

Evolutionary Literary Theory

Emelie Jonsson

INTRODUCTION: STUDYING LITERARY MEANING

Evolutionary literary theorists treat literature as a product of the evolved human mind. That core premise sets them apart from non-evolutionary literary theorists, but it provides only their most general theoretical ground. After positing that literature is produced by the human mind, and that the human mind is structured by evolved dispositions, literary theorists still face many unanswered questions about their subject: the mental experiences of people who construct and consume verbally conveyed fictional experiences. Literature portrays fictional humans (or human-like characters) from the perspective of authors, as interpreted by readers. The minds of authors and readers are lodged in particular cultural settings, and the fictional minds of characters may be lodged in entirely different cultural settings. Authors and readers have different developmental trajectories

and childhood environments, different mating strategies, and different expressions of basic personality traits such as extraversion and agreeableness. They each construct a life narrative and adhere to some variation of the values available to them within their culture (McAdams and McLean, 2013). The fictional minds of characters – to the extent that they are naturalistically rendered – also display such differences.

Individual differences matter to evolutionary literary theorists because literature is a form of simulated social interaction (Mar and Oatley, 2008; Oatley, 2016). When reading a novel, one is to some degree registering the interaction between the author and the characters. *Does Joseph Heller like Yossarian? How does Jane Austen's attitude differ from Emma's?* One is also registering the interaction between oneself, the characters, and the author: *Why am I sympathizing with Count Dracula when Bram Stoker does not want me to?* If one reads a literary text without characters, one is nevertheless

interacting with authors – distancing oneself or becoming sympathetically absorbed in their outlooks. The total experience comes to a reader through words that convey images and simulate emotions, evoke the memory of other texts, or inspire you to stand back in aesthetic admiration (Jacobs, 2015; Jacobs and Lüdtke, 2017). This verbally artistic experience of perspectival interplay is *literary meaning* (Carroll, 2018a). Evolutionary literary scholars study literary meaning using an explanatory framework from the evolutionary social sciences.

Ideally, an evolutionary literary scholar would always consider the whole process of literary meaning. When approaching a novel, he or she would identify its cross-cultural themes (mate selection, coalitional violence, self-narrative), describe how the themes are expressed in its depicted cultural environment (finding a mate and constructing a self-narrative in the midst of coalitional violence during the Spanish Civil War), analyze the author's perspective using biographical information (early-20th-century American expatriate, male, neurotic but assertive), and study how readers have responded to the novel (critical accolades and condemnations, scholarly consensus and controversies, modern reader response experiments). Going through those steps, each of which involves its own methodological difficulties, would simply identify the particular subject of study (literary meaning in Ernest Hemingway's *For Whom the Bell Tolls*). It would prepare for the questions that can lead toward explanation or meaningful contextualization. *What are the psychological functions and effects of this novel? How does the author use cross-cultural themes for specific cultural and individual purposes? What type of novel is it, and what can it tell us about other novels that are similar or different?*

In reality, individual literary scholars can rarely focus on all aspects of literary meaning at once. But evolutionary literary theory explicitly treats each aspect as part of the whole. There is no text without an author,

no literary experience without a reader, and no literature without the human psychology that has been shaped by evolutionary history. Since the beginning of academic literary study, theoretical schools have centered on one or another aspect of literary meaning: the author (e.g. biographical criticism), the reader (e.g. reader response theory), the text (e.g. narratology), or the world (e.g. new historicism) (Abrams, 1953). Not infrequently, such schools have behaved as if their focus constitutes the whole of literary meaning. They have treated an author's life as the sole key to the text; or claimed that readers create the text while reading; or envisioned the text as an artistic essence detached from author, reader, and world; or reduced author, reader, and text to effects of historical tendencies (Abrams, 1997). Ultimately, all evolutionary literary scholars appeal to biocultural theory for explanation (Boyd et al., 2010). They see humans as products of genes and environments, human environments as fundamentally cultural, and literature as a product of human minds. This conceptual framework helps prevent a myopic focus on the author, the reader, the text, or the world.

Evolutionary literary scholars still focus on one or another aspect of literary meaning. Those who focus on the text use evolutionary psychology and neuroaesthetics to explain the beauty of word-choices, the logic of sentence-length, and the effect of metaphors (Boyd, 2009; Dissanayake, 2000; Dutton, 2009; Easterlin, 2010). They identify cross-cultural themes to account for the staying power of particular literary works (Nordlund, 2007; Kruger and Jonsson, 2019; Saunders, 2015), or they provide evolutionary explanations for archetypal heroes and monsters (Clasen, 2017; Cooke, 2010; Kjeldgaard-Christiansen, 2017). Those who focus on the author use biographical information to trace how an author's core motives, personality profiles, and self-narrative shape his or her literary works (Carroll, 2011; Jonsson, 2013; Saunders, 2018a).

Those who focus on the reader tend to use quantitative methodology, finding patterns of emotional response across hundreds of texts, or measuring how people interact with particular genres (Carroll et al., 2012; Clasen et al., 2018; Gottschall and Nordlund, 2006). Those who focus on the world use biocultural theory to reconstruct particular socio-cultural environments, explaining how those environments gave rise to specific literary works (Gottschall, 2008a). The best work in each category bleeds over into other categories and contributes to the general understanding of literary meaning.

At the most general level, evolutionary literary theory aims to explain why humans create verbal art. Why spend time and effort on simulated social experiences? Why, since it is already so demanding to navigate the real world, create and inhabit imaginative virtual worlds made of words? These questions speak to the broader question of whether the arts have an adaptive function. Among humanists and evolutionary scientists, the answer has sometimes been that the arts are a by-product of complex cognition – a functionless pleasure technology (Cochran and Harpending, 2009: 126–27; Davies, 2012; Pinker, 1997: 524–25; Kramnick, 2011). Evolutionary literary scholars who pursue this question have a different answer. They suggest various adaptive functions for verbal art, but they agree that it is too costly to have persisted as a byproduct. They argue that it requires reliably developing, complex cognitive mechanisms, and that it modifies human behavior in significant ways (Boyd, 2009; Carroll, 2011; Clasen, 2017; Dissanayake, 2000; Gottschall, 2012; Saunders, 2018a; Scalise Sugiyama, 2005).

The rest of this chapter outlines the history of evolutionary literary theory; describes some of its most important achievements, debates, and ongoing research programs; relates it to contiguous fields; positions it within the larger field of evolutionary studies in imaginative culture; and discusses directions for future research.

HISTORY AND INSTITUTIONAL POSITION OF THE FIELD

In the 1970s and 1980s, literary study adopted a ‘blank slate’ view of the human mind and, in that respect, came into alignment with the non-evolutionary social sciences (Abrams, 1997; Pinker, 2002). There was a sharp turn away from cross-cultural patterns and psychological explanation toward cultural variation and ideological argument. Focus increasingly shifted from analyzing literary works to critiquing power structures and empowering marginalized groups (Boyd, 2010; Gottschall, 2008b). Unlike the social sciences, literary study has not turned back toward biology. Literary scholars who publish in the field’s flagship journals still believe that culture is the primary cause of human behavior, that culture is unrestrained by biology, and that science cannot explain literature (Carroll et al., 2017b). This paradigm-level resistance, mirrored in several humanist disciplines, has not prevented scholars and scientists from investigating humanist subjects scientifically. Beginning in the early 1990s, the biological turn in the social sciences was extended to the arts (Dissanayake, 1992; Tooby and Cosmides, 2001). Evolutionary literary theory emerged toward the end of the 20th century (Carroll, 1995; Cooke and Turner, 1999; Storey, 1996). Within the last three decades, the field has produced around 30 books and hundreds of articles (Carroll, 2018b). It has been given different names – literary Darwinism, biocultural literary criticism, biopoetics – but the core premise has remained the same. The field is sufficiently stable and productive to be included simultaneously in handbooks of evolutionary psychology and anthologies on literary theory (Buss, 2016; Corstorphine and Krammel, 2018; Dunbar and Barrett, 2007; Richter, 2018; Turner et al., 2014).

