Graphing Jane Austen

The Evolutionary Basis of Literary Meaning

Joseph Carroll, Jonathan Gottschall, John A. Johnson, and Daniel J. Kruger

Cognitive Studies in Literature and Performance

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Extraversion	0.68	1.18	0.57	1.36
Agreeableness	0.49	0.00	0.92	-0.06
Conscientiousness	0.80	-0.23	-0.29	-1.84
Stability	0.95	0.33	-0.35	-1.26
Openness	0.88	0.63	0.53	1.53

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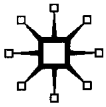

GRAPHING JANE AUSTEN
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First published in 2012 by
PALGRAVE MACMILLAN®
in the United States—a division of St. Martin's Press LLC,
175 Fifth Avenue, New York, NY 10010.

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ISBN: 978–1–137–00240–2

Library of Congress Cataloging-in-Publication Data

Graphing Jane Austen : the evolutionary basis of literary meaning / Joseph Carroll...[et al.].
p. cm.—(Cognitive studies in literature and performance)
Includes bibliographical references.
ISBN 978–1–137–00240–2
1. Characters and characteristics in literature—Statistics. 2. English fiction—19th century—History and criticism. 3. English fiction—20th century—History and criticism. 4. Austen, Jane, 1775–1817—Characters. 5. Hardy, Thomas, 1840–1928—Characters. 6. Human behavior in literature. 7. Reader-response criticism. I. Carroll, Joseph, 1949– II. Title: Evolutionary basis of literary meaning.

PR878.C47G73 2012
823'.80927—dc23 2011042318

A catalogue record of the book is available from the British Library.

Design by Newgen Imaging Systems (P) Ltd., Chennai, India.

First edition: May 2012

10 9 8 7 6 5 4 3 2 1

Printed in the United States of America.

Acknowledgments

Several people have contributed helpful comments on part or all of this book while it was in progress, notably Brian Boyd, Gwendolyn Carroll, Paula Carroll, Mark Collard, Ellen Dissanayake, Denis Dutton, Harold Fromm, John Knapp, Richard Kopley, Matthew McAdam, Jessica McKee, Gary Saul Morson, and Michael Ryan. David Michelson went through the whole manuscript twice, at different stages. All these readers made constructive criticisms and offered welcome encouragement, but of course none is responsible for the contentions in the book.

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Introduction

The Purpose of this Study

The research described in this book is designed to help bridge the gap between science and literary scholarship. Building on findings in the evolutionary human sciences, we constructed a model of human nature and used it to illuminate the evolved psychology that shapes the organization of characters in nineteenth-century British novels (Austen to Forster). Using categories from the model, we created a web-based survey and induced hundreds of readers to give numerical ratings to the attributes of hundreds of characters. Participants also rated their own emotional responses to the characters. Our findings enable us to draw conclusions on several issues of general interest to literary scholars—especially the determinacy of literary meaning, the interaction between gendered power relations and the ethos of community, and the evolutionary basis for telling stories and listening to them. The data on novels of the whole period provide an interpretive base line against which we graph the distinctive features of the novels in two case studies: all the novels of Jane Austen, and Thomas Hardy's *The Mayor of Casterbridge.*

This kind of research crosses several boundaries not usually crossed in literary study. Readers might thus reasonably wonder what to make of it—why we did it, and how we hope it might influence the whole field of literary study. To answer such questions, in the next section of the introduction, we locate our effort in a historical and theoretical context that includes the development of modern empirical methods, the conflict between "the two cultures," the decline of the humanities, the growth of the evolutionary human sciences, and the emergence of "literary Darwinism" as a distinct school of literary theory—part of a "third culture" that integrates research in the life sciences, the social sciences, and the humanities. In the conclusion

to the book, we compare the research in *Graphing Jane Austen* with work in other schools of literary theory that take up similar subjects, engage similar themes, adopt similar ideas, or use similar methods.

Moving Past the Two Cultures

Steven Weinberg, a Nobel Laureate in Physics, makes a compelling case that the most important development in knowledge since ancient Greek philosophy consists of deploying empirical methods.[1] Those methods include formulating testable hypotheses, producing quantitative evidence, and using that evidence to falsify or confirm hypotheses. Researchers began to rely on empirical methods first in the Renaissance, roughly at the same time that humanists began both to recuperate ancient literature and to develop a distinctively modern form of literary culture. In some ways, science and the humanities have since then influenced each other. Scientific questions have emerged out of large imaginative and philosophical paradigms. And the humanities have absorbed information from science, adjusting their imaginative vision to the changing world picture produced by scientific discovery. Nonetheless, in method science and the humanities have remained fundamentally distinct.

