

Integrating the Humanities and Sciences:

**A campus-wide program at Binghamton University
that addresses a general problem in higher education**

Note: This document was prepared as a grant proposal to the National Endowment for the Humanities (NEH), but it also serves as a position paper for a “New Humanities” initiative, as reported by Natalie Angier in her article titled “Curriculum Designed to Unite Art and Science” (New York Times, May 27, 2008). This version is slightly abridged, omitting unnecessary grant-related details.

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David Sloan Wilson

SUNY Distinguished Professor

Departments of Biology and Anthropology

Director of EvoS <http://evolution.binghamton.edu/evos/>

dwilson@binghamton.edu

Leslie Heywood

Professor and Director of Graduate Studies

Department of English

heywood@binghamton.edu

Project Summary

C.P. Snow famously described the humanities and sciences as “The Two Cultures” in 1959. Today, the gap appears wider than ever and the humanities are increasingly overshadowed by the sciences in higher education, especially when it comes to funding decisions. We provide a detailed diagnosis of the “Two Cultures” problem and a blueprint for a solution that we have already started to implement at Binghamton University. We seek a NEH challenge grant to fully implement a “New Humanities” curriculum that can serve as a model for other institutions of higher education.

It is important to emphasize the integrating the humanities and sciences in not a matter of making the humanities more “scientific.” It is genuinely a two-way street, in which intellectual perspectives and subject areas currently associated with the humanities occupy center stage as part of the study of what it means to be human from a scientific perspective, and where the humanities are instrumental in articulating the transformative power of the imagination, a perspective that, for the first time in a very long time, is again taken seriously by science.

Our diagnosis begins with the observation that evolutionary theory has been restricted to the biological sciences and avoided for most human-related subjects for most of the 20th century—not only in the humanities, but also in the human-related sciences. This situation is now rapidly changing, as evolutionary theory is being applied to virtually all human-related subjects. Far from threatening the humanities, the human capacity for cultural change and the central role of activities associated with the humanities, such as narrative, music, dance, art, and religion, become central to a scientific account of human evolution. At the same time, evolutionary theory is itself a form of narrative that functions within its social and historical context, and that changes according to the dominant social assumptions of a given period. This theory of cultural embeddedness is widely accepted for the early days of evolutionary theory-- Darwin, like anyone else of his time, was often shaped by assumptions of Victorian culture. Yet it is equally true today, for example in assumptions about individuals in relation to society. Scientific inquiry can be improved when cultural embeddedness is explicitly examined, which is a hallmark of analysis in the humanities.

These developments are resulting in a rapid integration of the humanities and sciences at the level of worldwide research and scholarship, but they are not yet reflected in structure of higher education. We are providing a solution with a campus-wide program called EvoS (<http://evolution.binghamton.edu/evos>) which was initiated in 2003 and is becoming a model for a nationwide consortium of programs. Building upon this foundation, we intend to design a New Humanities curriculum with the help of a NEH challenge grant. Funding will be used for a campus-wide seminar series, curriculum and research development, and graduate fellowships. Our New Humanities curriculum will provide a model for other institutions of higher education, including the consortium that is already forming around EvoS.

Narrative Description: Integrating the Humanities and Sciences

Academic knowledge is typically divided into two branches, the humanities and the sciences. The division is largely historical; only a few centuries ago, all of the sciences were branches of philosophy, which today is regarded as part of the humanities. As the sciences grew in influence and sophistication, they warranted separate labels; physics, chemistry, biology, psychology, sociology, economics. Still, the humanities remained at the center of intellectual inquiry. The central assumption of a liberal arts education is that a broad knowledge of subjects such as history, literature, philosophy, music, and art, makes one a more fully realized and educated person and citizen of the world.

Today, that assumption of centrality appears threatened. The branches of science and technology have grown so rapidly that they now overshadow the humanities from which they sprang. Those who cherish the humanities often feel they need to justify their existence in both philosophical and practical terms. Their concerns are often realized when funding decisions are made. As a recent example, the New York State Commission on Higher Education's statement issued in December 2007 almost entirely ignored the humanities.

Many have commented on this problem, often citing C.P. Snow's (1959) description of the humanities and sciences as "The Two Cultures," particularly regarding the way Snow linked science with "progress" and termed humanities scholars "natural Luddites" because of their critique of science, and the way he trivialized culture as a mere diversion or entertainment. A current division, which echoes Snow's, is often between the assumption of constructivism in the humanities, which sees the scientific method as embedded in and informed by the biases of language and culture, and the scientific perspective where one can make largely "objective" observations about nature and culture. It can be argued that, despite the advances made in science studies that have questioned the epistemic authority of the logical positivist view of

science, funding the humanities has been de-emphasized precisely because that epistemic authority exists in the larger public and within the natural sciences themselves. These competing sets of assumptions unnecessarily bifurcate the two research areas, and have contributed to the marginalization of the humanities. Our program highlights the efficacy of each—there is validity in the insights of both cultural constructivism and the scientific method. In this NEH challenge grant proposal, we offer a comprehensive solution to integrating the two cultures so that the best of each inform each other, the basis for which we have already initiated at Binghamton University. A challenge grant can greatly facilitate our efforts toward further integration, contributing to a model for higher education in general.