The early years of evolutionary literary theory were marked by manifestos and polemical exchanges (Boyd, 2010; Carroll, 1995, 2008;

Gottschall, 2008b). Evolutionary literary scholars had to stake out a territory between the sciences and the humanities, clarifying their theory and methods. Almost every paper had to include a basic rationale for the field. Though literary interpretations were part of the repertory from the start, the proportion of strong interpretive work has increased within the last decade (Boyd et al., 2010; Carroll, 2011; Carroll et al., 2012; Clasen, 2017; Saunders, 2018a). The field continues to be theoretically conscious. Literature depicts all of human life, and literary experience depends on human capacities that remain hotly debated among evolutionary psychologists and neuroscientists: moral evaluation, narrative imagination, and aesthetic appreciation. Evolutionary literary scholars therefore have a particularly urgent need to stay abreast of scientific developments. Articles often take on a hybrid character – part theoretical synthesis, part literary interpretation; part theoretical argument, part quantified reader response (Carroll, 2015; Clasen et al., 2018; Kruger and Jonsson, 2019). But evolutionary literary scholars no longer take part in frequent polemical exchanges to justify their academic existence.

Evolutionary literary theory has had greater success outside than inside its literary home discipline. It has been featured in social science handbooks and journals, drawn attention from the media, and appeared frequently at the conferences of the *Human Behavior and Evolution Society*. But it has not been widely embraced by academic literary study. Though a few non-evolutionary literary scholars have softened their tone over the years – supposedly no longer ‘Against Literary Darwinism’ (Kramnick, 2011) so much as requiring ‘Another Literary Darwinism’ (Fletcher, 2014) – there is an epistemological disagreement at the heart of this conflict. Literary study still considers culture a force independent of biology (Carroll et al., 2017b). Evolutionary literary theorists consider culture a crucial part of the human niche, but one that is ultimately constrained by evolved

psychological dispositions (Boyd, 2009; Carroll et al., 2017a; Saunders, 2018a). For evolutionary literary theorists, nothing in culture makes sense except in the light of human psychology. For non-evolutionary literary theorists, in contrast, psychology should be treated with suspicion – especially if it claims to identify ‘timeless themes’ or ‘deep themes that fascinate us in fiction’ (Kramnick, 2011: 346, 338). To quote Jonathan Kramnick (2011: 338), the most influential critic of evolutionary literary theory: ‘Academic literary criticism of course recoils from this sort of thing and for good reason’. Kramnick does not articulate the reason. Part of it is most likely ideological, since some agendas for social reform seem more plausible if culture is a force unrestrained by biology (Lewontin, 1980; Lewontin et al., 1984). Another part may be institutional inertia – the unwillingness of scholars to abandon their theoretical assumptions and master new methodologies. Regardless of its causes, the academic literary establishment’s belief in the autonomy of culture is incompatible with the biocultural perspective of evolutionary literary theory.

The contrast between evolutionary literary theory and conventional literary theories mirrors broader contrasts between the sciences and the humanities. It shows two fundamentally different ideas about how to study subjects in the humanities. Non-evolutionary literary theorists study the interaction between culture and literature: a meeting between cultural discourses and cultural artefact without clearly conceived causal direction. Evolutionary literary theorists study literature as imaginative experience in human brains, explicable through science. These two ideas of the subject produce different research goals. Non-evolutionary literary theorists aim to show multiple interpretations of literary works, to uncover their ideological affiliations, or both (Richter, 2018). They frame their social contribution as agitation – moral and political enlightenment – rather than explanation (Gottschall, 2008b). Evolutionary literary theorists aim to explain

the psychological functions and effects of literature. They may have individual moral and political values, but those values are subordinated to the purpose of explanation. They test their ideas against data collected by themselves and others. As in any field, there are also literary scholars less concerned with theory, who focus on categorization and analytic description. *Which Victorian novels mention Darwinian evolution? How does Webster's Duchess of Malfi allude to King James's court?* Evolutionary literary theorists can use the work of such literary scholars. But to the extent that analytic description is done within the theoretical paradigm of literary study, it is shaped by literary study's attitude to science.

Attitudes to science are the fundamental difference between evolutionary literary theory and its home discipline. Conventional literary theorists may adopt concepts from the sciences, but those concepts are chosen ad hoc, and treated as if they were part of any other cultural discourse (Kramnick, 2011; Fletcher, 2014; Grubbs, 2016). Where there is contradiction, scientific concepts are subordinated to humanist concepts, such as Foucauldian social theory (all hierarchies are oppressive) or the gender philosophy of Judith Butler (sexual identity is entirely cultural). Evolutionary literary theorists take the opposite approach. They may adopt concepts from the humanities, but where there is contradiction, they use scientific data to correct humanist concepts. They assimilate information from the evolutionary social sciences, envisioning a research program that is coherent, cumulative, and explanatory.

MAIN ACHIEVEMENTS, DEBATES, AND CURRENT RESEARCH PROGRAMS

The Adaptive Function of Literature

Debates about the adaptive function of literature have perhaps been the most visible part

of evolutionary literary theory. Hypotheses have been advanced, or discussed, in books that reach beyond Academe (Boyd, 2009; Dissanayake, 2000; Dutton, 2009; Gottschall, 2012). Biologists and evolutionary psychologists have addressed the question in non-fiction bestsellers (Cochran and Harpending, 2009; Miller, 2000; Pinker, 1997; Wilson, 1998). Critics of evolutionary literary theory have protested with particular vigor against the idea that literature has an adaptive function (Davies, 2012; Kramnick, 2011), and one skeptical fellow traveller has declared it the most interesting idea in evolutionary literary theory (Harpham, 2015). Given how fundamental the adaptive function of literature is to how literature should be conceived and studied, such attention is not unreasonable. Evolutionary literary theory would still remain viable if literature were a functionless byproduct. Biologists find it worthwhile to study functionless structures and vestigial traits or to analyze the susceptibility of functional structures to non-functional uses. But the research questions one asks about literature are profoundly affected by whether or not one envisions literature as adaptively functional. Moreover, which functions one attributes to it – social cohesion or sexual display, cognitive flexibility or motivational structures – influences how one interprets new data. Any scientific endeavor involves an interdependence between theory and empiricism. For evolutionary literary theory, adaptationist debates are at the heart of that interdependence.

