitive phenomena under discussion: predictive processing and disordered eating, respectively. That said, the contributors to our third part are happy to acknowledge the limitations of current scientific practice too: Gibbs in relation to typical literary reading studies investigating 'naïve readers' first-time pass through, and quick comprehension of, brief segments of text, usually artificially constructed for experimental purposes', for instance, or Bergs on the 'substantial drawbacks' of fMRI. (Although as a linguist working at an Institute for English and American Studies using historical and solidly empirical methods, Bergs is an excellent example of where the opposition of 'scientist' versus 'humanities scholar' breaks down.) A bit of healthy scepticism about traditional literary-critical methods might also be anticipated from the scientists writing in Part III, but this is not really in evidence at all, with the possible exception of Gibbs's comments on the tendency of critics to think of their acts of reading as quite unlike those of 'ordinary' readers, and so to feel legitimized in rejecting findings about the latter as inapplicable to critical reading. A brief note

of warning is, however, sounded by Carney when he considers what happens when prescriptive notions of the literary collide with ordinary readers' experiences—and advocates siding with the latter.

As for whether interdisciplinarity itself is the object of questioning, doubt, or other kinds of meta-reflection, on the whole it seems not to be. Assessing the status quo and offering suggestions for how to strengthen the field is the point of Hartner's opening chapter, but otherwise, though most of our authors give brief scene-setting remarks about the disciplinary encounters they will be drawing on, these are more explanation than defence, and the usual procedure seems to be: set out why a cognitive-literary approach is meaningful, and then put it into practice. On the meta-level, Hartner makes some concluding suggestions about the aims of interdisciplinary research that contrast with Herman's position on 'transdisciplinarity', suggesting that although conducting research that demonstrates the benefits of the humanities in broader contexts is an excellent aim, it needn't be one we always have in mind: 'Literature is worth studying for a vast variety of reasons; not all of them will necessarily be of scientific or transdisciplinary value.'

By now it will have become clear that, like any categorical structure imposed on complex works of individual scholarship, our ordering schema is far from watertight. It's easy to make the case, in particular, that the contributions in Part I offer 'transdisciplinary' benefits back to the cognitive sciences just as those in Part II do. By offering rich evidence of cognitive phenomena that are manifested in salient and complex ways in literary encounters, they arguably do what Kukkonen says of literature and 'fantastic cognition': throwing each of their cognitive subjects into sharp relief, cognitive literary study 'helps make . . . more or less automatic features of cognition noticeable and thus subject to analysis'. One of the most subtly and unexpectedly encouraging trends in the whole book, actually, is that many of our authors do not seem to feel the need to specify, in disciplinary terms, where the projected benefits of their contributions lie: when investigating what distinctive processes might be involved in the reading of full-length novels, or how the linguistic phenomenon of coercion behaves in aesthetic contexts, or what exactly the sublime is, these questions are of intrinsic interest, and working out which 'side' 'gains' more from any given increase in understanding may be beside the point. Of course, articulating which disciplinary stockpiles we want to contribute to is often important, but sometimes we can allow our questions and answers to speak for themselves.

Finally, we might ask how the classic flashpoints of the cognitive literary field are dealt with by our contributors. We might name three in particular: How do findings about averaged-out experimental participants relate

to insights into individual experiences? How do the theoretical and the empirical relate to each other? And how do findings about 20th- or 21st-century experimental participants relate to questions about texts many centuries or even millennia old?

The matter of the individual versus the general is broached in many chapters, and takes centre stage in two—interestingly, both by scientists (Gibbs, and Gerrig and Mumper). This concern from the scientific side with the specificity more usually thought of as the domain of the humanities is echoed in Oatley's chapter too, though Pirlet and Wirag also engage with it, and it makes brief appearances in lots of other chapters. The problem and a solution are expressed concisely by Carney, who notes that literary texts inherit the variability of the human mind, and so can suffer from shoehorning typologies, but that both also have regularities which emerge at the statistical level, so that generalizations are not meaningless. Many of our chapters are beautiful demonstrations of the simple reality that although empirical methods can be used to iron out the differences between people, they can also be used to highlight those differences—indeed, empirical work that investigates responses other than one's own is the only way of doing that. This is part of perhaps the most immediately satisfying justification for the entire field of CLSci (should one be needed): that instead of basing conclusions about textual effects on the singular experience of the critic-as-reader disguised as the generic reader, or accumulating new interpretations of texts without acknowledgement of the cognitive factors on which they depend, we can understand interpretations as cognitive effects, and investigate their natural variations in others as well as ourselves. This logic is put into practice not just in the kinds of research questions and empirical evidence manifest in our contributions, but in some cases also in their approaches as expressed through choice of writerly tone: the chapters by Gibbs and Jacobs, both scientists, make particularly clear that personal experience is a touchstone for how research is conducted and/or conveyed.

