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REVIEW ARTICLE

A MODEST PROPOSAL FOR A REORIENTATION IN LITERARY STUDIES

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ABSTRACT

This essay offers a review of *Literature, Science and the New Humanities* by Jonathan Gottschall. The author challenges the field of literary studies to rethink long-held assumptions about the nature of knowledge and human nature. In particular, what appear to be dominant tendencies in the field have strongly resisted the inclusion of findings from biology and genetics specifically. This resistance is tied to a view that scientific methods do not apply to the study of literature, and that radical social-constructivist theory presents a general alternative to the traditional methods of scientific inquiry. A proposal is made to incorporate recent advances in the cognitive sciences into the analysis of literature. Specifically, concepts drawn from evolutionary psychology might be especially useful in the analysis of narrative themes.

INTRODUCTION

For centuries scientists have looked to art as both an object of study and as a source of new ideas. Explorations and sources of inspiration from the other direction have for just as long captivated artists. The exchange between linguistics, and the cognitive sciences more broadly, and literature is the focus of this review. *Literature, Science and the New Humanities* by Jonathan Gottschall (2008) is the most recent major contribution to this exchange and deserves a close reading for what are in appearance its sweeping recommendations. After examining the arguments and research findings presented in the book, I will offer a follow-up proposal for how this important discussion might go forward along the clearest lines possible.

Mutual approximations in the science-art dialogue have been cautious; and in the case of linguistics, perhaps because the realm of investigation of major sub-specialties is the analysis of literary texts, cognitive science oriented researchers have been especially cautious (for very good reasons). Gottschall's book shifts the discussion to the confines of a single discipline, literary studies, where at first it seems that caution is thrown to the wind (for different good reasons). This framing by the author allows us to center our

attention on the critical controversies restricted to the domain of literary studies, separating out the debates clearly from the proprietary issues that face creative writers and artists in their work. The interest of this reviewer in the discussion stems from a need to understand literary studies better. It would be a mistake on the part of our project[1] to simply reach over this area of scholarship, directly engaging language scientists and creative writers.

The book is divided into a Part I, which lays out the stakes in the discussion, taking up broad questions of theory and method, and a Part II which offers examples of the kind of research that might help literary studies to broaden its methods of inquiry to include approaches traditionally associated with the sciences. The Introduction starts with an overview: a progressively narrowing vision in the field has its roots in the project of "denaturalization" of socio-cultural constructivism. Today it appears as the dominant model by far in the disciplines with historical ties most distant from the traditions and practice of modern science (the designation "postmodern" is thus appropriate). Its growing influence, successively, in one field after the other (in some cases, given their intellectual antecedents, with surprising success) is noteworthy by any measure. In a number of influential circles in literary studies in North America in particular, entertaining the idea that human nature is anything more than an accidental product of historical and social circumstance puts one on the wrong side of a now highly politicized boundary. Factors related to a common human biological endowment and context-free, cross-cultural, universals with great difficulty find a place in the analysis of individual works of literature or in the study of linguistic creativity. Understanding creative abilities, in the many forms they take, as supported by uniquely human faculties encounters a firmly established neo-behaviorist rejection of any notion that takes into account essential properties of mind; see Slezak for a discussion of the affinity between Skinnerian learning theory and strong versions of social constructivism (Slezak, 2000).

Flowing from this kind of localistic constructivism is the tendency to favor one or another variant of methodological relativism. Since "objectivity" is ideologically constructed to serve social elites, a number of basic assumptions that underlie rational inquiry also need to be fundamentally questioned; these include:

- knowledge actually moves forward and builds upon previous advances,
- analysis (the study of components and their interaction in complex systems) is a useful problem-solving approach, and
- the systematic ruling out of hypotheses, for which evidence is lacking, is a valid method because it reduces the space of possible explanation.