What does it mean for literature to have an adaptive function? Evolutionary literary theorists who argue that it does have an adaptive function often refer to Tinbergen's four levels of analysis: phylogeny, ontogeny, mechanism, and function (Carroll, 2012a). Such theorists suggest that storytelling appeared around the time of behavioral modernity, that human infants reliably develop an appreciation for it, that it depends on complex neurological mechanisms, and that it solves some problem related to human fitness (Boyd,

2009; Carroll, 2018b; Scalise Sugiyama, 2005). They do not argue that humanity evolved a cognitive module for the Victorian three-volume novel. They frame today's printed and visual storytelling as intricate, culturally specific expressions of ancient narrative impulses (Gottschall, 2012). Several strands of data support this fundamental hypothesis: storytelling can be found in every known human culture, including the hunter-gatherer populations used as proxies for ancient populations (Brown, 2010; Smith et al., 2017); behavioral modernity coincides with a globularization of the brain, affecting areas involved in the 'brain's default mode network', which is activated when reading and writing stories (Carroll, 2018a; Jacobs and Willems, 2018); particular folktales can be traced thousands of years into the past (Graça da Silva and Tehrani, 2016; Tehrani, 2013); storytelling is a time-consuming activity in which humans engage relentlessly from a young age; and stories appear to affect human behavior (Gottschall, 2012).

Evolutionary literary theorists still debate how literature contributes to human fitness, but they tend to argue that it solves problems specific to the human niche. One hypothesis suggests that stories help maintain social cohesion in the vast and complex human social world (Dissanayake, 2000). Another suggests that stories are a medium for sexual selection, displaying the cognitive power and mental flexibility crucial to human survival (Dutton, 2009). Several hypotheses center on the idea that stories are a technology for mental simulation. In one version, storytelling is an extreme form of play, honing human cognitive flexibility and pattern recognition the way other animals hone hunting and evasion (Boyd, 2009). In another version, stories are a safe way to convey environmental information across generations (Scalise Sugiyama, 1996). In a third version, stories create an arena for case-based reasoning – a flight simulator for piloting human life, allowing us to act out possible scenarios without facing real-world consequences (Clasen, 2017;

Pinker, 2010; Tooby and Cosmides, 2001). Finally, one hypothesis suggests that literature helps produce a sense of meaning, guiding human values and self-images (Carroll, 2018a; Wilson, 1998). Some of these hypotheses have been in conflict over the years. For instance, the idea of a prosocial function has been critiqued by advocates of literature as sexual display, on the grounds that authors often turn against society and promote anti-social forms of individualism (Dutton, 2009). The idea of sexual display has been critiqued, in turn, on the grounds that storytelling is a communal behavior that begins long before pubescence (Dissanayake, 2000). Despite these conflicts, there is obvious room for the hypotheses to complement each other. Many evolutionary literary theorists subscribe to some version of the hypothesis that literature helps produce meaning (Clasen, 2017; Jonsson, 2018; Saunders, 2018a). That hypothesis can incorporate other functions like social cohesion, sexual display, cognitive play, environmental information, and case-based reasoning.

Human Life History Theory and Literary Universals

From the first, evolutionary literary theorists have been concerned with 'human universals': traits and behaviors that appear in all known human cultures (Brown, 2010; Carroll, 1995; Hogan, 1997). Such cross-cultural features have clear implications for what tends to engage human attention and emotions – and thus, what tends to be the subject of literature across time. In order to turn human universals into an explanatory framework, evolutionary literary theorists have sometimes recruited human life history theory (Boyd et al., 2010; Kruger and Jonsson, 2019; Saunders, 2015, 2018b). Life history theory identifies the patterns of behavior that arise from a species' reproductive cycle. In the case of humans, the reproductive cycle involves an extended dependent

childhood, socialization into sustenance systems that require high degrees of technology and cooperation, romantic pair-bonds embedded in complex sociocultural environments, and cooperative parenting developing into grandparenting. Evolutionary literary theorists use this model of human nature to analyze literary themes like romantic love, social status, and survival (Boyd, 2009; Clasen, 2017; Nordlund, 2007; Saunders, 2015; Winkelman, 2013). Carroll (2012b) identifies a set of core literary themes: survival, growing up, love and sex, family life, social life, aliens and enemies (outlaws, ethnic conflict, war), and the life of the mind (the arts, science, religion). These themes arise out of the phases and main social relationships of human life. Taken together, they can be used to measure an author's scope in depicting human experience.

The life history model allows evolutionary literary theorists to analyze each universal theme in relation to specific cultural and individual systems of value. For instance, many authors take the romantic pair bond as a central theme. That theme reflects a cross-culturally important human motive. But no human motive exists in isolation. Across cultures, the romantic pair bond is tied to the separate range of motives involved in parenting; it is lodged within networks of extended kinship, non-kin social structures, and systems of sustenance; it is riddled with conflicts and partly in conflict with other bonds, or with other individual motives; and it is given varying cultural meanings. Evolutionary literary theorists can ask how a particular author depicts the nature and relative importance of the romantic pair bond. How is it related to the organization of family and networks of extended kinship? How is it related to the economic organization of a given society? How is it integrated into those aspects of socio-sexual identity that vary from culture to culture? How does it compare with the values attached to romantic pair bonds in the author's culture? If an author has religious beliefs, in what way is

the romantic pair bond integrated into a cosmic religious vision?

Literature does not, of course, exclusively deal with reproduction that is successfully achieved or tragically unattained. Nonetheless, literary works build on the emotional and cognitive apparatus that has evolved around the human reproductive cycle. Some works do that by celebrating reproductive unions embedded in prosocial environments, like the folk tales recorded by the Brothers Grimm, the comedies of Shakespeare, and many British novels from the early 19th century. Others do it by portraying the breakdown of every human attachment, from families to societies, like the tragedies of Sophocles or the dystopian novels of the 20th century. Oscar Wilde's *The Picture of Dorian Gray* does it by depicting a supernaturally perpetuated youthful pleasure-seeking in conflict with Christian morality. Charlotte Perkins Gilman's *Herland* does it by valorizing maternal care to the exclusion of all other motives. Many works build on evolved human psychology by pushing its boundaries. The Marquis de Sade's *120 Days of Sodom*, for instance, eroticizes cruelty and mocks every type of human relationship. Evolutionary literary theorists use life history theory to understand all of these different perspectives on human life.

The themes from human life history explain the psychological foundations of literary genres. Classic comedy tends to affirm universal human relationships, while tragedy tends to evoke their fragility and inherent conflicts (Boyd, 2009; Carroll, 2012b; Nordlund, 2007). Romance novels and pornographic literature reflect female and male mating psychology respectively, focusing on mates who are either exaggeratedly powerful and romantically committed or exaggeratedly beautiful and sexually accessible (Salmon and Symons, 2010). Horror literature draws on ancestral threats like homicidal humans, predators, parasites, contagion, and darkness (Clasen, 2017). Gothic and 19th-century realist novels often center on mate choice

and mate guarding, portraying characters who choose wisely or disastrously, and characters who represent faster or slower mating strategies (Carroll et al., 2012; Kruger et al., 2003; Saunders, 2015). Dystopian literature portrays dysfunctionally rigid social systems that suppress human needs like pair bonding and privacy (Cooke, 2010). Utopian literature extrapolates from human preferences for social stability and environmental control, depicting worlds without social and ecological conflict (Jonsson, 2019). Postapocalyptic literature portrays the failure of human society – sometimes the end of the human species – and often contains visions of utter social isolation (Clasen, 2019). Starting from the broad psychological effects of genres, evolutionary literary theorists can pinpoint the particular effects of individual literary works.

Agonistic Structure

Agonistic structure – the division between protagonists and antagonists – is one main way in which authors convey their perspectives. Readers are expected to root for the protagonists and feel antipathy for the antagonists, who are the protagonists' enemies. The utility of this concept can be indicated by the interpretive questions it raises. How clearly do authors signal agonistic structure to readers? What personality factors characterize protagonists and antagonists? What emotional consequences follow from the victory or defeat of a protagonist? What implications do preferences for characters have for the value structure implicit in any given work? How are those value structures implicated in the depictions of personal identity, basic human motives, social organization, and world views?