In contrast to the culture of modern science, scholarship in the humanities progresses, if at all, by way of argument and rhetoric. More often than not, humanists believe that rhetoric operates within a qualitative realm radically incompatible with quantitative forms of evidence. In its most scholarly guise, traditional literary study aims at producing objective textual and historical information. Scholars weigh alternative explanations against the evidence. In the hands of a judicious scholar, this method can produce valuable results. Still, it has two serious deficiencies: (1) it contains no means for combating "confirmation bias"—the selective use of evidence to confirm favored hypotheses; and (2) it contains no means for settling differences between two or more plausible but incompatible hypotheses. In *The Two Cultures and the Scientific Revolution* (1959), C. P. Snow charged literary scholars with ignorance of scientific facts, but the absence of neutral, objective methods for assessing the validity of ideas is a deeper, more serious problem than the ignorance of particular facts.

All efforts at interpreting evidence are encompassed within larger theoretical paradigms.[2] In literary scholarship, those paradigms have often been speculative and rhetorical in character. During roughly the first two-thirds of the twentieth century, the most common

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interpretive frameworks available to literary study included quasi-scientific systems of thought drawn from outside the realm of humanistic culture—most prominently from Marxism (sociology and economics), Freudianism and Jungianism (psychology and anthropology), and Structuralism (linguistics and anthropology). The majority of literary critics did not clearly or unequivocally subscribe to any of these paradigms. Instead, most critics operated as eclectic free agents, spontaneously gleaning materials for interpretive models from the whole field of human discourse—from science, literature, philosophy, social science, history, current events, and common knowledge. This method can be designated "pluralistic humanism." The method is something like that of the Bower Bird, an artistic scavenger who carefully combs his territory, looking for shells, feathers, stones, or other bits of brightly colored material with which to decorate his bower, interrupted only by the necessities of eating, mating, and attacking and disrupting the artistic constructions of his competitors.

Old-fashioned literary Marxism, Freudianism, and structuralism sought to produce rhetorical "knowledge"—that is, interpretive commentary—in rough concord with a conceptual order supposed by its proponents to possess some solid grounding in scientific fact. Practitioners of pluralistic humanism, in contrast, typically conceived of their work as an alternative and autonomous order of knowledge—an order imaginative, subjective, and qualitative—and thus independent of scientific knowledge and incommensurate with it. In practice, it is not possible for any humanist to operate in a realm untouched by scientific information, but the claim for autonomy left the individual humanist free to pick and choose his rhetorical materials with no constraint other than that exercised by his or her own individual sense of what was plausible or rhetorically striking.

Over the past four decades or so, all these older forms of literary criticism have been partially assimilated to a new critical episteme and partially superseded by it. The new episteme is called by various names: "poststructuralism," "postmodernism," "cultural constructivism," "cultural critique," "critical theory," or most broadly and simply, "Theory." For convenience, we shall refer to the new episteme as "poststructuralism" but ask readers to understand that term in its broadest signification, including in it the whole array of attitudes and assumptions associated with the various alternative designations. Whatever one chooses to call it, the new episteme has incorporated Freudianism and Marxism (particularly in their Lacanian and Althusserian forms), but it has also overtly rejected the idea that empirical research can produce "objective" knowledge. Instead, it has

envisioned science itself as a form of ideologically driven rhetoric, and it has thus subordinated scientific forms of knowledge to the kind of speculative theory that more typically characterizes the humanities. As Stanley Aronowitz puts it, science "is no more, but certainly no less, than any other discourse. It is one story among many stories." Within the poststructuralist frame of thinking, it is not permissible to say that a given scientific idea is "true" or that it "corresponds" closely to a "reality" that exists independently of the human mind. Consider, for instance, Gowan Dawson's commentary on efforts to integrate evolutionary psychology with studies in the humanities. As Dawson rightly observes, adopting a "realist" or "objectivist" approach to science "undermines the entire premise of recent literature and science studies." In his own work and that of his colleagues, Dawson explains, conceptions of science as an "intellectually authoritative mode of knowledge" have "long been proscribed."[3]

In literary studies, the key to subordinating science to rhetoric can be found in deconstructive philosophy. As practiced by Jacques Derrida, Paul de Man, J. Hillis Miller, Geoffrey Hartman, and their associates, deconstruction envisions all human cognition as operating within an all-encompassing realm of unstable and self-undermining semiotic activity. Deconstruction is no longer very prominent as a distinct school, but it remains a core element in poststructuralist thinking. The epistemological skepticism for which deconstruction provided a rationale was a theoretical prerequisite for the political criticism that has dominated literary studies since the 1980s. In the absence of progressive, empirical knowledge, all signs, even scientific signs, can be conceptualized as media for power politics. Current political criticism typically interprets discursive formations as symbolic enactments of a struggle between ruling social groups and subversive forms of group social identity, especially those of gender, race, and class.

