

2020 Summer Presidential Incentive Awards

Summer Incentive Award

The Tourist Tax

Mr. James Mackenzie

Assistant Professor, Tenure-Track, Communication, Media & Journalism, Arts & Letters

Abstract

The Tourist Tax is a 10-minute narrative short film that will be produced in conjunction with UNG's Film in Italy study abroad program in the summer of 2020. The film tells the story of a young American mother whose child goes missing during vacation in a quaint Tuscan hilltop town, and despite a language barrier, she finds help from unexpected local characters on the journey to find her son.

The general importance of this project is related to three matters: (1) the film's story humanizes the dreams and struggles of a young, single mother; (2) the film's crew and cast is to be composed of students and working film professionals from both America and Italy, which fosters a global production experience for all involved parties; (3) the film itself will serve as an example of work from the still relatively new UNG Film & Digital Media program, and will in turn be used to promote the program and its filmmakers on both a national and international scale.

The Film in Italy program has already partnered with Kalispéra, a production company based in Italy, to make this short film over the course of two weeks in Barga, where UNG's Film in Italy program is based. The film will be produced as a part of the program's Production II (MDST 3500) course, in which students will fill roles as production assistants, camera assistants, grips, and other entry-level roles serving under a professional Producer, Director, Director of Photography, 1st Assistant Director, and Key Grip. After careful pre-production planning and two days of production, the film's sound and video footage will be edited together by September of 2020 in order to submit to film festivals around the world.

The anticipated outcomes will be as follows: to moderate a "Work-in-Progress" panel and receive feedback at the 2020 Georgia Film Festival, to use the film's footage in our film program's Audio Production (MDST 3200) and Post-Production (MDST 3700) courses, to premiere at juried domestic and international film festivals in 2021, and to screen the film at the 2021 Georgia Film Festival on UNG's Gainesville campus. This film will be used toward promotion and tenure for its corresponding applicant.

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What are we singing about?: Identity and Meaning in the Songs of Stephen Foster

Dr. Esther Morgan-Ellis

Associate Professor, tenured, Music, Arts & Letters

Abstract

Almost everybody can sing a Stephen Foster song. "Oh, Susanna!" is perhaps the best known today, with "Camptown Races" as another strong contender. Two of Foster's songs—"My Old Kentucky Home" and "Old Folks at Home"—have been adopted as state songs, by Kentucky and Florida respectively. What few people know, however, is that all of these songs were born out of the practices of blackface minstrelsy, and all originally offered stereotyped and offensive portrayals of African Americans. "Oh, Susanna!" and "Camptown Races" both give voice to the minstrel character Jim Crow—a foolish but happy black man who is always good for a laugh. "Old Folks at Home," which was originally sung in dialect, expresses the yearning of an ex-slave for the plantation, while "My Old Kentucky Home" describes the suffering of slaves in terms that were already distasteful to black Americans at the time of the song's publication in 1852. Most of these songs were popularized by white performers who blackened their faces, donned comical outfits, and assumed African American identities on the minstrel stage.

Today, these songs mean something quite different to the American who sing them. This change in signification has been made possible by means of various transformations in the songs' text and context. Dialect, which originally betrayed the supposed ethnicity of the speaker, has been stripped away. References to "darkies" have been expunged. And certain offensive verses have been eliminated. In sum, Foster's most popular songs have been recast as expressions of white identity. "My Old Kentucky Home" and "Old Folks at Home" now express generic nostalgia or state pride, while "Camptown Races" is merely a comic nonsense song for children. The fate of "Oh, Susanna!" is a bit more complicated: While it is no longer associated with the Jim Crow character, it has become linked with another stereotype, the white hillbilly.

This project will trace how and when these changes came about. It will also offer conclusions about why these songs changed, and what those transformations have to tell us about American culture and identity. Because I am specifically interested in the collective construction of meaning through the practice of community singing, I will be focusing on sing-along media, including song books, song slides (from which lyrics and images were projected), and sing-along films, radio programs, and television shows. I have already completed a cursory survey of forty-seven song books published between 1913 and 2003, which has revealed certain key facts. For example, dialect and racist epitaphs were no longer printed after the 1950s, while at the same time illustrations ceased to portray explicitly black subjects and instead favored white subjects—often hillbillies or cowboys.