Though the terms 'protagonist' and 'antagonist' have been used in literary study from its birth as an academic discipline, they have not been subject to much investigation. Evolutionary literary scholars have approached them through theoretically

rationalized reader response studies. The most ambitious study of agonistic structure in the field collected data from around 500 readers responding to characters in over 100 novels from the 19th century (Carroll et al., 2012). Respondents answered questions in three categories: (1) the characters' agonistic role (protagonist, associate of protagonists, antagonist, or associate of antagonists), (2) the characters' personal identities (age, personality, attractiveness, motives, and criteria of mate selection); and (3) the respondents' subjective responses to the characters (wanting them to succeed or fail; basic emotional responses like anger, sadness, or interest). These measures tested whether protagonists and antagonists can be separated into recognizable patterns of motives, personality traits, and emotional effect. The study hypothesized that protagonists would form cooperative communities geared toward constructive goals, and that antagonists would exemplify dominance behavior (Carroll et al., 2012: 8). That hypothesis was robustly sustained. In fact, antagonists tended to be *exclusively* motivated by a desire for dominance, with little concern even for sex (Carroll et al., 2012: 40–3). Protagonists tended to 'care about friends and family, respond to romantic attractions, and become readily absorbed in cultural pursuits' (Carroll et al., 2012: 55). The domineering antagonists represented the opposite of these positive absorptions. They displayed 'dominance striving devoid of all affiliative dispositions' and 'sex-neutral egoism'; they were 'emotionally isolated' and 'incurious' (Carroll et al., 2012: 43, 55). On the basis of these data, the study's authors argue that agonistic structure mirrors the human egalitarian syndrome: the tendency of cooperators to band together and suppress dominance behavior in individuals. They also argue that agonistic structure in literature, like gossip, fulfils an adaptive function by enhancing social cohesion (Carroll et al., 2012: 10).

The long-overdue quantification of agonistic structure opened up a new avenue of

research for evolutionary literary theorists. The study concerned itself only with British novels from the 19th century, but it is unlikely that no other body of literature features distinctions between protagonists and antagonists that draw on evolved human sociality. Nineteenth-century novels in different genres and styles, written by authors as distant in personality, values, and life experience as Jane Austen and H. G. Wells, all used the same pattern to elicit positive and negative responses to their characters. Against the background of that pattern, it is possible to clarify agonistically complex characters – characters like Victor Frankenstein and his monster or Cathy and Heathcliff from *Wuthering Heights* – who do not fit smoothly into either the protagonist category or the antagonist category (Carroll et al., 2012: 22–3, 91). Such characters tend to combine protagonistic traits like openness, cultural absorption, and romance with antagonistic dominance behavior. The theoretical framework derived from this study has been used to explain modern anti-heroes and villains in film (Kjeldgaard-Christiansen, 2016, 2017). Evolutionary literary theorists have used the same framework to approach questions about 20th-century and 21st-century literature: how horror novels create emotional investment through their portrayal of sociality and dominance (Clasen, 2017), and how popular science and adventure stories shape evolutionary history into agonistic structures (Jonsson, 2018).

Literary Form

Evolutionary literary theorists consider literary form an integral part of literary meaning (Boyd et al., 2010). *Literary form*, in this sense, means the aspects of literary texts that have to do with structural organization: ‘from individual words, with their evocative sounds and connotational resonance, through the rhythm of sentences and paragraphs, up to the largest features in the organization of time, representational mode, and manner of

narration’ (Carroll, 2018a: 142). These aspects function as the medium of literary art. Authors do not convey their perspective on characters, behaviors, and ideas simply through declarative statements, but through choices of adjectives and metaphors, through rhetorical repetition and symbolic juxtaposition, producing effects like allegory, allusion, satire, or tragic irony. Readers do not usually experience formal features separately from the semantic contents of a literary text. As suggested by the early-20th-century Shakespearean A. C. Bradley (1965: 14), that would be like experiencing the lines of a smile as something separate from the feeling conveyed by the smile: ‘Just as there the lines and their meaning are to you one thing, not two, so in poetry the meaning and the sounds are one’. Nevertheless, the formal features of literature can be studied with concentrated attention, the way one can study the muscles and environmental cues of a facial expression.

Though evolutionary literary theorists acknowledge the importance of literary form, they have not yet produced many studies that focus on it. Instead, discussions of style and structure have been included as part of the most ambitious interpretive analyses. Several evolutionary analyses of Shakespeare discuss the effect of his language (Boyd, 2009; Carroll, 2010; Nordlund, 2007). There have been articles and book chapters in the field that deal specifically with poetry (Boyd, 2009; Easterlin, 2010; Kruger and Jonsson, 2019; Saunders, 2018b, 2018a: 61–77, 175–203; Winkelman, 2013). These studies have tended to foreground themes, depicted content, and authorial self-presentation. For instance, Easterlin explains William Wordsworth’s celebration of mother-infant bonds using developmental psychology (against a tradition of Freudian interpretations), and Winkelman analyzes the intricate romantic self-advertisement of John Donne using evolutionary accounts of sexual display. However, none of these studies of poetry entirely omits discussions of formal features. Easterlin supports

her argument by analyzing word choice, rhetorical repetition, and compositional structure (Easterlin, 2010: 354–57). Winkelman largely bases his argument on Donne's word choices and metaphors. Saunders (2018a) combines her evolutionary analysis of Edna St. Vincent Millay's sexual identity with a constant attention to her sonnets' allusions, analogies, hyperbolic wit, lyrical alter egos, and satirical narrative structures (175–203).

CONTIGUOUS FIELDS

Psychology of Fiction

'Psychology of fiction' is a broad term for the psychological study of literature and narrative thinking. The field's main premise is that fiction engages real emotions through mental simulation (Oatley, 2016; Oatley et al., 2012). Psychologists who subscribe to this idea tacitly identify literary experience as a special form of cognitive activity. They relate fictional experience to the brain's default mode network and speculate about the function of literature (Jacobs and Willems, 2018; Oatley, 2016). In order to investigate the cognitive mechanics of reading, they use a variety of experimental tools: questionnaires, personality profiles, textual manipulation, lexical databases of emotional valence, eye-tracking, heart-rate measures, skin-conductance response, and neuroimaging (Barnes, 2018; Carney and Robertson, 2018; Carney et al., 2014; Jacobs, 2015; Mar and Oatley, 2008).

There are obvious lines of convergence between the psychology of fiction and evolutionary literary theory. Both fields attempt to understand fiction psychologically, subordinating their theoretical ideas to empirical data. Indeed, evolutionary literary scholars have often collaborated on empirical studies with psychologists (Carroll et al., 2012; Clasen et al., 2018; Kruger and Jonsson, 2019). To the extent that psychologists measure the

real process of literary experience, evolutionary literary theorists can use their data (Carroll et al., 2012; Oatley et al., 2012). To the extent that evolutionary literary theorists synthesize scientific information, psychologists can use their theoretical ideas (Jacobs, 2015). The two fields have the potential to improve each other directly. Evolutionary literary theory can have its hypotheses tested using the sophisticated experimental tool kit of psychologists. Its theoretical ideas can be refined by the detailed accounts of emotional and aesthetic engagement provided by empirical reader response studies. Psychologists, in turn, can use evolutionary literary theory to guide their reader response studies. They can use the concept of literary meaning created by evolutionary literary scholars to develop the 'ecological validity' of their experiments (Jacobs, 2015). Most importantly, they can provide an explanatory framework for their research through biocultural accounts of literary experience, life-history models of literary themes, and hypotheses about the adaptive function of the arts.