This last assumption is the Introduction's theme and sub-title. It concludes with a preview of what in reality is a modest proposal, to be presented in the following chapters: the sort of questions that literary scholars and scientists ask do not forcibly and categorically have to be different in every way. That the study of literature and art can be supplemented by scientific methods of discovery is not at issue; this sub-field of cognitive science is well established and growing rapidly. Rather, the proposal is that literary studies might profit from incorporating some of its methods and discussing some of its findings.

There was perhaps a time when many in the social sciences, for one, would count their blessings upon contemplating the influence of radical social constructivism in the fields of cultural/multicultural/ethnic studies and allied disciplines. The hope was that the

spread of anti-scientific notions would contain itself, go the way of similar New Age type thinking that occupies the fringes of academia. But over the years persistent trends have charted just the opposite course, parallel to those in the humanities described by Gottschall. A recent publication, edited by Ana Celia Zentella (2005) on bilingualism (for the most part, a field still deeply rooted in the traditions of rational inquiry), seems to exemplify the beginnings of such a tendency. The astonishing pronouncement in the introduction, that the authors of the anthology *oppose* one of the methods of science, suggesting that its defect lies precisely in the fact that it is a scientific approach, perhaps crosses a line that even the most ardent social constructivist is not willing to cross. But the fact that its author is a well-known figure in the field of applied linguistics and that the collection was published by a highly respected academic press should be cause for some serious reflection.

> Highlighting an anthropological perspective makes clear our opposition to the scientific experimental approach to education that is increasingly favored by governmental agencies, because it drowns out the multiple voices of our communities and hides the impact of powerful external forces, particularly the dominant language ideology (p. 9).

This idea is echoed explicitly in two contributions on the study of reading and writing: that the study of these language abilities cannot be removed, apparently for any purpose, from the purportedly all encompassing effects of social environment and historical circumstance. "Technical" questions, because they do not examine cultural aspects of literacy embedded in an ideology, perhaps should also be "opposed," or more charitably, simply set aside as irrelevant (Chapter 9, by Mercado). The idea is drawn out more unequivocally in a subsequent chapter: that the study of all aspects of literacy must be embedded in such manner because "nothing exists outside of ideology" (González, 2005, p. 163), *nothing.*

How indeed the application of any kind of research methodology, ethnographic, experimental, descriptive, or otherwise, in the study of a linguistic phenomenon "hides the impact of powerful external forces" or "drowns out" anyone's voice is never addressed in any of the chapters, as we would expect. Investigators have always discussed the relative merits of one or another method as it might be applied to a specific research problem. Is the tool adequate for the task? However, the blanket *opposition* to scientific methods (do the authors view "anthropological approaches" as not scientific?) is truly an innovation that minimally requires some explanation, or at very least an example of how experimental studies, for example, inherently obscure the effect of external factors, presumably in a way that bias results. And contrary to the authors' implication, historically, it has been the ideologically motivated constraint on the work of science, and art, (from all across the political spectrum) that has, in fact, inhibited the voices of democracy, free expression and investigation. Zentella gets it exactly backwards: knowledge acquired from experimentation, and other kinds of research, informs and amplifies the voice of communities, all communities.

THE CURRENT DOMINANCE OF HOLISTIC THEORY AND RADICAL ASSOCIATIONISM

This example of postmodern thinking in the social sciences, which should ring familiar to humanities scholars, leads us to the chapters on theory and method (1, 2 and 3). Gottschall

identifies in Chapter 1 the fundamental flaw in social constructivism in its insistence on a deterministic and reductionist framework that disallows the consideration of factors that are not directly tied to culture and ideology. It is as if any research problem that is "isolated" for analytical purposes becomes illegitimate or inadmissible. In this sense social constructivism can be characterized as a holistic and "integrativist" theory, reflected in its frequent (often in principle) rejection of methods that allow for componential analysis, especially in the study of selected components of human cognition (Pinker, 2004). Cultural and political factors must enter into all analyses and must be taken into account in all explanations. For example, if an aspect of literacy, or literary creation or literary understanding, comes to be the object of investigation, this component or domain of study *must* also be researched and understood as "a cultural product embedded in an ideology that cannot be isolated and treated as neutral or merely technical" (Mercado, 2005, p. 136). The underlying assumption is that there is a fundamental discontinuity between the social sciences and the natural sciences; that the concepts and methods of the latter cannot apply unless they are integrated holistically into ("grounded in") a socio-cultural theory.