*The final product of this investigation will be a 13,000-word book chapter for inclusion in a volume tentatively titled *Music and Cultural Value*, currently under consideration at Oxford University Press. This project will also be presented at a national conference and on the UNG Dählonega campus.*

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Race-Based Stress, Social Isolation, and Psychological Well-Being in the African American Community

Dr. Harrison Davis

Associate Professor, Tenured, Counseling, Health Sciences & Professions

Abstract

Racial discrimination can be an unpleasant psychological experience for individuals who belong to an ethnic minority group, however the study of race-based stress is only recently gaining traction. Further research needs to be done concerning the psychological well-being of African Americans who experience racial discrimination. The primary objective of this research study is to extend the literature in this area by examining the relationship of race-based stress, social isolation, depression, and anxiety within the African American community.

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From Pathways to Envisioned Gateways

Dr. William Black

Assistant Professor, Tenure track, Accounting and Law, Business

Abstract

The Pathways Commission is a joint project of the American Accounting Association (AAA) and the American Institute of Certified Public Accountants (AICPA) that in 2012 produced a series of recommendations for how the next generation of accountants is to be educated. It called for changes in: how accounting research, education and practice are integrated; how accounting faculty are recruited and trained; how teaching is respected and rewarded; how curriculum models, learning resources, and faculty development opportunities are developed and shared; how high-potential, diverse entrants are attracted into the accounting profession; how information about markets for accounting professionals and accounting faculty is collected, analyzed, and disseminated; and how all these recommendations are implemented and sustained. In the ten years since the Pathways effort started, there has been no comprehensive critical assessment of the successes of Pathways recommendations and the challenges remaining. The proposed project will conduct such a review and communicate relevant findings to the academic and practitioner communities.

The project will analyze archival documentation, including meeting minutes, correspondence, and drafts of finished documents, and will add life to the documentation through a series of interviews with leading participants in and observers of the Pathways efforts. The applicant is well qualified to conduct this effort through experience working in support of the Pathways Commission, chronicling its initial stages up to the production of its report, and observing subsequent implementation efforts in accounting education. Furthermore, the applicant is trained in historical research, has published articles utilizing methods similar to those in this proposal, and has personal connections with the interview subjects that make it highly likely that requests during the project will be honored rather than ignored. Outcomes are expected to include one or a series of scholarly articles, publication of a monograph by the AAA, and presentations in practitioner journals and forums as well as more traditional scholarly outlets.

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Pursuing “Green” Single-Use Plastics: Investigation of the Direct Polymerization of Bio-renewable Chemical Feedstocks

Dr. Levi Miller

Assistant Professor, Tenure track, Chemistry/Biochemistry, Science and Mathematics

Co-Applicants - Dr. Noah (Eric) Huddleston, Associate Professor, Tenured, Chemistry, Science and Mathematics

Abstract

Polymers are macromolecules that are ubiquitous in modern society. Everything from paint to plastic forks and car interiors contain polymeric materials. A specific set of polymeric materials are referred to as plastics and are widely used in electronics and in single-use disposables. Most plastics are derived from non-renewable petroleum resources and as such, are dependent on our limited supply of petroleum reserves within the earth. In addition to the problem of the finite availability of these resources, the accumulation of plastic waste as result of the poor degradation properties of most plastics poses a significant threat to our environment.

Currently, single-use plastics are used primarily as a convenience factor in such utilities as food preparation and medical applications. However, as is the case with all modern plastic materials, single-use plastics are prepared from petroleum-based resources and remain persistent within the environment when their end-of-use life cycle begins. While biodegradable options do exist, their high manufacturing cost is a prohibiting factor to most consumers.

Most biodegradable plastics are synthesized using only a few renewable resources; poly(lactic acid), poly(glycolic acid) and copolymers therein, as well as the relatively new poly(hydroxyalkanoates), derived from bacterial anaerobic fermentation mechanisms. While these renewable resources are widely known, their production suffers from expensive purification processes that drives material costs prohibitively out of reach. Additionally, due to the nature of typical batch reactors, careful attention must be payed to reaction conditions and feed ratios to obtain high molecular weight polymers; of which it is a necessity to derive the commonly known tensile strength of traditional plastics.