One often now hears that "Theory," meaning poststructuralist theory, is a thing of the past.[4] In reality, most literary scholars have not left poststructuralist theory behind but have only internalized it. The categories they use derive chiefly from Foucauldian traditions: versions of Marxism and Freudianism filtered through deconstructive epistemology. Despite the many eulogies pronounced over the corpse of "Theory," in a survey of citations of books in the humanities in the year 2007, the most frequently cited authors were either the main luminaries in poststructuralist theory or thinkers who have been assimilated to the poststructuralist paradigm, especially Marxists, Freudians, and contributors to "the cultural construction of

science."[5] The top three, in this order, were Foucault, Bourdieu, and Derrida. The top ten included Habermas, Judith Butler, and Bruno Latour. Freud and Deleuze ranked eleventh and twelfth. A group of 37 authors whose books had been cited 500 times or more included Marx, Nietzsche, Heidegger, Barthes, and Lacan. Perhaps needless to say, it did not include Darwin, Huxley, Edward O. Wilson, Sarah Hrdy, Robin Dunbar, Steven Pinker, or any other writer closely associated with evolutionary thinking in the human sciences.

Louis Menand, a distinguished senior literary scholar and an advocate of poststructuralist theory, recognizes that younger scholars in the humanities can declare themselves "post-theory" only because they have so completely internalized its axioms:

> There is a post-theory generation, bristling with an "it's all over" attitude, but when people of my generation look at the post-theory people, we recognize them immediately. They're the theory people. And their attitude is not "You've got it all wrong." It's "Stop repeating yourselves; we know this stuff better than you do."
>
> The profession is not reproducing itself so much as cloning itself. One sign that this is happening is that there appears to be little change in dissertation topics in the last ten years. Everyone seems to be writing the same dissertation, and with a tool kit that has not altered much since around 1990.[6]

Though Menand himself thinks "Theory" is profoundly right, he deplores the way in which younger scholars simply take it as a given. They seem unable to think critically about the fundamental ideas that guide their practice.

In short, for decades now nothing much has really changed in the way most humanists think. For close to two decades, though, the humanities have clearly been in crisis, demoralized by falling enrolments and funding, by eroding prestige within and beyond the academy, and by a sense of repetition and intellectual exhaustion. Monographs, edited volumes, and special journal issues have been devoted to "the crisis in the humanities," but few effective solutions have been proposed.[7] The most common response is to deplore the dismal conditions, blame public misperceptions or the degrading influence of late-capitalist consumerism, suggest a stepped-up campaign in public relations, and advise humanists to do precisely what they are already doing, only more vigorously. Menand offers a fairly typical instance. He cites all the usual statistics indicating institutional decline and registers the widespread contempt with which the educated public regard the academic humanities. Even so, he can

envision no real alternative to the paradigm within which he himself works. While casting about desperately for almost any form of renewal in the humanities, he sternly admonishes his colleagues that the one course they must not on any account pursue is "consilience," that is, integrating literary study with the evolutionary human sciences. That option, he declares, would be "a bargain with the devil." Instead, what scholars in the humanities need to do is "hunt down the disciplines whose subject matter they covet and bring them into their own realm."[8] That strategy has not worked before, but perhaps if we keep trying...

As literary culture has been moving steadily further away from the epistemological standards that characterize scientific knowledge, science has been approaching ever closer to a commanding and detailed knowledge of the phenomena most germane to literary culture: to human motives, human feelings, and the operations of the human mind. Evolutionary biology, psychology, and anthropology—along with all contiguous disciplines such as behavioral ecology, affective and social neuroscience, developmental psychology, and behavioral genetics—have begun to penetrate the inner workings of the mind and make it accessible to precise empirical understanding. In Steven Pinker's provocative and stimulating title phrase, scientists are now in a position to give an ever more convincing account of *How the Mind Works.*