Cognitive Literary Study

'Cognitive literary study' covers a multitude of perspectives. In some uses, it describes an assimilation of scientific information into literary study that is consistent with evolutionary literary theory and even overlaps it (Fisher et al., 2013; Hogan, 2003; Winkelman, 2013). Cognitive literary scholars in this camp tend to use the word *evolution* sparingly but still strive for a cross-cultural understanding of literature: universal narrative structures, literary engagements of basic emotions, cognitive biases, and theory of mind. They may collaborate with – or at least have dialogues with – researchers from the psychology of fiction (Oatley et al., 2012). Overall, their approach resembles that of cognitive scholars in film studies and performance studies (Bordwell, 2010; McConachie, 2008; Smith, 2017). These scholars aim in

some way to build new theoretical frameworks for literary study based on psychology and neuroscience. However, in other uses, cognitive literary study simply means appropriating scientific concepts to currently conventional literary theories (Richardson, 1999; Spolsky, 2008; Zunshine, 2014). Cognitive literary scholars in this camp display beliefs and deploy methods like those of non-evolutionary literary scholars: emphasizing the subjectivity and ideological biases in science, subordinating scientific information to literary theories, and criticizing scientists for not deferring to humanist perspectives on literature (Grubbs, 2016; Carroll et al., 2017b; Spolsky, 2008). Such cognitive literary scholars gain the approval of literary scholars who oppose evolutionary literary theory (Fletcher, 2014; Kramnick, 2011).

The heterogeneity of cognitive literary study makes it hard to say how constructively it can interact with evolutionary literary theory. Literary scholars who call themselves ‘cognitive’ may or may not acknowledge the epistemological authority of science. They may use quantitative methodology or resist it, strive for theoretical coherence or champion theoretical pluralism. Similar classification problems apply to related literary schools that absorb scientific concepts. For instance, ‘ecocriticism’ includes both evolutionary literary analysis that focuses on the environment and non-evolutionary literary analysis that treats nature as a victim of ideological oppression (Glottfelty and Fromm, 1996; Helsing, 2017; Love, 2003). In a critical light, the amorphousness of these schools resembles a parasol: a way for scholars who want to use psychology and neuroscience to avoid censure from colleagues, and a way for scholars who want to resist scientific literary study to claim science as an ally. More generously, one might view the amorphousness as a sign of paradigmatic transition. Cognitive literary study and related schools could possibly introduce cautious literary scholars to scientific information and experimental methodologies. Its precise effect on

interdisciplinary collaboration is open for investigation. However, after nearly two decades of cognitive literary study, the most prominent journals in literary study still resist scientific approaches to literature (Carroll et al., 2017b).

Evolutionary Studies in Imaginative Culture

‘Evolutionary studies in imaginative culture’ is not so much a contiguous field as it is an overarching field. It is roughly equivalent to the ‘evolutionary humanities’: research that uses the evolutionary social sciences to analyze imaginative behavior like musical arts, visual arts, plastic arts, performance, religion, ideology, and philosophy (Carroll, 2017). Evolutionary literary theorists ultimately aim to explain verbal art within the total context of evolved human behavior. The subjects of the humanities are important forms of human behavior. Moreover, literature often interacts with other types of imaginative culture. Across cultures, verbal art is combined with images, music, and performance; stories inspire sculptures; religious and philosophical systems are pervaded by fables, allegories, metaphors, and rhythmically organized words (Brown, 2010; Dissanayake, 2000; Dutton, 2009; Gottschall, 2012). Research in each subject in the humanities can be greatly facilitated by an understanding of the others.

Evolutionary scholars have long attempted to provide evolutionary explanations that account for all of the arts (Asma and Gabriel, 2019; Boyd, 2009; Dissanayake, 2000; Dutton, 2009). Given the connection between different artistic behaviors, approaching them as a collective riddle is reasonable. Discussions about the adaptive function of literature often include discussions of other arts (Dissanayake, 2000; Gottschall, 2012). That makes particular sense for some hypotheses. For instance, if literature serves to promote social cohesion,

or if it helps create world views that guide our behavior, that is probably true also of related arts like figurative painting and song (Carroll, 2012a; Dissanayake, 2000; Zaidel, 2017). Nevertheless, different arts may have different evolutionary origins and multiple adaptive functions. The neurological health benefits of music have been linked to bipedal movement and complex coordination as well as to social cohesion (Meehan et al., 2017). The origin of figurative painting has been attributed to the close observation and empathetic projection required by human hunting techniques (Coss, 2017; Hodgson, 2017). Narrative psychology has connected verbal self-narratives to the evolution of self-consciousness and identity (McAdams, 2019). The origin and adaptive function of religion have been vigorously debated, with hypotheses ranging from cognitive byproduct to motivational regulator (Lawson, 2019; Wood and Shaver, 2018). These behaviors all form part of the human experience that literature depicts, but they can also illuminate literature as an art form. If literary theorists understand the evolution of rhythm, they are in a better position to understand meter, rhyme, and rhetorical repetition. If they understand the mechanisms of visual imagination, they can better understand verbal imagery. If they understand the adaptive functions of religion and self-narrative, they can get new insights into how literature shapes personal and collective world views. Research about the other arts, in turn, can gain by incorporating the main achievements of evolutionary literary theory: the model of literary meaning, the range of universal literary themes, the explanatory account of agonistic structure, and hypotheses about the adaptive function of verbal art.

CONCLUSION

Evolutionary literary theory has existed for nearly three decades, but the evolutionary

study of literature is only beginning. Literary meaning is not a subject that lends itself easily to scientific explanation. Even a scientific description of it requires high degrees of specificity about controversial, multi-variable phenomena like human sociality and personality differences. Psychologists who study fiction employ complex experimental methodology simply trying to measure the experience of reading and writing literature (Jacobs, 2015). Evolutionary literary scholars use intricate biocultural models to interpret single literary works or authorships. Much of this work is still being done in isolated pockets. Individual literary scholars can be informed to a greater or lesser extent about current developments in psychology, and psychology labs can develop their own eclectic theoretical frameworks (Carroll, 2018a; Jacobs, 2015). One goal for the future of evolutionary literary theory is to cooperate systematically and achieve theoretical integration with the psychologists who study fiction. That goal is related to the perpetual need for quantification and hypothesis testing. But there are many areas within the field that are open for theoretical development.

Literary form and historical specificity are the two most obvious areas of development for evolutionary literary theory. The field's early stages necessarily focused on the big picture – epistemology and scientific theory, literary universals, the adaptive function of literature, and the basic elements of literary meaning. Now there is need for more detailed studies of the verbal medium and cultural variations. All evolutionary literary scholars could gain from studies that theorize rhetorical rhythm and imagery, narrative structure and symbolic interplay. The study of historical specificity is an even greater opening. Each human population organizes human life history in somewhat different ways, through their specific modes of sustenance, social systems, marriage practices, child-rearing habits, and gender relations – all of which affect literary expression. The scientific study of literature from different periods can do a lot to

illuminate the values and preoccupations of those periods. For instance, one might envision studies of agonistic structure that replicate the study of 19th-century literature for other cultural and historical periods (Carroll et al., 2012). The original study found variation even within the database of 19th-century British fiction: a decrease in happy endings around the turn of the century. How would these patterns compare to British literature from the 18th or 20th century, or to American literature from the same periods – or to different periods in Chinese, Polish, or Italian literature? Such large-scale studies might be complemented with more case studies that interpret the imaginative structure of literary works that have been particularly influential throughout history.