This project aims to conduct hands-on fundamental chemical research with undergraduate students towards the flow-based synthesis of renewable and biodegradable materials using known and novel plant-based monomeric compounds. The research conducted herein will provide a starting point for future collaborative research conducted by students at the University of North Georgia to access and identify “green” polymeric materials using modern reaction technology. More importantly, this effort will provide experience and training for undergraduate students in the fields of polymer chemistry and flow-based synthetic strategies (flow chemistry).

Other major outcomes of this project cannot be overstated and include fundamental understanding of barriers, pathways, and properties of polymeric materials which will serve as the foundation/proof of

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concept and preliminary data for a major NSF-RUI grant. Students and faculty alike will work on the development of presentation/communication skills via dissemination of research progress at local, regional, national conferences. The results of this chemical research have high potential for publication space in peer-reviewed and impactful journals. Participation in this project will provide students with a truly unique and marketable experience in flow- reactor engineering and operation, a valuable addition to the toolbox of the modern synthetic chemist.

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Dreaming South: Latin America in the African-American Imagination

Dr. Melissa Schindler

Assistant Professor, Not tenured, English, Arts & Letters

Abstract

The proposed UNG Presidential project will examine African-American perceptions of Latin America in speculative literature. Recent years have seen an explosion of interest in “afrofuturism,” an aesthetic movement that describes science fiction, fantasy and speculative fiction by people of African descent. Although scholarship is actively expanding the field of afrofuturism, it has yet to consider how African-American intellectuals, from W.E.B. Du Bois to Octavia Butler, have been inspired by Latin America. For many authors, artists and activists, Latin America represented a “racial paradise.” My project, a literary history, will examine how utopic views of Latin America changed throughout the twentieth century. Drawing on archival research in Los Angeles and Rio de Janeiro, the project will produce a peer-reviewed journal article, a public lecture, and a new unit for my course on postcolonial literature at UNG. It will support the UNG mission by further globalizing the curriculum, facilitating faculty development and fostering community engagement through partnerships with the local library.

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A Dynamic Analysis of Life Insurance Holdings during the 2008 Financial Crisis: Evidence from the Panel Survey of Consumer Finances

Dr. Ning Wang

Assistant Professor, Tenure Track; Economics and Finance, Business

Abstract

During financial crisis, the purchasing power and wellbeing of households can be tremendously reduced resulting from unexpected life events. This leads to greater need for life insurance compared with households exposed to a healthy economy. Prior studies have employed cross-sectional data to investigate household characteristics driving life insurance holdings in a static setting. Little in the literature exists that studies demand determinants during recessionary times through a dynamic analysis on panel data. This innovative project will expand the literature and provide a deeper understanding of the dynamics of life insurance demand during recessionary times, by examining life insurance holdings as a function of changes in household characteristics during financial crisis. The unique panel data from the 2007-2009 Survey of Consumer Finances will be used. This study will disclose the effect of changes in household employment, demographic and financial characteristics on choices of initiating, dropping, increasing or decreasing life insurance holdings during the 2008 financial crisis. The findings are fundamental for insurers as they account for the effects of economic conditions in their estimates of life insurance demand. The findings can also provide practitioners with an insight into promoting life insurance by recognizing dynamic life insurance needs for households with different characteristics. Social policy implications about how to lessen household hardships from insufficient life insurance will also be evident from this study. This project will lead to a research paper to be presented in academic conferences and published in a peer-reviewed journal.

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A Workshop Approach: Exploring Teacher Reflections on Using Mentor Texts to Teach Writing

Dr. Jennifer Jones

Assistant Professor, Tenure-track, Teacher Education, Education

Abstract

In recent years there has been a shift in the way teachers approach writing instruction. This shift requires teachers to move away from traditional teacher-directed instruction focused on discrete skills to a process-orientated approach requiring teachers to model the “craft moves” found in authentic texts during the writing workshop (e.g., Calkins, 2003; Dorn & Soffos, 2001). This shift can be challenging for teachers who need more professional development, in both knowledge about the writing process and in how to teach the “craft moves” of mentor authors that have published engaging narrative, informative, and argumentative texts (Rebora, 2016).