In the following sections, we will describe: I) how a comprehensive integration of the “Two Cultures” is possible based on recent developments in evolutionary theory and in the mechanistic branches of the human sciences such as cognitive psychology and neurobiology; II) how the integration is being implemented at Binghamton University on a campus-wide scale, providing a model for other institutions of higher education; III) how a NEH challenge grant will help to accomplish the integration, both at Binghamton University and nationwide; and IV) how Binghamton University will raise funds to meet the NEH matching requirement.

Before proceeding, we want to stress that unifying the humanities and sciences is not a matter of making the humanities more “scientific.” It is genuinely a two-way street, in which subject areas currently associated with the humanities occupy center stage as part of the study of what it means to be human from a scientific perspective, and where the humanities are instrumental in articulating the transformative power of the imagination, a concept that, for the first time in a very long time, is again taken seriously by science. Cognitive researchers in particular have pointed to literature as an invaluable body of research in which literary authors anticipated the conclusions that scientists are reaching today. When researchers conceptualize the sciences and the humanities as complementary ways of looking at the same subject—the

human organism—there is a long-term benefit to each, but perhaps especially to the humanities since its importance has been deemphasized. SUNY is an institution that, like many others, is diverting more resources to the science side, and a program such as that we propose will help to address this drift by making the humanities and sciences integral to each other’s missions, and by bringing out more clearly the fundamental contributions the humanities make to the sciences. Rather than being a separate, less pragmatic or “useful” subject and set of methods, in this program the humanities offer previously neglected dimensions of human experience to provide a much more complete and developed picture of what it means to be human than that provided by science alone. Because it will facilitate external fundraising and start-up, the challenge grant would support this integration in a way that would not otherwise be possible.

I. A Diagnosis of the “Two Cultures” Problem that Points to a Solution

The root of the problem: To help contextualize the necessity of this programmatic solution to the “Two Cultures” problem and to articulate that solution’s intellectual roots, we first provide some historical background. Much like the humanities themselves in the current social and historical context, our program for a successful integration relies upon another theoretical perspective that was historically marginalized: the theory of human evolution. When Darwin proposed his theory in 1859, it was obvious that our understanding of humanity would be transformed, along with our understanding of the rest of life. Yet, for complex reasons, evolutionary theory became largely restricted to the biological sciences and avoided for most human-related subjects throughout most of the 20th century. Part of the problem was that evolutionary theory became associated with political ideologies that justified inequality, both within western society (Social Darwinism) and outside it (colonialism). As Janet Browne’s comprehensive two-volume biography of Darwin makes clear (1995, 2002), these associations were probably inevitable against the background of the Victorian worldview, but in retrospect they are not a necessary part of the theory. In the contemporary context of a worldview based

on diversity, the theory of evolution—with its emphasis on diversity and change—looks very different.

Another factor in the historical marginalization of the theory of evolution was the allure of reductionistic scientific theories of human behavior, such as behaviorism in psychology and rational choice theory in economics, which promised to explain humanity on the basis of minimalistic principles. These theories led to elegant mathematical models and precise laboratory experiments, which made evolutionary theory appear irrelevant. Evolution might be required to explain how humans became flexible learners (in the case of behaviorism) or individual utility-maximizers (in the case of rational choice theory), but otherwise had little to offer. As a result, even when the study of humanity became scientific over the course of the 20th century (e.g., psychology, economics, political science, sociology), it was largely without reference to evolutionary theory.

In the humanities, with a few notable exceptions, evolutionary theory was treated as irrelevant at best and pernicious at worst. Evolution might be needed to explain a few human universals, such as our desire to eat and have sex, but had nothing to say about our rich cultural diversity. Activities such as storytelling, dance, music, visual art, and religion seemed very far removed from biological survival and reproduction. Above all, evolutionary theory seemed to imply *genetic determinism*, which in turn implied an *incapacity for change*, which in turn seemed to justify *social inequality*. Even if these associations were debated intellectually, they have historically been used to justify reprehensible social policies in the past, requiring vigilance in the present. But rather than practicing that vigilance while making use of the theory, it has been misrepresented as deterministic and irrelevant to humanities concerns.

However, any proposal to integrate the evolutionary perspective with the major assumptions that have motivated the best work in the humanities over the past few decades