It is with this backdrop that Chapter 1 introduces evolutionary psychology as a lens that could make a contribution to the formation of a more inclusive current of thinking in literary studies. Darwin himself "saw that natural selection had profound implications for the origins of the most trivial aspects of human nature…as well as for the most exalted of our higher faculties," subserved by "what he sometimes called the 'mental organs'" (p. 27), a metaphor that is not as far-fetched as might appear at first glance. Such an inclusion of questions related to the evolutionary foundations of language and the highest faculties of cognition that underlie the complex abilities associated with verbal art and the closely related aesthetic genres (music in the first place) opens up a vast space of common endeavor between literary studies and cognitive science. Only a small cut from the rich vein of possibilities in this realm has been exploited to date.

Crucially, what is being proposed here is not the substitution of one mantra with another. No reasonable person would deny the contribution of learning and culture to the development of complex knowledge structures and abilities; it would be impossible, for example, to account for variation, individual and cultural. Biological mechanisms can only be understood fully as they interact with environmental conditions. In addition, there is no direct innate determination of artistic ability, no single cognitive module that underlies or controls any one domain of verbal creativity. Gottschall's proposal simply consists in that the study of these factors not be excluded from literary analysis. Case-by-case, the claims and the evidence for the participation of genetics can be evaluated by open-minded and intellectually curious scholars and their students. Even the strong general claim of a *tabula rasa* for all components of the higher-order aesthetic genres and their themes (culture-specific and universal) would be up for discussion; but now the evidence would be assessed based on the merits, not by *a priori* exclusion of potential factors related to the biological underpinnings of cognition.

OPENING UP THE DEBATE ON THEORETICAL QUESTIONS LEADS TO GREATER METHODOLOGICAL PLURALISM

While confronting opposing hypotheses for the purpose of theory construction we strive to reduce the space of possible explanation, no such reduction is necessary in regard to methodology, just the opposite. Among competing theories, the systematic assessment of

positive and negative evidence narrows the field, ideally helping us to converge upon a single coherent set of explanations for a particular research question. In contrast, patently irrational schemes aside, methods are normally not disproven or discarded; a more diverse toolbox of procedures and measuring devices to draw from is not a problem of any kind (unless the toolbox turns into a disordered chaos, but then the solution is simply to impose order and clean up the mess). Thus, debates on methodology in general often turn out to be sterile and pointless.

It is from this point of view that Gottschall's emphatic call for quantitative research in the humanities should be understood. A "quantitative branch of literary inquiry" (p. 53) would complement qualitative research, providing critics, reviewers and analysts with empirical data. Case-by-case, findings can be assessed as reliable and relevant or not, or, more likely, reliable and relevant to some degree. In turn, qualitative analyses feed back, and horizontally, to all investigators, helping them to: reflect on the defects of their original conception of the research problem, reformulate questions more clearly and contemplate new ones, state claims more precisely, and design and implement more exacting methods (and among these, "exacting" does not always imply "quantitative"). The arguments in Chapter 2 on this score are presented such that they are difficult to refute: similarly as in Chapter 1, as proposals for greater inclusion and less uniformity. Literary studies is big enough to allow for this kind of diversity (keeping in mind the important distinction suggested above between the ultimate objective in theoretical debate, to "shrink the space of possible explanation," and methodological diversification). While quantification is emphasized, at times in a seemingly categorical way (I think unintentionally), it's important to keep in mind that even in the "exact sciences," rigorously applied qualitative methods are no less scientific.[2] And beyond the qualitative-quantitative distinction, the tools at the disposal of researchers include: observation and a sometimes unavoidable (over)-reliance on positive evidence, case-study (e.g., in neuroscience, with n-sizes of one), and in fields such as theoretical linguistics, scientific studies often involve data that were not gathered from any human subject. Nevertheless, in all these instances, the same general rules of evidence apply. We wouldn't want to suggest that humanities scholars have at their disposal a toolkit that is any less varied.