Over the past 15 years or so, a group of literary scholars has been assimilating findings from what Pinker calls "the new sciences of human nature."[9] Many "literary Darwinists" aim not just at creating another "approach" or "movement" in literary theory; they aim at fundamentally altering the paradigm within which literary study is now conducted. They want to establish a new alignment among the disciplines and ultimately to encompass all other possible approaches to literary study. They rally to Edward O. Wilson's cry for "consilience" among all the branches of learning.[10] Like Wilson, they envision nature as an integrated set of elements and forces extending in an unbroken chain of material causation from the lowest level of subatomic particles to the highest levels of cultural imagination. And like Wilson, they regard evolutionary biology as the pivotal discipline uniting the hard sciences with the social sciences and the humanities. They believe that humans have evolved in an adaptive relation to their environment. They argue that for humans, as for all other species, evolution has shaped the anatomical, physiological, and neurological characteristics of the species, and they think that human behavior, feeling, and thought are fundamentally constrained and

informed by those characteristics. They make it their business to consult evolutionary biology and evolutionary social science in order to determine what those characteristics are, and they bring that information to bear on their understanding of the products of the human imagination. For the most part, the evolutionists in the humanities have been assiduous in incorporating new knowledge and scrupulous about speculating within the constraints of a biological understanding of human nature. So far, though, only a few have made use of empirical methods. As it seems to us, including empirical methods in the toolkit for literary scholarship is an important final step in bridging the gap between the two cultures.[11]

Not surprisingly, the ambitions of the literary Darwinists have often met with a skeptical response: "There have been previous efforts to establish a scientifically based criticism—Marxism, psychoanalysis, structuralism. All these efforts have failed. Why would yours be any different?" A fair question. Here is our answer: This effort is different because the historical conditions are different. We now have, for the first time, an empirically grounded psychology that is sufficiently robust to account for the products of the human imagination. Darwin's speculations about human nature in *The Descent of Man* were prescient, but evolutionary social science did not become a cumulative research program until the last quarter of the twentieth century.

Until the past few years, three theoretical deficiencies hampered efforts to form a paradigm in evolutionary social science. Early sociobiologists insisted that "selection" takes place only at the level of the gene and the individual organism. David Sloan Wilson has spearheaded the now largely successful effort to resuscitate the idea of "multi-level selection" and use it as the basis for a more adequate understanding of human sociality.[12] In the 1990s, "Evolutionary psychologists" distinguished themselves from sociobiologists by emphasizing "proximate mechanisms" that in ancestral environments fostered reproductive success, but in constructing their model of "the adapted mind," they left out the idea of flexible general intelligence. Books such as Kim Sterelny's *Thought in a Hostile World* (2003) and David Geary's *The Origin of Mind* (2005) demonstrate how that deficiency can be corrected.[13] The third major deficiency was an inadequate appreciation of "gene-culture co-evolution"—the idea that culture operates in reciprocally causal ways with the genetically transmitted features of human nature. That barrier, too, is now giving way. Theorists such E. O. Wilson, Ellen Dissanayake, John Tooby, Leda Cosmides, Brian Boyd, and Denis Dutton have made increasingly

effective arguments that the arts are functionally significant features of human evolution.[14]

We believe these three gradual corrections have now produced a conceptual framework with the explanatory power of a true paradigm. Over the next few years, research in evolutionary literary study will provide a crucial test for the validity of this belief. The decisive evidence will be whether the literary Darwinists generate a cumulative body of explanatory principles that are in themselves simple and general but that nonetheless encompass the particularities and complexities of literature and the other arts. The research described in this book is offered as one contribution to that effort.

Agonistic Structure

The central concept in this study is "agonistic" structure: the organization of characters into protagonists, antagonists, and minor characters. We asked this question: does agonistic structure reflect evolved dispositions for forming cooperative social groups? Within the past decade or so, evolutionists in diverse disciplines have made cogent arguments that human social evolution has been driven partly by competition between human groups. That competition is the basis for the evolution of cooperative dispositions—dispositions in which impulses of personal domination are subordinated, however imperfectly, to the collective endeavor of the social group. Suppressing or muting competition within a social group enhances group solidarity and organizes the group psychologically for cooperative endeavor. Drawing on our own impressions about the features of temperament and moral character that typify characters in novels of the nineteenth century, we hypothesized that protagonists would form communities of cooperative endeavor and that antagonists would exemplify dominance behavior. And this is indeed what we found. In these novels, protagonists and their friends typically form communities of affiliative and cooperative behavior. Antagonists are typically envisioned as a force of social domination that threatens the very principle of community.[15]

Three Main Arguments

On the basis of the data collected through the questionnaire, we make three main arguments (1) that the novels in this study contain determinate structures of meaning that can be captured using the categories in our research design (chapter 3); (2) that differences between

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