must take seriously the idea that evolutionary theory is itself a form of narrative that functions within its historical context, and that changes according to the dominant assumptions of a given period. Our program will keep this kind of analysis, articulated formally by the large body of research in science studies, at the forefront. In addition to its explanatory power in scientific terms, evolution is also cultural in a double sense: the scientific sense of recent formulations regarding “cultural evolution” (e.g., Richerson and Boyd, 2005) and the sense that each scientific formulation (including cultural evolution) is also informed by the ideological assumptions of its time. For instance, it has been accepted by both humanities and science scholars that the history of evolution’s articulation and reception was initially grounded in the discredited assumptions about gender and race that Darwin shared with the late Victorians. Later, individualistic theories of evolution that became dominant in the middle of the 20th century can be linked to the ideology of individualism that was developing in America and Europe at that time (Cuordileone, 2005; Reisch, 2005; Wang, 1998). These theories were based on a set of assumptions that privileged individual self-interest as a grand explanatory principle, as opposed to groups as corporate units in their own right. As Margaret Thatcher famously put it in a speech during the 1970’s, “There is no such thing as society; only individuals and families.” Similarly, the more recent emergence of interest in multi-level selection theory (Wilson and Wilson 2007), which emphasizes the possibility that groups can be like individuals in their functional organization, might have cultural influences as well . There are factual claims that can be accepted or rejected apart from the cultural context (such as the importance of between-group selection when the terms are carefully defined), but they need to be understood against the background of their cultural significance. Our program keeps this cultural embeddedness at the forefront of its conceptual focus, giving the examination of evolution as a cultural narrative a centrality it has not previously had in programs with a scientific base. Both rhetorical analysis and quantification are forwarded as complementary perspectives in this proposal, and the strongest work, for which we hope to provide an infrastructural basis, will find ways to combine

them.

Two gulfs, not one: Against this background, we can appreciate that the “Two Cultures” portrayal is too simplistic. In addition to a gulf between “the humanities” and “the sciences,” there is also a gulf between “the study of humanity (including the humanities and the human-related sciences)” and “the study of the rest of life,” and evolution is often thought to apply to the rest of life, but not humanity. Yet developments in the theory of cultural evolution are bringing the human into the purview of evolution, and in the last ten years, evolutionary theory has been applied to literature and the arts as well. As a recent article in the *New York Times* written by Natalie Angier (2007) indicated, art is now seen as an evolutionary adaptation that allows the group to function more effectively as a whole, serving as a bonding mechanism that allows a given society to thrive.

Through evolutionary theory and its study of both ultimate explanations (such as biological fitness) and proximate explanations (such as the function and importance of the arts to human survival and development), we think that the 21st century will witness an integration of human-related subjects. Moreover, because of its emphasis on the crucial developmental functions of art, this integration can help restore the centrality of the perspectives and subjects currently associated with the humanities. Evolutionary theory is necessary to this integration, for while disciplines such as cognitive psychology identify the proximate mechanisms that guide human behavior, they cannot explain how these mechanisms came into existence, either directly by genetic evolution or indirectly through open-ended psychological and cultural processes that themselves require a genetically evolved architecture.

In the biological sciences, this two-pronged approach is known as the proximate-ultimate distinction. Everything that evolves requires two complementary explanations; a) the mechanistic process that causes the trait to exist in individual organisms (proximate causation),

and b) the environmental forces that caused the trait to evolve, rather than other traits, often because of its contribution to survival and reproduction (ultimate causation). Well-rounded research programs in the biological sciences pay equal attention to proximate and ultimate causation, which mutually inform each other. We propose a similar approach to integrating the sciences and humanities: looking at both the ultimate causes of human behavior, and their proximate manifestations in cultural institutions such as art, literature, and other forms of cultural production.

How these developments can make the humanities and sciences more central to each other: Recent developments in the study of evolution that stress multilevel selection and cultural evolution have made that study more central to a humanities approach. Until recently, natural selection was thought to take place entirely by small mutational change. Now a second pathway has been identified, whereby groups become so functionally integrated that they qualify as higher-level organisms in their own right. These major transitions, as they are called, have occurred throughout the history of life, including the first cells as groups of genes, the first nucleated cells as groups of bacteria, the evolution of multi-cellular organisms such as ourselves, and social insect colonies. It is likely that human evolution represents another major transition. In contrast to all other primate species, our ancestors were selected for teamwork much more than for competition within groups. Teamwork includes not only physical activities such as hunting, gathering, childcare, defense and offence, but *mental* activities such as memory, decision making, symbolic thought communicated by language, and the social transmission of information that makes culture possible. In short, humans are indeed unique among species, as is often claimed within the humanities, and that uniqueness can be more fully articulated within the framework of evolutionary theory.

The human capacity for teamwork enabled our ancestors to spread out of Africa and inhabit the entire globe, occupying all climatic zones, hundreds of ecological niches, and

(regretfully) replacing all other hominid species and many other species along the way. Yet, we remained a single biological species, with only minimal genetic differentiation among populations. Our ability to adapt to our environments by virtue of cultural mechanisms, rather than by directly by genetic evolution, is undeniable. Thus, culture is paramount, as is often claimed within the humanities, and this claim can be affirmed rather than denied from an evolutionary perspective. Similarly, cultural explanations have much more resonance when formulated in relation to the mechanisms of mind that contribute to their structure and form. The two kinds of explanation are not dissociable.

Indeed, much work in the humanities in the past thirty years has emphasized the human capacity for change, and, perhaps surprisingly given the stereotypical understanding of evolutionary theory, evolution shares this emphasis, and helps explain the roots of that capacity in our neurology. Far from being deterministic and opposed to change, a focus on biology and culture as interaction effects that work together to produce evolution expands our understanding of that capacity. First, a complex, genetically evolved set of adaptations is required for humans to have a capacity for change. Second, even if many cultural systems can be *produced*, not all of them *survive*. There is a winnowing process for cultural traits, no less than genetic traits. Therefore, evolution is not just a framework for the study of human universals; it also provides a framework for studying cultural diversity. This means that social constructivists are not wrong to emphasize cultural diversity and the impact of culture on human behavior, but the constructivist perspective is more effective when formulated as an interaction effect between neurology and culture—a kind of *evolutionary* social constructivism (Wilson 2005).