Chapter 3, entitled "On attitude," extends the discussion on method, and concludes Part I. Contributing to the deepening intellectual crisis in the humanities is the loss of what is referred to as the "possibility of disinterested inquiry" in the current groupthink environment of many departments in literature and cultural studies. In the integrativist and totalizing schema of radical social constructivism, divergence is undermined when young scholars get the idea that they should be looking over their shoulder to ensure correctness. In the social sciences, an analogous preoccupation would be about the political implications of an empirical finding: Does this line of investigation favor the cause of social justice? Is it consistent with a particular view of equality (e.g., between men and women)?

On this point, the conclusion to Part I introduces the four related studies on thematic universals in traditional narrative. Chapters 4 – 7 present findings from content analyses that contrast claims based on different social constructivist theories, on the one hand, and evolutionary hypotheses on the other. Specifically, the claims that sexual differences in human mate preferences, stereotypical characterizations of women, their overall under-representation, greater emphasis on physical attractiveness of female

characters, and romantic love are social constructions specific to Western culture were put to the test. Overall, statistical analyses of an extensive cross-cultural corpus failed to lend support to the Western origin hypothesis in regard to the asymmetries in question. With one exception (that references to attractiveness tend to be more female-skewed in the European tradition, lending support to a weak version of the social constructivist claim on this point – p. 149) results generally strongly favored the universal, non-culture-specific, interpretation. Specifying what is meant by "universal," cross-culturally common elements may consist of highly abstract component features, which are then combined in culture-specific ways, giving the appearance of unlimited and unsystematic variation (clearly a speculation to be confirmed empirically in future work).

As one can imagine, both reported results and interpretations raise more questions than lead us to hard conclusions. Further investigation, which could control for sampling error, the effect of intervening extraneous factors, etc., may force us to back away from what appears at first as strong disconfirmation of the Western origins hypothesis. But now, critique of the book's tentative conclusion must address the empirical findings, defects in the research design and limitations of procedure. Gottschall, in fact, starts things off by calling our attention to potential shortcomings in his own studies. These center on possible biases in the compilation, translation, and editing of the oral tradition narratives. Only English language versions were collected and analyzed, with Western influence potentially making its way into the secondary sources from the very initial stages of recording and selection. Again, it is at this level where counterclaim and critical observation must enter the debate (time to dust off our course texts from Research Methods and Statistics 101). Simplistic dismissal is now no longer coherent; neither is the objection that such findings do not favor the cause of equality, serving to reinforce prejudice. For example, as the argument goes, if some of the sexual differences along the dimensions under study in this book can be accounted for in part by genetic/evolutionary factors, accepting this possibility fosters discrimination against women. (The logical fallacy in this line of reasoning should be obvious, and need not be reviewed here.) The findings reporting on in Part II may indeed suffer from serious flaws; but further refinement, far-reaching qualification, or disconfirmation are likely to follow from the limitations already outlined in Chapters 6 and 7 (pp. 136-140, 148-149, 165-167). Replication, for example, can recruit the resources of multilingual coding, working from originals, and gaining access to more primitive narrative material.