Though much remains to be done, recent progress is encouraging. Book-length studies published in the last few years suggest that the explanatory framework of evolutionary literary theory can integrate, correct, and improve upon previous literary scholarship (Clasen, 2017; Saunders, 2018b). Evolutionary literary scholarship has occasionally been praised by high-profile non-evolutionary literary scholars (Cain, 2019; Harpham, 2015). As has been indicated in this chapter, evolutionary literary scholars and psychologists have already been engaging in collaboration, but the scope of possible collaborative work is immense. Progress in other fields has also improved the position of evolutionary literary theory. Evolutionary social theory now allows for vastly more nuanced interpretations of human sociality than it did during the 1990s – with detailed accounts of prosocial dispositions and cooperative networks, leadership, norm-internalization, and moral emotions (Carroll, 2015). Culture has itself received increasing attention from evolutionary scientists (Henrich, 2015; Richerson, 2017). Until recently, evolutionary literary theorists had to work without any sense of the brain mechanisms involved in imaginative experiences. We now know that the brain's default mode network is activated in daydreaming, moral

evaluation, mental time-travel, autobiographical memory, and literary experience (Jacobs and Willems, 2018). These advances can help immensely with the tasks of theorizing literary form and historical specificity.

Because evolutionary literary theorists remain at odds with the paradigm that governs academic literary study, they still face the problem of institutional resistance within the humanities. That makes publication more difficult for established scholars, but more importantly, it limits the number of doctoral students who can pursue evolutionary literary theory. The open vistas of research require nothing so much as manpower. If evolutionary literary theorists are to pursue the study of specific literary periods, they will need experts in those literary periods. If they are to produce case studies of influential authors, they will need scholars who have spent months or years studying those authors. Theorizing literary form will require scholars who are deeply immersed in poetic meter, rhetorical traditions, and modes of allegory or allusion. Single scholars cannot achieve total literary expertise, any more than single biologists can specialize in every species. The field needs to grow numerically as well as theoretically and methodologically.

Scholars who publish in prestigious humanist journals do not tend to believe that science can explain aesthetic and subjective experience. Literary scholars are among the most extreme disbelievers in this proposition (Carroll et al., 2017b). Thus, their perspective on literary meaning remains essentially unchanged since A. C. Bradley's declaration in 1901: 'It is a spirit. It comes we know not whence. It will not speak at our bidding, nor answer in our language. It is not our servant; it is our master' (Bradley, 1965: 28). Evolutionary literary theorists do believe that literary meaning can be explained by science. In fact, they are slightly more emphatic in that belief than evolutionary psychologists (Carroll et al., 2017b). Evolutionary literary theorists believe that literature can be understood from neurological mechanism

to evolutionary function – from the level of basic communicative processes, universal themes, and agonistic structures to the expressions of every particular cultural ethos, down to the world views and stylistic decisions of individual authors. But no evolutionary literary theorist believes that this will be easy. We have only just begun.

REFERENCES

- Abrams, M. H. (1953). *The mirror and the lamp: Romantic theory and the critical tradition*. New York: Oxford University Press.
- Abrams, M. H. (1997). The transformation of English studies: 1930–1995. *Daedalus* 126, 105–32.
- Asma, S. & Gabriel, R. (2019). *The emotional mind: The affective roots of culture and cognition*. Cambridge, MA: Harvard University Press.
- Barnes, J. L. (2018). Imaginary engagement, real-world effects: Fiction, emotion, and social cognition. *Review of General Psychology* 22, 125–34. doi:10.1037/gpr0000124
- Bordwell, D. (2010). Convention, construction, and cinematic vision. In B. Boyd, J. Carroll & J. Gottschall (Eds.), *Evolution, literature, and film: A reader* (416–32). New York: Columbia University Press.
- Boyd, B. (2009). *On the origin of stories: Evolution, cognition, and fiction*. Cambridge, MA: Harvard University Press.
- Boyd, B. (2010). Getting it all wrong: Bioculture critiques cultural critique. In B. Boyd, J. Carroll & J. Gottschall (Eds.), *Evolution, literature, and film: A reader* (197–211). New York: Columbia University Press.
- Boyd, B., Carroll, J., & Gottschall, J. (2010). *Evolution, literature, and film: A reader*. New York: Columbia University Press.
- Bradley, A. C. (1965). *Oxford lectures on poetry*. London, UK: Macmillan.
- Brown, D. (2010). The universal people. In B. Boyd, J. Carroll & J. Gottschall (Eds.), *Evolution, literature, and film: A reader* (83–95). New York: Columbia University Press.
- Buss, D. (2016). *The handbook of evolutionary psychology* (2nd ed.). Hoboken, NJ: Wiley. doi: 10.1007/978-3-319-16999-6_1860-1
- Cain, W. E. (2019). Review: American classics: Evolutionary perspectives by Judith P. Saunders. *Evolutionary Studies in Imaginative Culture* 3, 143–45. doi:10.26613/esic.3.1.138
- Carney, J. & Robertson, C. (2018). People searching for meaning in their lives find literature more engaging. *Review of General Psychology* 22, 199–209. doi:10.1037/gpr0000134
- Carney, J., Wlodarski, R., & Dunbar, R. (2014). Inference or enaction? The impact of genre on the narrative processing of other minds. *PLoS ONE* 9, e114172. doi:10.1371/journal.pone.0114172
- Carroll, J. (1995). *Evolution and literary theory*. Columbia, MO: University of Missouri Press.
- Carroll, J. (2008). Rejoinder. *Style* 42, 309–412.
- Carroll, J. (2010). Intentional meaning in *Hamlet*: An evolutionary perspective. *Style* 44, 230–60.
- Carroll, J. (2011). *Reading human nature: Literary Darwinism in theory and practice*. Albany, NY: State University of New York Press.
- Carroll, J. (2012a). The adaptive function of the arts: Alternative evolutionary hypotheses. In C. Gansel & D. Vanderbeke (Eds.), *Telling stories/geschichten erzählen: Literature and evolution/literatur und evolution* (50–76). Berlin, Germany: De Gruyter.
- Carroll, J. (2012b). The truth about fiction: Biological reality and imaginary lives. *Style* 46, 126–60.
- Carroll, J. (2015). Evolved human sociality and literature. In J. H. Turner, R. Machalek & A. Maryanski (Eds.), *Handbook on evolution and society: Toward an evolutionary social science* (572–608). Boulder, CO: Paradigm.
- Carroll, J. (2017). Why we need a journal with the title *Evolutionary Studies in Imaginative Culture*. *Evolutionary Studies in Imaginative Culture* 1, vii–xii. doi:10.26613/esic.1.1.1
- Carroll, J. (2018a). Minds and meaning in fictional narratives: An evolutionary perspective. *Review of General Psychology* 22, 135–46. doi:http://dx.doi.org/10.1037/gpr0000104
- Carroll, J. (2018b). Evolutionary literary theory. In D. H. Richter (Ed.), *A companion to literary theory* (425–38). Chichester, UK: John Wiley & Sons, Ltd.