Highly reductionistic branches of the sciences, such as molecular genetics, neurobiology, and cognitive psychology, might seem far removed from both the humanities and evolutionary theory. However, we have already stressed that evolutionary analysis requires equal attention to both ultimate and proximate causation, which mutually inform each other.

Knowing that activities such as narrative, music, dance, and religious worship perform essential functions in group life, mechanistically oriented scientists will become motivated to study how they are manifested in the brain and genes. Humanists, with their training in hermeneutics, sensitivity to context, and the overall function of representation, have much to teach scientists about how to approach humanistic subjects in a non-reductive way.

From this perspective, history, cultural studies, and literature become central. If cultural and biological diversity are fundamentally linked, then recorded history becomes comparable to the biological fossil record, which needs to be preserved and studied in as much detail as possible to understand the nature of cultural change and the human development associated with that change. Contemporary cultural productions become like species that need to be studied in as much detail as possible in relation to their environments. Literature and other arts provide some of the most nuanced information about what it is like to be a member of a given culture, a human citizen functioning in a particular environment in a particular place and time.

Perhaps even more importantly, in addition to providing new objects of study for the sciences, research perspectives from the humanities become central as well. Historically, most scientific theories of human behavior (including those inspired by evolution) have made bold claims about human universals and paid scant attention to differences among cultures or biases on the part of the scientists. In contrast, many scholars and intellectuals associated with the humanities emphasize the uniqueness of each culture and the fact that scientists can no more transcend their cultural biases than anyone else. Currently, this insight sets the humanities in opposition to the sciences, and prevents conversation between them. However, once it is conceptually clear to that there is more to evolution than genetic evolution, the study of cultural variation can occupy center stage, in relation to the study of cultural universals such as brain structure. Indeed, the program we propose shows that there is no firm dividing line between the kind of scholarship associated with the humanities and scientific methodology.

How the Integration Contributes to and Develops the Humanities: This kind of integrative perspective is clearly emerging within the humanities, which our program hopes to amplify and facilitate. Authors such as Ellen Dissanayake in regards to art, Brian Boyd in regards to literature, and Mark Turner and Patrick Hogan in regards to narrative and the cognitive sciences are identifying the human social behaviors and practices that are likely to exist in the ultimate and proximate senses, based on their contribution to survival and reproduction, and, beyond these baseline manifestations, to human cognition and meaning. This inquiry includes but also goes far beyond genetic evolution. These authors are quick to point out that any process whereby the most successful behavioral strategy increases in frequency over time counts as an evolutionary process. As detailed in the previous section, this can include fast-paced psychological and cultural processes based on imitation, learning, and intentional thought, in addition to the slow-paced process of genetic evolution, vastly expanding the domain of evolutionary theory and its relevance to contemporary human social dynamics.

To summarize, the “Two Cultures” problem begins with the marginalization of evolutionary theory for *all* human-related subjects, not just the humanities. Once this problem is solved, the humanities and human-related sciences can become integrated with each other and with the biological sciences. The integration is already taking place in a diffuse fashion at the level of research and scholarship, as shown for a sample of the literature in Table 1. However, *it is only starting to be reflected in the structure of higher education*. Notable programs in North America include the Brain and Creativity Institute at the University of Southern California, the Center for Behavior, Evolution, and Culture at the University of California, Los Angeles, the Centre for the Study of Human Evolution, Cognition, and Culture at the University of British Columbia, the Culture and Cognition Program at the University of Michigan, the Evolution, Mind, and Behavior Program at the University of California, Santa Barbara, and the Project on Autonomy, Singularity, and Creativity at the National Humanities Center.

Table 1: A sample of the recent literature integrating the humanities and sciences