All of this leads us to an important clarification made in the concluding section of Chapter 7. Commenting on the practical difficulties in controlling for all bias and the impossibility of eliminating all error in empirical research, the effects of doubt need to be put into perspective: "Science, including literary science…is not a method for providing metaphysical certainty. It is a systematic and probabilistic way of determining where the predominance of evidence lies… [of providing] evidence that exceeds all reasonable doubt" (p. 169). What is at issue is how positive evidence and negative evidence are evaluated. In principle, scientific claims need to be formulated such that they can be demonstrated to be false; and researchers strive to design experiments and seek observations that might yield falsifying evidence, of their own hypotheses. But as Sokal has pointed out, a priority placed on falsification, over and above all types of positive evidence (verification), presents investigators with a dilemma born of a problematic imbalance: "one can never prove that a theory is true, because it makes … an infinite

number of empirical predictions, of which only a finite subset can ever be tested; but one can nevertheless prove that a theory is false…[A] single (reliable) observation contradicting the theory suffices." However, in abandoning "the uncertainty of verification in favor of the certainty of falsification, one pays too high a price" (Sokal, 2008, p. 183).

First of all, in practice, negative evidence usually offers far less certainty than we might hope for. To falsify a theory, consensus among specialists in the subfield in question would need to be reached on whether the results of the test are relevant to the problem at hand (a consideration of "validity"), how much error of measurement can be tolerated, what degree of unreliability is acceptable, what intervening factors might account for an alternate explanation for the possible disconfirmation, was the tested prediction that flowed from the hypothesis a proper prediction in the first place, did the negative evidence simply disconfirm an unnecessary assumption, that now strengthens the theory's central claims? Scientists are therefore cautious in their assessment of purportedly falsifying data. If accumulated positive evidence and verification consistently point in the same direction, an instance of contradicting evidence, even in apparent absence of any defect or qualification, is often provisionally set aside. We ask: in which direction does the "predominance of evidence" lie, exceeding "reasonable doubt"? To strongly minimize induction, to require the resolution of all doubt, and insist on falsifiability as *the* standard for a theory to be considered scientific, is to call into question the advances of all of the sciences and to embrace radical skepticism. Strong cultural relativism and the privileging of so-called "local knowledge" follow closely behind. Contrary to some versions of social constructivist anthropology, the rejection of Darwin's theories of natural selection by Bible Belt fundamentalists rests on the same kind of empirical foundation as Native American creationist myths if these are counterposed to the findings of evolutionary science, and vice versa (Sokal, 2008, pp. 171-221).

THE LITERATURE-COGNITIVE SCIENCE DIALOGUE

Humanities scholars interested in the framework outlined by Gottschall will find recent developments in cognitive science useful for their work. A good place to begin would be to consider making contact with a theory of meaning that is compatible with evolutionary theory. How do the linguistic modules (language) interface with semantics and pragmatics (thought), and how might this kind of mental architecture have emerged? Conceptual Semantics (Jackendoff, 2007; Pinker, 2007) presents a discussion of these questions that is relevant to the problems we have been examining in the first three sections of this review. Among the important guiding themes are:

1. The idea of cognitive representation, that knowledge is structured, neurologically instantiated in the brain in some way. This view is in line with a "mentalist" approach to the study of meaning (Jackendoff, 2006).
2. The interaction between language and thought (a very hard research problem on which only some progress has been made) implies the existence of a Conceptual Structure (CS) that is, to some considerable degree, independent from language; "language" in this sense is to be understood as the (narrow) grammatical components of linguistic knowledge.
3. That holistic/integrativist theories of meaning and language should be taken as the least plausible alternatives from an evolutionary perspective. A modular, or

componential, approach would appear to align itself better with the cognitive science model referenced in this book. It is unlikely that in biology a highly complex system of internal networks and constituent parts evolves and comes to be constituted in a completely homogeneous and undifferentiated manner, subject to no prior genetic programming of any kind. The first course differentiation we could propose is that of #2 above, between the mental data structures of language and thought. Linguistic knowledge (grammatical competence) is of a different kind from that of conceptual knowledge.

A more detailed overview of Pinker and Jackendoff's hypotheses will bring out the key points of potential convergence. Their framework is more pertinent to the study of how the actual mental faculties that underlie language, verbal aesthetic, and musical abilities might have evolved (or emerged in some other way) rather than to the study of universal themes in literature. But this is precisely where some of the most important potential points of contact are likely to be found.