- Carroll, J., Gottschall, J., Johnson, J. A., & Kruger, D. (2012). *Graphing Jane Austen: The evolutionary basis of literary meaning*. New York: Palgrave Macmillan.
- Carroll, J., Clasen, M., Jonsson, E., Kratschmer, A. R., McKerracher, L., Riede, F., Svenning, J.-C., Kjaergaard, P. C. (2017a). Biocultural theory: The current state of knowledge. *Evolutionary Behavioral Sciences* 11, 1–15. doi:10.1037/ebso0000058
- Carroll, J., Johnson, J. A., Salmon, C., Kjeldgaard-Christiansen, J., Clasen, M., & Jonsson, E. (2017b). A cross-disciplinary survey of beliefs about human nature, culture, and science. *Evolutionary Studies in Imaginative Culture* 1, 1–32. doi: 10.26613/esic.1.1.2
- Clasen, M. (2017). *Why horror seduces*. New York: Oxford University Press.
- Clasen, M. (2019). Imagining the end of the world: A biocultural analysis of post-apocalyptic fiction. In D. Vanderbeke & B. Cooke (Eds.), *Evolution and popular narrative* (64–82). Boston, MA: Brill.
- Clasen, M., Kjeldgaard-Christiansen, J., & Johnson, J. A. (2018). Horror, personality, and threat simulation: A survey on the psychology of scary media. *Evolutionary Behavioral Sciences*. Advance online publication. <http://dx.doi.org/10.1037/ebso0000152>
- Cochran, G. & Harpending, H. (2009). *The 10,000 year explosion: How civilization accelerated human evolution*. New York: Basic Books.
- Cooke, B. (2010). Human nature, utopia, and dystopia: Zamyatin's *We*. In B. Boyd, J. Carroll & J. Gottschall (Eds.), *Evolution, literature, and film: A reader* (381–91). New York: Columbia University Press.
- Cooke, B. & Turner, F. (1999). *Biopoetics: Evolutionary explorations in the arts*. Lexington, KY: ICUS.
- Corstorphine, K. & Kremmel, L. R. (2018). *The Palgrave handbook to horror literature*. Cham, Switzerland: Palgrave Macmillan.
- Coss, R. G. (2017). Drawing of representational images by Upper Paleolithic humans and their absence in Neanderthals reflects historical differences in hunting wary game. *Evolutionary Studies in Imaginative Culture* 1, 15–38. doi:10.26613/esic.1.2.46
- Davies, S. (2012). *The artful species: Aesthetics, art, and evolution*. Oxford, UK: Oxford University Press.
- Dissanayake, E. (1992). *Homo aestheticus: Where art comes from and why*. Seattle, WA: University of Washington Press.
- Dissanayake, E. (2000). *Art and intimacy: How the arts began*. Seattle, WA: University of Washington Press.
- Dunbar, R. I. M. & Barrett, L. (2007). *Oxford handbook of evolutionary psychology*. Oxford, UK: Oxford University Press.
- Dutton, D. (2009). *The art instinct: Beauty, pleasure, and human evolution*. New York: Bloomsbury.
- Easterlin, N. (2010). Wordsworth, psychoanalysis, and the “discipline of love.” In B. Boyd, J. Carroll & J. Gottschall (Eds.), *Evolution, literature, and film: A reader* (348–59). New York: Columbia University Press.
- Fisher, M., Garcia, J. R., & Chang, R. S. (2013). *Evolution's empress: Darwinian perspectives on the nature of women*. New York: Oxford University Press.
- Fletcher, A. (2014). Another literary Darwinism. *Critical Inquiry* 40, 450–69. doi:10.1086/674126
- Glotfelty, C. & H. Fromm (1996). *The ecocriticism reader: Landmarks in literary ecology*. Athens, GA: University of Georgia Press.
- Gottschall, J. (2008a). *The rape of Troy: Evolution, violence, and the world of Homer*. New York: Cambridge University Press.
- Gottschall, J. (2008b). *Literature, science and a new humanities*. New York: Palgrave Macmillan.
- Gottschall, J. (2012). *The storytelling animal: How stories make us human*. Boston: Houghton Mifflin Harcourt.
- Gottschall, J. & Nordlund, M. (2006). Romantic love: A literary universal? *Philosophy and Literature* 30, 450–70. doi:10.1353/phl.2006.0030
- Graça da Silva, S. & Tehrani, J. (2016). Comparative phylogenetic analyses uncover the ancient roots of Indo-European folktales. *Royal Society Open Science* 3, 150645. doi:10.1098/rsos.150645
- Grubbs, L. (2016). The arts and sciences of reading: Humanities in the laboratory. *AJOB Neuroscience* 7, 85–94. doi:10.1080/21507740.2016.1172133
- Harpham, G. G. (2015). Defending disciplines in an interdisciplinary age. *College Literature* 42, 221–40. doi:10.1353/lit.2015.0018

- Helsing, D. (2017). Blues for a blue planet: Narratives of climate change and the Anthropocene in nonfiction books. *Evolutionary Studies in Imaginative Culture* 1, 39–57. doi:10.26613/esic.1.2.47
- Henrich, J. P. (2015). *The secret of our success: How culture is driving human evolution, domesticating our species, and making us smarter*. Princeton, NJ: Princeton University Press.
- Hodgson, D. (2017). Closely observed animals, hunter-gatherers, and visual imagery in Upper Paleolithic art. *Evolutionary Studies in Imaginative Culture* 1, 59–72. doi:10.26613/esic.1.2.48
- Hogan, P. C. (1997). Literary universals. *Poetics Today* 18, 223–49.
- Hogan, P. C. (2003). *Cognitive science, literature, and the arts: A guide for humanists*. New York: Routledge.
- Jacobs, A. M. (2015). The scientific study of literary experience: Sampling the state of the art. *Scientific Study of Literature* 5, 139–70. doi:10.1075/ssol.5.2.01jac
- Jacobs, A. M. & Lüdtke, J. (2017). Immersion into narrative and poetic worlds: A neurocognitive poetics perspective. In F. Hagemulder, M. M. Kuijpers, E. S. Tan, K. Bálint & M. M. Doicaru (Eds.), *Narrative absorption* (69–96). Amsterdam, Netherlands: John Benjamin Publishing Company.
- Jacobs, A. M. & Willems, R. M. (2018). The fictive brain: Neurocognitive correlates of engagement in literature. *Review of General Psychology* 22, 147–60. doi:10.1037/gpr0000106
- Jonsson, E. (2013). The human species and the good gripping dreams of H. G. Wells. *Style* 47, 296–315.
- Jonsson, E. (2018). T. H. Huxley, Arthur Conan Doyle, and the impact of evolution on the human self-narrative. *Evolutionary Studies in Imaginative Culture* 2, 59–74. doi:10.26613/esic.2.1.74
- Jonsson, E. (2019). Dystopia and utopia after Darwin: Using evolution to explain Edward Bulwer Lytton's *The Coming Race*. In J. Trotta, P. Platen, H. Sadri, & Z. Filipovic (Eds.), *Broken mirrors: Representations of apocalypse and dystopias in popular culture* (74–89). New York: Routledge.
- Kjeldgaard-Christiansen, J. (2016). Evil origins: A Darwinian genealogy of the popcultural villain. *Evolutionary Behavioral Sciences* 10, 109–22. doi:10.1037/ebs0000057
- Kjeldgaard-Christiansen, J. (2017). The bad breaks of Walter White: An evolutionary approach to the fictional antihero. *Evolutionary Studies in Imaginative Culture* 1, 103–120. doi: 10.26613/esic.1.1.19
- Kramnick, J. (2011). Against literary Darwinism. *Critical Inquiry* 37, 315–47. doi: 10.1086/657295
- Kruger, D. J. & Jonsson, E. (2019). The viking and the farmer: Alternative male life histories portrayed in the romantic poetry of Erik Gustaf Geijer. *Evolutionary Studies in Imaginative Culture* 3, 17–38. doi:10.26613/esic.3.2.141
- Kruger, D. J., Fisher, M., & Jobling, I. (2003). Proper and dark heroes as DADS and CADS. *Human Nature* 14, 305–17. doi:10.1007/s12110-003-1008-y
- Lawson, T. E. (2019). Review: Philosophical, neurological, and sociological perspectives on religion. *Evolutionary Studies in Imaginative Culture* 3, 105–10. doi:10.26613/esic.3.1.128
- Lewontin, R. C. (1980). Sociobiology—another biological determinism. *International Journal of Health Services* 10, 347–63. doi:10.2190/7826-DPXC-KA90-3MPR
- Lewontin, R. C., Rose, S. P. R., & Kamin, L. J. (1984). *Not in our genes: Biology, ideology, and human nature*. New York: Pantheon Books.
- Love, G. (2003). *Practical ecocriticism: Literature, biology, and the environment*. Charlottesville, VA: University of Virginia Press.
- Mar, R. A. & Oatley, K. (2008). The function of fiction is the abstraction and simulation of social experience. *Perspectives on Psychological Science* 3, 173–92. doi: 10.1111/j.1745-6924.2008.00073.x
- McAdams, D. P. (2019). “First we invented stories, then they changed us”: The evolution of narrative identity. *Evolutionary Studies in Imaginative Culture* 3, 1–18. doi:10.26613/esic.3.1.110
- McAdams, D. P. & McLean, K. C. (2013). Narrative identity. *Current Directions in Psychological Science* 22, 233–38. doi:10.1177/0963721413475622
- McConachie, B. (2008). *Engaging audiences: A cognitive approach to spectating in the theatre*. New York: Palgrave Macmillan.