Reference	Title
Bordwell, D. et al. (2005)	Moving Image Theory: Ecological considerations
Bortolussi, R.J. and Dixon, P. (2003)	Psychonarratology: Foundations for the empirical study of literary response
Boyd, B. (forthcoming)	On the Origin of Stories
Carroll, J. (2004)	Literary Darwinism: Evolution, human nature, and literature
Crews, F. (2007)	Follies of the Wise: Dissenting essays
Dissanayake, E. (2000)	Art and Intimacy: How the arts began
Dutton, D. (2008)	The Art Instinct: Beauty, pleasure, and human evolution
Ehrenreich, B. (2007)	Dancing in the streets: A history of collective joy
Fireman, G. et al. (1999)	Narrative and Consciousness: Literature, psychology and the brain
Fromm, H. (forthcoming)	From Ecology to Consciousness
Gerrig, R.J. (1993)	Experiencing Narrative Worlds: On the psychological activities of reading.
Gottschall, J. (2008)	Literature, science and a new humanities
Haidt, J. (2005)	The Happiness Hypothesis: Finding modern truth in ancient wisdom
Hogan, P. (2003)	Cognitive Science, Literature, and the Arts: A guide for humanists
Hrdy, S.B. (1999)	Mother Nature: A history of mothers, infants, and natural selection
Levine, G. (2006)	Darwin Loves You: Natural selection and the re-enchantment of the world
Levitin, D.J. (2006)	This is Your Brain on Music: The science of a human obsession
Locher, P. et al. (2005)	Evolutionary and Neurocognitive Approaches to Aesthetic Creativity and the Arts
Martindale, C. (1990)	The Clockwork Muse: The predictability of artistic change
McEwan, I. (1998)	Enduring Love
McNeill, W.H. (1995)	Keeping Together in Time: Dance and Drill in Human History
Miall, D. (2006)	Literary Reading: Theoretical and empirical approaches
Moretti, F. (2005)	Graphs, Maps, Trees: Abstract models for a literary history
Nordlund, M. (2007)	Shakespeare and the Nature of Love: Literature, culture, evolution
Pinker, S. (2002)	The Blank Slate: The modern denial of human nature
Richardson, A. and Spolsky, E., eds (2004)	The Work of Fiction: Cognition, Culture, and Complexity
Salmon, C. and Symons, D. (2001)	Warrior Lovers: Erotic fiction, evolution, and female sexuality
Saxe, R. and Baron-Cohen, S. (2007)	Theory of Mind: A Special Issue of Social Neuroscience
Slingerland, E.G. (2008)	What Science Offers the Humanities: Integrating body and culture
Smail, D.L. (2007)	On Deep History and the Brain
Solso, R.L. (1996)	Cognition and the Visual Arts
Swirski, P. (2007)	Of Literature and Knowledge: Explorations in narrative thought experiments, evolution, and game theory
Turchin, P. (2003)	Historical Dynamics: Why states rise and fall
Van Peer, W. et al. (2007)	Muses and Measures: Empirical research methods for the humanities
Wallin, N.L. et al. (1999)	The Origins of Music
Wilson, D.S. (2002)	Darwin's Cathedral: Evolution, literature, and the nature of society
Wilson, E.O. (1999)	Consilience: The unity of knowledge
Zunshine, L. (2006)	Why We Read Fiction: Theory of Mind and the Novel

These programs are exemplary, but they also comprise a relatively small number of faculty and students, compared to their institutions as a whole. At Binghamton University, we have created a program called EvoS (for Evolutionary Studies) that strives to accomplish the integration at a campus-wide scale (<http://evolution.binghamton.edu/evos/>). EvoS places Binghamton University in a position to become a leader in the integration of the humanities and sciences and a model for the full spectrum of academic institutions, from community colleges to major research universities.

II) How the Integration is Being Implemented at Binghamton University on a Campus-wide Scale, Providing a Model for Other Institutions of Higher Education

Binghamton University is one of the four University Centers in the State University of New York System, with a current enrollment of 14,373 undergraduate and graduate students. It is consistently rated among the top public universities in quality and value. *The Fiske Guide to Colleges* calls it “the premier public university in the northeast because of its academic programs.” One of the hallmarks of such programs is that Binghamton University is committed to the principle of integration across disciplines. One goal of its current faculty hiring plan is to “develop a cohort of faculty large enough to ... leverage the ease with which multidisciplinary research and scholarship can be pursued on this campus.” Current distinguished programs in the humanities include the Fernand Braudel Center for the Study of Economies, Historical Systems, and Civilizations, the Center for Medieval and Renaissance Studies, the Asian and Asian American Studies program, the program in Philosophy, Interpretation, and Culture, and the program in Social, political, Ethical, and Legal Philosophy.

EvoS (pronounced as one word) was initiated in 2003 with enthusiastic support from our administration. It is arguably the first program designed to expand evolutionary theory beyond the biological sciences to include all human-related subjects at a campus-wide scale. It includes introductory undergraduate and graduate courses and a multi-course curriculum leading to a certificate in evolutionary studies that can be earned in parallel with any major (for an undergraduate student) or research concentration (for a graduate student). Currently, over 100 undergraduate students and 20 graduate students are earning their certificates and hundreds more are participating at the level of single courses and other activities.

EvoS also functions as a faculty training and collaborative research program. Unlike other universities, faculty members in human-related disciplines who did not receive evolutionary

training during their own higher education can quickly achieve a professional level of competence by joining a network of over 60 EvoS faculty participants. The same network leads to interdisciplinary teaching and research collaborations. EvoS was recently designated an Institute of Advanced Study within the university in recognition of its potential to foster externally funded research programs.

EvoS has become a worldwide hub through its seminar series, which brings approximately 10 distinguished speakers to campus every semester to speak on topics that span the biological sciences, the human-related sciences, and the humanities. The seminars are not watered down for a general audience but are similar to what the speakers would give in departmental seminars at other universities. In addition to the audience of EvoS participants, each speaker is co-hosted with the most relevant department, so that faculty and students who are not yet participating in EvoS can learn about how evolution applies to their particular discipline from one of their own respected colleagues. In this fashion, faculty members in human-related disciplines can quickly start interacting, not only with a network of faculty within Binghamton University, but also with the most relevant scientists and scholars elsewhere.