Above all, it is important to clarify what a mentalist approach to meaning entails. In a psychology of how physical states and events, for example, are construed, meaning is connected to the external world as it comes to be conceptualized in the mind. Situational context makes its contribution to understanding in the way that individuals cognize it and take it as relevant. Thus, reality does not unswervingly dictate how it is experienced and conceived, our Conceptual Structure allowing us to frame situations in different ways, even totally contrary to and incompatible with the way they are framed by others (Pinker, 2007, p. 4). It is this aspect of semantics and pragmatics that should be most interesting from the point of view of the study of cognition.

In his discussion of metaphor, Pinker explains how the perspective just outlined is different from relativism. Even for concepts of a first order of abstraction that speakers make reference to in everyday conversation, metaphor is indispensable and ubiquitous; and despite important differences, understanding the figures of colloquial discourse bears on the metalinguistic and deliberate use of literary metaphor. But far from license to reject the possibility of determining alternative understandings as true or false, the metaphoric use of language is rooted in basic and universal (i.e., not culture-specific) assumptions of causality, implicit knowledge of natural physics, human purpose, social cognition and Theory of Mind. Words that express concepts are reliably traced to properties of time and space, causal networks, and so forth, in the material world. Word representations, which can be thought of as neuro-interfaces connecting structures of semantics, syntax and phonology, are not confined to internal self-contained webs of ideas constructed idiosyncratically and "intersubjectively." Rather, they are coupled via series of intermediate neural connections to real entities and phenomena. How meanings can be framed, "in contrary and incompatible ways," is systematic, thanks in part to how concepts are formed: we draw from a basic core of primitive features, universally and innately given, to mentally build concepts, in each instance combining elements from the same inventory. Elements from this inventory of fundamental ideas and "basic conceptual distinctions" assemble themselves into a scaffolding of meaning. Concepts are built combinatorily out of the more elementary atomic components, with Conceptual Structure forming an independent generative system (Jackendoff, 2007, p. 193; Pinker, 2007, p. 82).

These primitives of meaning and first concepts probably emerged early during the ascent of humanity, prior to language. The first steps toward an incipient proto-language might have involved a rudimentary combination of simple utterances for the purpose of expressing propositions of gradually increasing complexity. One possibility is that an emerging CS, product of natural selection resulting in mechanisms to more effectively process information from the environment and communicate more precisely, did not at first require a linguistic syntax. From this point of view, the semantic roles of agent, experiencer, theme, goal, instrument and location are primary, grammatical functions of subject, object, adjunct, prepositional phase, etc., secondary (Burling, 2005). See Newmeyer (2003) for further speculation on how the principles of a Universal Grammar might have come to be biologized. Notably, the selective advantage of developing concepts and their constituent features for information processing, seeing the world in a certain way, implies that they be accurate, reliable and sensitive to subtle distinctions, in reasonably close correspondence to the details of the material world (e.g., the behavior patterns of predators). Perceptions and understandings, by this account, could not have been a wild "kaleidoscopic flux of impressions" awaiting the development of grammar to put them in order (Burling, 2005, pp. 218-225).

In literary metaphor, effecting tension and prompting reflection upon text depends on an opposition between conventional and unconventional. One or another kind of representation of literal meaning and unmarked grammar, at some level, is necessary. Without these "expectations," and without a stable Conceptual Structure underlying the meaning of words, there is nothing to transgress or violate. In appearance, a contradiction presents itself: according to this view, the possibilities of interpretation and the force of imagination owe their power to constraints of different types. Some of them are of the kind that a human mind is genetically endowed to impose. Other kinds of constraint, culturally dependent, and acquired by other means, also serve creativity. In contrast, unbounded context-dependent comprehension, which seemingly draws "freely" from anything and everything, when it can be implemented at all, suffers from a severe poverty of autonomous and self-directed resources.