Another question bound to be asked about work in CLSci as conducted by researchers trained in literary studies is what combination of theory and empirical work it draws on or contributes to. David Miall is well known as one of the pioneers of empirical literary studies, and Gibbs, Gerrig and Mumper, Oatley, and Jacobs all present findings from experimental work they have carried out. Amongst our humanities contributors, several give clear outlines of how their suggestions could be tested empirically: a hypothetical study using the three extant versions of Cazotte's 18th-century novella to see how readers tread the interpretive line between the uncanny, the fantastic, and the marvellous (Kukkonen), or a prediction of changes to readers' approval of Joyce's eponymous heroine Eveline as a function

of their varying tendencies towards empathic engagement with other people (Pirlet and Wirag). Troscianko presents some pilot data from the start of a 'knowledge exchange' collaboration with a mental health charity, and Herman also makes clear the real-world ethical implications of the research project he sketches out: mental-state attribution in narrative can have effects back on the discourse domains in which they are located, and thus help change how we think about other species' minds and so treat other animals.

When it comes to testing hypotheses, or even making the hypotheses in the first place, about writers or readers of texts written centuries or millennia ago, there are obvious complications—indeed, they were raised by one of the reviewers of our book proposal as needing more attention—but our contributors do not seem fazed by them. Miall's chapter deals with the historically furthest removed textual examples, but he aligns Sappho's poem with travel accounts from the 18th and 19th centuries, and his analysis makes clear that there is no principled obstacle to creating this kind of line of connection between periods. Boyd's argument relates to a fundamental enough feature of human cognition that illustrating it through Shakespeare's sonnets poses no problems. Kukkonen's argument links the history of aesthetic trends with the predictive models they engage, but in general from our contributions one can infer that an adapted version of Carney's response to the 'problem' of individual variation applies to that of historical variation: there are variations, but there are also commonalities. The difference between the two cases is, of course, that if we have hypotheses about reader response (or indeed authorial creation) that we want to test, this simply cannot be done with historical readers or writers as it can with 21st-century individuals; the most we can do are observational studies along the lines of corpus analysis. But maybe this does not hugely matter. We can do experiments with readers now and interpret our results in the light of wide-ranging evidence of what is known about historical-evolutionary trends in human cognition. This requires more interdisciplinary collaboration, but perhaps that is no bad thing. It is certainly one more tempting territory staked out for future exploration.

What we take from this survey of the territory of CLSci, at least as it is inhabited by the 17 contributors to this volume, is the sense of a field growing confidently into maturity. We imposed the tripartite structure, but probably we needn't have: people are doing all kinds of creative borrowing and lending, from different starting points and with varying aims. You must judge for yourself whether Hartner's three principles for a responsible CLSci are being adhered to, or whether you agree with them in the first place, and we are sure you will have your own set of criteria by which

to assess what follows. But we hope that your reading experience will have something of the quality of eavesdropping enjoyably on a mixture of animated conversations.

As for the near future of CLSci, well, we predict that scholars and scientists from across the disciplines will work together more frequently on closely collaborative projects, and that these projects will develop new ways of doing mixed-methods research combining theory with qualitative and quantitative measures. We also predict that 4E cognition—the embodied, the embedded, the enactive, and the extended—will stay big, but grow more differentiated as debates on what strength of claim can be made about the contributions of context to cognition continue to mature. Investigations of contextual effects, priming, and framing will, we imagine, connect the linguistic and the rhetorical more closely with the other aspects of the cognitive. There will be more work on how important dimensions of reader variation affect the processes and the outcomes of literary reading, and how these interactions may have implications for today's social and psychiatric challenges. The ever-seductive question of whether reading literature makes us better (cleverer, more empathic, more moral) people will be tackled from new angles, especially by developing ways of tracking longer-term changes in readers' mental states and behaviours. In this regard, we anticipate an increasing concern with more ecologically valid methods for studying literary reading empirically, via more dialogue with social anthropology and mobile tech innovation. Lab-based experiments will continue to ask detailed questions about readers' responses, with the 4E paradigm bringing the haptics, kinaesthetics, and ergonomics of literary text processing under scrutiny. Neuroscientific methods will, we hope, grow more nuanced too, as conceptual developments like 'second-person neuroscience' accompany technological advances. All this should keep the cognitive literary scientists of the near future agreeably busy. Of course, we could be wrong about any or all of this, but in a field as young and as vibrant as ours, there is nothing particularly disquieting about that.