EvoS has already become a model program for replication at other colleges and universities. A sister program was initiated in 2007 at SUNY New Paltz, which is known for its strength in the humanities (<http://www.newpaltz.edu/evos/index.html>). A grant proposal submitted to NSF's CCLI program will use EvoS-Binghamton as a hub for a nationwide consortium of programs, starting with nine institutions that span the range from community colleges to major research universities. The consortium is designed for additional institutions to be added in an open-ended fashion.

To summarize, the developments that we outlined in section one of this proposal are taking place worldwide at the level of research and scholarship, but they are not yet reflected in

the structure of higher education except for a few centers that comprise a tiny fraction of their respective institutions. Our goal is to accomplish the integration at a campus-wide scale. We have made a strong start during a five-year period with modest intramural support, but fully achieving our goal will require a larger investment. A NEH challenge grant will greatly assist our efforts to reach this new plateau.

III) How a NEH Challenge Grant Will Help to Accomplish the Integration, both at Binghamton University and Nationwide

In addition to our own analysis of the “Two Cultures” problem, we invited comments from a number of external authorities as part of our preparation for this proposal. We chose senior authorities in a position to comment broadly on the “Two Cultures” problem, along with scholars and scientists of all ranks at the forefront of the “New Humanities” movement. Excerpts of the comments are provided in an appendix and the full comments are available upon request. Collectively, they demonstrate a strong consensus on the following points:

- The commentators affirm our diagnosis that the “Two Cultures” problem stems from an apartheid between evolutionary theory and most human-related subjects until very recently.
- They agree that breaking down the apartheid will automatically result in the integration of the humanities, human-related sciences, and biological sciences.
- They agree that the integration will place the subjects and perspectives associated with the humanities on a *stronger* foundation in academic and intellectual life, rather than further marginalizing the humanities.
- They agree that the integration is not a future event but is *already in progress* as far as worldwide scholarship and research are concerned.

- They agree that the integration is *not yet reflected in the structure of higher education*.
- They agree that Binghamton University's EvoS program *is already at the forefront* of the integration, especially with respect to its campus-wide scope.
- Commentators with a background in the humanities were especially strong in their affirmation that *our proposal genuinely represents a two-way street*, in which the humanities bring as much to the integration as they receive from the sciences.

We know that there are also dissenting views—it's not as if the "Two Cultures" problem has disappeared overnight! In addition, we know that terms such as "new," "movement," and "paradigm" are overused. Nevertheless, we think that the foundational developments that we have outlined in this proposal and the consensus view of the commentators provided in the appendix qualifies as a new movement that deserves recognition and support from the NEH. We will use a NEH challenge grant to build a model "New Humanities" program at Binghamton University and to facilitate the creation of similar programs elsewhere.

Our New Humanities program will be linked to EvoS and will share its campus-wide structure, but will also stand on its own. Specifically, the challenge grant will be used to raise matching funds for the following categories.

A New Humanities Seminar Series. Based upon the model provided by EvoS, we will bring approximately 10 external speakers/semester from all disciplines representing the new humanities movement. We routinely get audience sizes over 100 for EvoS seminars and expect comparable numbers for the New Humanities seminars. One speaker/semester will be sufficiently well known to give an evening public lecture widely advertised in the surrounding community (estimated audience size=400). The New Humanities Seminar Series will produce the following benefits: a) It will make the New Humanities a conspicuous part of campus life,

even for those whose participation is limited to occasional seminars; b) It will facilitate greater involvement in the form of faculty training, collaborative research and scholarship, both within Binghamton University and with the external speakers; c) It will provide an opportunity for the external speakers to directly experience our program as a model for what they might implement at their own institutions; c) It will allow undergraduate and graduate students to become involved, especially in the context of a 2-credit “current topics” course taught in conjunction with the seminar series, which brings students across departments into direct contact with each other, Binghamton University faculty, and the external speakers in a relaxed but intellectually dynamic social setting, as outlined in more detail in the next section.

Curriculum and research development. Based on the model provided by EvoS, a multi-course curriculum program (20 credits for undergraduate students, 16 credits for graduate students) will be established that results in a certificate and which can be earned in parallel with any major or research concentration. The “Current Topics” course just described must be taken twice as part of the requirement. This course requires reading one or more articles and writing a commentary prior to the seminar, attending the seminar, and attending a light dinner followed by a continued focused discussion with the speaker after the seminar. The dinner is open to everyone in the program and their invited guests, making each seminar a social event for the whole program. This format has become so popular for the EvoS program that the dinner/discussion must be held in one of the large union halls and a traveling microphone is required for students to ask their questions to the speaker standing at the podium. The conversation usually takes place at a very high level and the speakers are almost invariably highly impressed by the experience. For students who complete the program, the experience is repeated approximately 20 times over the course of two semesters, providing a powerful education in integration, in addition to the 4-credit courses that are also part of the program.