Recent work on the relationship between thought and language has advanced beyond a simplistic for-or-against the Sapir-Whorf Hypothesis. Some version of an autonomy model, independent cognitive domains intercommunicated by interface connections, appears to be able to avoid the untenable extreme positions of completely self-contained separation and holistic integration. Integrativist/holistic theories tend to favor a strong version of linguistic determinism (grammar has deep-going effects on reasoning, and that actual language-specific sentences are the medium of thought) for which evidence is thin. On the other hand, extreme dichotomy theories find it difficult to account for evidence of how language interacts with Conceptual Structure, how language is tool not only of communication but is also an indispensable medium of thought, especially in the case of higher-order thinking. An important distinction in evaluating findings from experiments on the effects of language is that between the "language-general" hypothesis and the "language-specific" hypothesis. The first is consistent with the autonomy and interaction position; the second has predicted limited effects (interesting nonetheless), many of which however turn out to be inconclusive: correlations linking linguistic and cognitive differences do not necessarily indicate what the causal relation is (Bloom and Keil, 2001). However, natural selection as the mechanism for the emergence

of Conceptual Structure and language is not the only theory assumed by linguists and psychologists. Even among proponents of Universal Grammar and nativism in general, there is no consensus on an evolutionary model; for example, see the reply to Pinker and Jackendoff by Fitch, Hauser and Chomsky (2005). Therefore, a measured and deliberative approach to this discussion is called for. While a standard Darwinian account certainly presents itself as plausible, there might be important details that have been overlooked. Add to this divergence the more fundamental arguments of functionalist and non-nativist theorists within cognitive science, and an even broader range of questions is brought to the table in the dialogue with the humanities – not a bad thing, despite first impression.

One last controversy (a fitting conclusion for this section) comes from the field of musical cognition: the suggestive hypothesis of a common origin, or parallel evolution, of music and language, originally put forward by Darwin himself. Of special importance to poetics in literary studies is a better understanding of the musical aspects of verbal/vocal ability: metronomic beat (unique to human abilities), emphatic stress, and intonation, and how they are coordinated with the contrastive component of phonology. Intonation in particular is interesting in its comparison to gesture. In this regard, according to Burling (2005, p. 99): "The iconicity of intonation is entirely metaphoric." A single ancestral class of primitive chant and a pragmatics of modulation, prelinguistic and premusical, could have developed and contributed to a greater voluntary control over the vocal tract, among other capacities and competencies. Differentiation into (non-poetic) speech and song would subsequently have unfolded over time (Burling, 2005, pp. 122-134).

KEEPING AS MANY LINES OF DIALOGUE OPEN AS POSSIBLE

As should be evident by now, speculation on the evolutionary foundations of human psychology, including social cognition, conceptual knowledge, and the competencies that underlie language, the aesthetic genres and other art forms, has put forward a number of new ideas for rethinking long-held beliefs in both literature and the sciences. But speculative they remain, and likely will so for years to come. Thus, it would be a mistake to elevate them above the present level of theory construction or to commit ourselves strongly to one or another position in current work. In addition, the theories mentioned by this reviewer related to models of Universal Grammar, Conceptual Structure, modularity, and the origins of music are also controversial and do not represent broad consensus views in any field. If it came down, prematurely for sure, to dividing up sides, we would be surprised to see where proponents of one or another point of view actually line up on specific questions. So, to advance the discussion most productively, we should strive to keep the channels open not only with the different tendencies in the cognitive sciences, but also as broadly as possible within the humanities and social sciences. In fact, much more than among writers, artists and literary analysts, it is among social scientists where today we find the most deep-rooted resistance to the idea of biological endowments and predispositions.