REFERENCES

Burke, Michael, and Emily Troscianko. (2012). Science and literary criticism. *St John's College Oxford.* Programme and abstracts at http://www.sjc.ox.ac.uk/4073/Science%20and%20Literary%20Criticism%202012_v4.pdf.download
Burke, Michael, and Emily T. Troscianko. (2013). Explorations in cognitive literary science. *Journal of Literary Semantics*, *42*(2).
Clark, Andy. (2013). Whatever next? Predictive brains, situated agents, and the future of cognitive science. *Behavioral and Brain Sciences*, *36*(3), 181–204.

Literature through a Cognitive Lens

Scientific Concepts in Literary Studies

Towards Criteria for the Meeting of Literature and Cognitive Science

MARCUS HARTNER

INTRODUCTION

Cognitive approaches to the study of literature are not a new phenomenon. More than 25 years ago, inspired by the cognitive turn in linguistics, Eldrud Ibsch published an article on the 'The Cognitive Turn in Narratology' (1990), and at the turn of the millennium Tony Jackson (2000, p. 340) suggested that the influence of cognitive science might soon become irresistible. 'How can empirically established, scientific claims about the biology and psychology of reading, writing, and responding', he asked, 'have no bearing on the discipline whose meat and potatoes is reading, writing, and responding?' Yet, despite such predictions, the overall situation of cognitive approaches within the academic study of literature has changed only partially over the last two decades. General interest in the field has undoubtedly increased over the past years, but many students of literature still complete their studies without ever being introduced to cognitive approaches, and the majority of scholars remain sceptical, or at least indifferent, towards this field of research. Cognitive approaches, in other words, have remained 'on the verge of affecting the mainstream' (Burke and Troscianko, 2012) but have never quite managed to do so. As a result, the field's breakthrough continues to be projected

into the future. It is still hailed as 'the next big thing' in literary studies (Cohen, 2010), despite the fact that cognitive approaches have been around for more than 20 years.[1]

The reasons for the lack of enthusiasm many scholars in the humanities display towards cognitive approaches are diverse. They range from the field's lack of a common theoretical framework to an old-fashioned concern about the 'infiltration and contamination [of literary criticism] by other disciplines' (Waugh, 2006, p. 24). Furthermore, scholars such as Paul Sheenan consider cognitive literary studies to be fundamentally incompatible with the entire body of approaches traditionally subsumed under the shorthand of 'Theory' (2014, p. 31). Cognitive approaches, in his view, represent 'a deliberate turn away from the historical, social and political conditions that shape the literary, toward the universal structures of cognition' (p. 53). The concerns about cognitive literary studies also include epistemological and methodological uncertainties surrounding the intersection of empirical (cognitive) science and (non-empirical) literary studies, which have formed part of an ongoing debate on the explanatory potential, the scope, and the problems of cognitive approaches.[2]

In the context of this discussion, my chapter engages in a reflection on methodologically sound ways of conceptualizing the meeting of science and the humanities. Taking up some of the methodological and theoretical issues affecting cognitive approaches, I try to identify general criteria by drawing on a standard model of the structural relationship between different levels of scientific investigation, outlined, for example, by Patrick Hogan (2003, pp. 202–210). From this model, I derive a set of basic heuristic guidelines for cognitive literary studies: the principles of *coherence, moderation*, and *autonomy*. By elaborating on the conceptual underpinnings and the practical consequences of those guidelines, I hope to provide some practical orientation for research situated at the intersection of literature and science. In this way, I aim both to further the field's development and to counter some of the methodological criticism to which it has been subjected.[3]

---

1. On the origins of cognitive approaches to literature, see Richardson (2004, p. 1) and Vandaele and Brône (2009, p. 1).
2. See, for example, Jackson (2000, 2005), Adler and Gross (2002), Hogan (2003), Gottschall (2008), Slingerland (2008), Ryan (2010), and Sheenan (2014).
3. For a more extended discussion of the project of cognitive literary studies and the idea of heuristic guidelines, see also Hartner (2012, pp. 13–56).