- Meehan, A. D., Abbot, B. W., & Larsson, M. (2017). Movement is the song of the body: Reflections on the evolution of rhythm and music and its possible significance for the treatment of Parkinson's disease. *Evolutionary Studies in Imaginative Culture* 1, 73–86. doi:10.26613/sic.1.2.49
- Miller, G. (2000). *The mating mind: How sexual choice shaped the evolution of human nature*. New York: Doubleday.
- Nordlund, M. (2007). *Shakespeare and the nature of love: Literature, culture, evolution*. Evanston, IL: Northwestern University Press.
- Oatley, K. (2016). Fiction: Simulation of social worlds. *Trends in Cognitive Sciences* 20, 618–28. doi:10.1016/j.tics.2016.06.002
- Oatley, K., Mar, R., & Djikic, M. (2012). The psychology of fiction: Present and future. In I. Jaén & J. J. Simon (Eds.), *Cognitive literary studies: Current themes and new directions* (235–49). Austin, TX: University of Texas Press.
- Pinker, S. (1997). *How the mind works*. New York: Norton.
- Pinker, S. (2002). *The blank slate: The modern denial of human nature*. New York: Penguin.
- Pinker, S. (2010). Art and adaptation. In B. Boyd, J. Carroll & J. Gottschall (Eds.), *Evolution, literature, and film: A reader* (125–34). New York: Columbia University Press.
- Richardson, A. (1999). Cognitive science and the future of literary studies. *Philosophy and Literature* 23, 157–73. doi:10.1353/phl.1999.0023
- Richerson, P. J. (2017). Review: Recent critiques of dual inheritance theory. *Evolutionary Studies in Imaginative Culture* 1, 203–12. doi:10.26613/esic.1.1.27
- Richter, D. H. (2018). *A companion to literary theory*. Chichester, UK: John Wiley & Sons, Ltd.
- Salmon, C. & Symons, D. (2010). Slash fiction and human mating psychology. In B. Boyd, J. Carroll & J. Gottschall (Eds.), *Evolution, literature, and film: A reader* (469–82). New York: Columbia University Press.
- Saunders, J. P. (2015). Darwinian literary analysis of sexuality. In T. K. Shackelford & R. D. Hansen (Eds.), *Evolutionary psychology: The evolution of sexuality* (29–55). Cham, Switzerland: Springer International Publishing.
- Saunders, J. P. (2018a). *American classics: Evolutionary perspectives*. Boston, MA: Academic Studies Press.
- Saunders, J. P. (2018b). "The mind, the helpless mind": An introduction to evolutionary psychological preoccupations in the poetry of Stephen Dunn. *Evolutionary Studies in Imaginative Culture* 2, 67–82. doi:10.26613/esic.2.2.93
- Scalise Sugiyama, M. (1996). On the origins of narrative. *Human Nature* 7, 403–25. doi:10.1007/BF02732901
- Scalise Sugiyama, M. (2005). Reverse engineering narrative: Evidence of special design. In J. Gottschall & D. S. Wilson (Eds.), *The literary animal: Evolution and the nature of narrative* (177–96). Evanston, IL: Northwestern University Press.
- Smith, M. (2017). *Film, art, and the third culture: A naturalized aesthetic of film*. New York: Oxford University Press.
- Smith, D., Schlaepfer, P., Major, K., Dyble, M., Page, A. E., Thompson, J., Chaudhary, N., Salali, G. D., Mace, R., Astete, L., Ngales, L. V., & Bamberg Migliano, A. (2017). Cooperation and the evolution of hunter-gatherer storytelling. *Nature Communications* 8, Article number: 1853.
- Spolsky, E. (2008). The centrality of the exceptional in literary study. *Style* 42, 285–89.
- Storey, R. (1996). *Mimesis and the human animal: On the biogenetic foundations of literary representation*. Evanston, IL: Northwestern University Press.
- Tehrani, J. J. (2013). The phylogeny of Little Red Riding Hood. *PLoS ONE* 8, e78871. doi:10.1371/journal.pone.0078871
- Tooby, J. & Cosmides, L. (2001). Does beauty build adapted minds? Toward an evolutionary theory of aesthetics, fiction and the arts. *SubStance* 94/95, 6–27. doi:10.1353/sub.2001.0017
- Turner, J. H., Machalek, R., & Maryanski, A. (2014). *Handbook on evolution and society: Toward an evolutionary social science*. Boulder, CO: Paradigm Publishers.
- Wilson, E. O. (1998). *Consilience: The unity of knowledge*. New York: Knopf.
- Winkelman, M. (2013). *A cognitive approach to John Donne's songs and sonnets*. New York: Palgrave Macmillan.

- Wood, C. & Shaver, J. H. (2018). Religion, evolution, and the basis of institutions: The institutional cognition model of religion. *Evolutionary Studies in Imaginative Culture* 2, 1–20. doi:10.26613/esic.2.2.89
- Zaidel, D. W. (2017). Art in early human evolution: Socially driven art forms versus material art. *Evolutionary Studies in Imaginative Culture* 1, 149–58.
- Zunshine, L. (2014). *The Oxford handbook of cognitive literary studies*. New York: Oxford University Press.