The 4-credit courses will include introductory courses at the undergraduate and graduate levels and a menu of intermediate and advanced courses. Some are already being taught but others need to be developed with the help of NEH funds, as outlined in more detail below. A course that we have already developed titled “Evolutionary Approaches to Literature and Cinema (Engl 283R)” provides a proof of concept. As described in the syllabus, “This course will introduce you to the theories and methods involved in the emerging synthesis between the evolutionary sciences and the humanities that has come into focus over the last fifteen years. Scholars in the developing field of evolutionary literary and cinema studies have crisscrossed traditional disciplinary boundaries in an effort to reframe our understanding of the nature, function, and centrality of storytelling in human affairs. Central questions of the course include: Why do humans spend so much time and mental energy in the virtual worlds of fictional literature and film? Do stories function as more than entertainment? If so, what is this function? And how can looking into the entwined history of human biological and cultural evolution shed light on this question? These questions and more will be approached through recent evolutionary and scientific theory and methodologies in an effort to understand storytelling’s ancient and contemporary roles in our individual and collective lives.”

Offered for the first time in the Spring 2008 semester, this course was quickly filled by students from multiple departments representing both the sciences and humanities. A mid-course assessment was made in preparation for this proposal. In an anonymous survey, the item “Compared to other lecture-sized English or Film classes, I would give this class a (pick a number from 1 to 6)” received an average score of 5.5. Anonymous verbal comments included the following: “This is among the rare classes that I participate in on a regular basis. I love pretty much everything about it.” “Connecting to sciences is really interesting because other classes don’t really focus on this.” “I enjoy the readings and films and how they link with evolution.” “It is

making me think much more outside the box.” “Looking at film and literature from a biological perspective is new and interesting to me.”

The creation of this course required several thousand dollars provided by the Dean’s office, in part to alleviate other teaching duties for the instructors. A comparable amount will be required for the development of other new courses, although it is difficult to second-guess the details. We are requesting funds for the development of new courses and collaborative research projects (described in more detail below), which will be awarded in the form of small grants on a competitive basis. Every year, groups of faculty will be invited to submit short proposals for integrative course or research development, which will be evaluated by an executive committee consisting of faculty participants in the New Humanities program. In its capacity as an Institute for Advanced Studies, EvoS has already implemented a small grants program, which is proving very successful in stimulating the development of new courses and research projects.

Although we cannot predict the particular projects that will emerge from this open-ended process over the four-year period of the grant, we can describe two courses and one research project that will be developed during the first year with the help of NEH funds.

- **Quantitative methods in the humanities:** This will serve as an introduction to quantitative research methods in the humanities for graduate students, advanced undergraduates, and interested faculty. The aim of the course will be to show how quantification can supplement traditional qualitative methodology in the humanities. The course will be designed around actual research. Background will include a basic introduction to statistics and probability, content analysis, life history analysis, and survey methods. An introduction to the basic software tools such as Excel, SPSS, and Survey Monkey will be presented. These methods will be explicitly

focused on the kinds of problems that humanists are trying to solve, and each student will be expected to develop a research question and project feasibly accomplished in the space of a semester using these methods. The course will serve as a pilot project that both facilitates collaboration between disciplines whose methods are normally at odds, and provide a new integrative research agenda beneficial to both disciplinary branches.

- **Science and Science studies:** This course will introduce students to problems, methods, and research in the science studies disciplines, which often take place within the social sciences (e.g., sociology), and will link these methodologies to both humanistic approaches and ongoing scientific inquiry. The course will provide essential background on current approaches to understanding science, including the cultural context of contemporary scientific issues. It will be co-taught by faculty from the humanities and sciences, and available to students from both the humanities and sciences.

- **Individualism as a case study of how cultural studies can inform scientific inquiry.** Cultural influences on scientific inquiry are much easier to identify in the past than the present. Thus, it has become obvious that Darwin and his contemporaries were influenced by Victorian culture, but comparable influences that might be operating today are not obvious. Most important, there is usually no attempt to systematically study cultural influences in a way that is closely coordinated with ongoing scientific inquiry. We will attempt to remedy this situation for one of the most fundamental themes in evolutionary theory and human affairs—the individual in relation to society. As we have already described earlier in this proposal, various forms of individualism became dominant during the middle of the 20th century, including formal scientific theories such as rational choice theory in economics, the theory of individual selection and selfish gene theory in evolutionary biology, and methodological individualism in the human behavioral sciences. These parallel developments in fields that were not strongly influencing

each other almost certainly reflect broader cultural influences taking place at the time. More recently, lower-level self-interest has become criticized as inadequate for explaining higher-level social phenomena. This critique is driven in part by scientific developments that are objectively valid (such as the revival of multilevel selection theory in evolutionary biology), but probably also reflect broader cultural influence. We will use individualism as a case study for how to integrate the study of cultural influences with ongoing scientific inquiry. Starting with a group of faculty and students at Binghamton University interacting in an advanced seminar format, we will attempt to identify in detail the factors that led to the ascendance of individualism during the middle of the 20th century, how these factors influenced the development and acceptance of formal scientific theories, and why there is an even more recent trend away from individualism. Our internal effort will then expand outward in the form of a symposium and edited book project that includes the most relevant authorities from both the humanities and the sciences. Our purpose is not to deny the possibility of objective facts and genuine scientific progress. On the contrary, we hope to establish the reality of cultural influences on the scientific process beyond reasonable doubt, using quantitative methods in addition to traditional scholarship. Our purpose is to demonstrate that the scientific process can be facilitated, rather than inhibited, when the surrounding cultural environment is also studied in detail. This is the kind of project that will be funded from the small grants program established with the help of a NEH challenge grant.