One approach that might help motivate a wider consideration of Gottschall's proposals for literary studies is to distinguish between *scientific* and *non-scientific* inquiry, in contraposition, both, to approaches to the study of art and literature that are *unscientific*. At the same time we should be scrupulously mindful of the specialized methods, materials and resources, and objectives that correspond to creators, on the one hand, and on the other hand to analysts and students of their work, among both scientists and non-scientists. Self

evidently, in the case of artistic creation, criteria for scientific, non-scientific and unscientific don't even apply. But they do apply, in interesting ways, to the problems laid bare in *Literature, science and the New Humanities.* A special kind of engagement, of the convergent kind, is called for with students of literature who work within the framework of rational non-scientific methodologies, in the first place, going out on the limb here, because scientific procedures may *not apply either* to the most important research questions in their field. And if they might, the contribution would be one of complement, as was suggested indirectly in Chapter 2. A very different kind of discussion engages humanities scholars and sociologists who venture outside of their league to challenge the methods of science. For this reason, among others, the recommendations of this book should be welcomed and debated with a critical and self-critical ear. They should also not be taken in a subtractive sense, that somehow research shift away from the traditional domains and practices of literary studies, but rather with an additive perspective in mind. A careful examination of the arguments in Part I and the examples in Part II of *Literature, Science and the New Humanities*, I believe, suggests this to be one of the main ideas that readers should consider.

Over the many years experimentation and rigorous observation have been perfected by scientists, yielding unqualified advances in our understanding of nature, human included. But one of the reasons why they look to art as both object of study and source of new ideas is that their methods suffer from (sometimes severe) limitations. Cases in point are very hard conceptual problems and remote and almost inaccessible objects of study (no fossil record of the emergence of recursion in grammar or tonality in music). When empirical investigators look to fields whose scholars have perfected different kinds of inquiry, for example when further advances can be served by recourse to speculation, they profit, *in particular*, from a different way from their own of observing and analyzing. In any case, all researchers have a common interest in clearly marking off the boundaries of rational inquiry across the disciplines.

In the end, the crisis in literary studies and allied fields in the social sciences as portrayed in this review may have been overstated, especially if we look beyond the United States and Canada. Whatever the actual extent of the influence of radical social constructivism turns out to be in the coming years, Gottschall's timely book has helped to open up a discussion that has been put off for too long.

NOTES

[1.] What initially called our attention to the author's empirical work was a common assessment of folk literature and oral tradition as especially gainful for the purpose of understanding fundamental sources of narrative and other literary forms, not a new idea by any means. Researchers like us and others interested in Gottschall's evolutionary approach need to begin by studying and recovering the seminal contributions of previous generations of philologists, linguistic anthropologists, and students of comparative literature and folklore, much of them having fallen into neglect over the years, in part for some of the unfortunate reasons outlined in this book. One starting point, among others, would be a revalorization of the work of the Russian formalists. Our new project on the origins and development of aesthetic genres attempts to apply methods and concepts that are, at least, compatible with current trends in cognitive science, including evolutionary psychology (Francis, 2006, 2008; Navarrete Gómez, 2009). This approach we hope might offer the

most promising possibility for integrating findings from such a diverse and heterogeneous field of study; its investigators are today still dispersed in the same proportion.

[2.] In Chapter 6, the question is asked: "how does one access literary data in a way that is suitable for a scientific study? Faced with the problem of access, the systematic mining of literary data has rarely been featured in scientific studies of human behavior and psychology. Of those scientists who have turned to literature, most have relied on the subjective and qualitative methods of literary studies rather than on scientific quantification" (Gottschall, 2008, p. 130). We could agree that quantitative analyses have been neglected, and making up for lost ground in this area is likely to lead to new and important discoveries, motive enough to favor its promotion in the humanities. At the same time, I think it's fair to say that scientists who turn to literature to inform their work probably tend to rely on *objective* qualitative studies (the author's intention in the above quote was not to link qualitative research and subjectivity across the board); and, more importantly, there may be good reason for why qualitative research in general, including non-scientific studies of literature and art, might provide them with particularly useful insights.

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