Graduate fellowships: In his comments on this proposal, Joseph Carroll writes: “Because I am a prominent contributor to this field, I frequently receive letters from students who are excited about the prospects for this kind of research and wish to know where they can go to pursue doctoral work in it. The only program I’ve been able to recommend to them is the EvoS program at SUNY Binghamton.” Because we already occupy a leadership role, we can recruit highly qualified graduate students who have already discovered the New Humanities movement on their own. However, we have no way to offer financial support for these students, other than

what is available from the department that admits them. With the help of a NEH challenge grant, we will raise funds for three graduate fellowships that will enable us to offer our own financial support to the most highly qualified applicants to any humanities department. The fellowship will not be “free ride” but will involve duties that both contribute to the program, including TAing the courses in the program, helping to run the seminar series and Current Topics course, and mentoring undergraduate students. As the New Humanities fellows advance in their own training, their duties will shift to developing and serving as instructor of record for courses and taking a leadership role in research projects. In this fashion, the New Humanities fellows will both contribute to the program and develop the expertise to create similar programs later in their own careers.

Organization and assessment: The New Humanities program will be organized similarly and in close association with EvoS. The program will be run by a director and executive committee elected from a network of faculty participants. Faculty participants receive e-mail notices, can apply for small grants, host seminar speakers, and have light duties mentoring students and making consensus decisions. In our experience with EvoS, this loose organizational structure provides a relaxed and enjoyable social environment in which faculty can become involved and quickly achieve a professional level of competence. The most productive teaching and research collaborations develop spontaneously from among the many possibilities, especially when encouraged by incentives in the form of small grants offered on competitive basis. This is how EvoS is already organized as an Institute for Advanced Studies, and the same principles will be used to allocate funds for the New Humanities program raised with the help of a NEH challenge grant.

A detailed assessment plan has already been designed for EvoS, which can also be used to assess the New Humanities curriculum. The assessment will be carried out in collaboration with Dr. Sean McKittrick, Assistant Provost for Curriculum, Instruction, and

Assessment at Binghamton University. Dr. McKittrick is involved with the assessment of all students and programs at Binghamton University, which means that students involved in the New Humanities curriculum can be compared with other students at a variety of scales.

Students who join the program will be invited to participate in a multi-year assessment. A sample will be matched with a comparable sample of students who have not entered the program. Both groups will be assessed at yearly intervals and post-graduation via annual mailings. Assessment will include a number of surveys measuring general critical thinking skills, life satisfaction, and post-graduation career progress.

We are especially interested in testing the hypothesis that the New Humanities curriculum can increase general critical thinking skills, academic performance, and career attainment post-graduation. The rationale for this hypothesis is that applying a small set of basic principles to a diversity of phenomena is inherently a domain-general process that can be transferred from one class to the next and beyond the classroom to everyday life. In addition, whenever disparate facts come together to form a meaningful framework, they become easier to remember and to work with creatively. This is often the rationale for a liberal arts education in general, but it might apply even more powerfully for students who take the New Humanities curriculum. If domain-general benefits of the New Humanities curriculum can be documented, then this will obviously be a powerful incentive for adoption by other institutions, including those that are already becoming part of the EvoS consortium.

One of the innovative features of the EvoS assessment program, which will be carried over to the New Humanities curriculum, is analysis of writing samples that will be analyzed by a protocol developed by the SUNY General Education Assessment Review Group (GEAR) to evaluate general education programs across the 57-campus SUNY system (www.cortland.edu/GEAR/). A training procedure has been developed to evaluate writing

samples for elements of critical thinking, such as the ability to identify target arguments, to articulate the conclusion of an argument, and to evaluate logical support and reasonableness of the premises for an argument. Using this protocol will enable us to directly assess the critical thinking skills of students taking the New Humanities curriculum, in comparison with a number of control groups, including the students matched with New Humanities students, the general student population at Binghamton University, and the SUNY-wide student population.

Continuing the Program after NEH support

The New Humanities program that will be established with the help of NEH support is clearly designed to be permanent within Binghamton University and to serve as a national model for the full spectrum of institutions of higher education, from community colleges to major research universities. We have tried to be realistic about the matching funds that we can expect to raise, which will fund the program during a four-year period. However, we also think that NEH funding can help the New Humanities movement reach a tipping point as far as support for our program and similar programs is concerned. As Steven Pinker put it in his comments on our proposal (see appendix) "If I were to be asked to advise a dean or university president as to which areas of scholarship are the academic equivalent of growth stocks, these would be my picks." Indeed, to the degree that we succeed in integrating the humanities and sciences, that is exactly the degree to which the humanities will begin to enjoy the support accorded to the sciences from all sources, intramural and extramural, federal and private. We look forward to first meeting the goal that we have set for ourselves and then continuing to build upon the foundation that we have established with the help of a NEH challenge grant.

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