The purpose of this proposed project is twofold, to provide effective professional development for elementary teachers who are new to writing workshop while also investigating their perception of shifting from direct instruction to using mentor texts for modeling both the process of and “craft moves” for writing. How does using mentor texts for modeling writing differ from teacher’s current writing pedagogy? What do teachers see as the instructional value of mentor texts? What do teachers like and dislike about the mentor texts? What stands out as the key features of mentor texts for writing instruction? This project will occur within the context of a week-long professional development for elementary teachers in Dawson County. Teachers will participate in a series of sessions about teaching the writer’s craft within the workshop approach through the use of mentor texts. At the end of each session, teachers will complete written reflections which will serve as the data for the study.

Studying teacher’s reflections as they engage in professional development focused on using mentor texts to teach writing is important for two reasons. First, there is very little research on how teachers are prepared to teach writing (Bromer, Land, Rubin, & Van Dike 2019; Cheung, 2011). Second, research suggests that when teachers are provided with opportunities for reflection, learning and change in practice can occur (Opfer & Pedder, 2011). Therefore, how teachers reflect on the differences and potential cognitive dissonance between current practices and those practices proffered in professional development can provide researchers with insight on the type of thinking required for change (e.g., Marion, 1999). Additionally, if teacher’s thoughts on using authentic mentor texts for providing writing instruction are known, then teacher educators are positioned to use that insight to better educate other pre-service and in-service teachers about the value of using mentor texts for teaching the craft moves of writers.

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Introduction to Buddhist East Asia: An Interdisciplinary Resource

Dr. Robert H. Scott

Assistant Professor, Tenure track, History - Anthropology - Philosophy, Arts & Letters

Abstract

The central aim of this project is to complete, as a co-editor and author, an edited volume on Buddhism in East Asia. While there are many good general introductions to Buddhism, the prevailing tendency of available introductions is to focus on the origins and development of Buddhism in South and Central Asia. This volume will be distinctive in 2 respects: 1) in providing a general introduction, for use in undergraduate classes, to Buddhism as it has developed in East Asia, in particular in China, Korea, and Japan, and 2) in placing a strong emphasis on pedagogy (in Part 1) with the aim of providing a useful resource to teachers who may be adding (or considering developing) content on East Asian Buddhism in their courses, but who may not have specialization in this area.

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College Algebra Boot Camp

Dr. Leslie Davidson-Rossier

Assistant Professor, tenure-track, Mathematics, Science and Mathematics

Co-Applicants - Dr. Clayton Kitchings, Assistant Professor, tenure-track, Mathematics, Science and Mathematics

Abstract

In Fall 2018, the USG mandated that all remediation would be done in a co-requisite format requiring students to take the Learning Support class (099X-level classes) simultaneously with their Gateway class (1XXX-level classes). In response to this change, the USG set new criteria for placement using measures such as the Math Placement Index (MPI) to determine in which math pathway a student will begin. The Oconee campus offers two co-requisite pairings; MATH 0997/1001-Quantitative Skills and Reasoning, recommended for students in non-STEM pathways, and MATH 0999/1111-College Algebra, required for students in STEM pathways. STEM co-requisites MATH 0999/1111 require a higher MPI than non-STEM MATH 0997/1001. Many STEM students do not have a high enough MPI to place into MATH 0999/1111, resulting in STEM students having to take non-STEM co-requisites before beginning their STEM math classes. This delay is made worse by the fact that MATH 0997/1001 curriculum does little to prepare students for MATH 0999/1111.

According to studies cited by the Dana Center, the addition of non-STEM math classes for STEM students is in direct opposition to research that suggests that co-requisite education works best or is most beneficial when students follow the appropriate pathway for their major.[1] We propose to address this issue by creating a College Algebra Boot Camp on the Oconee Campus to help students re-test into MATH 0999/1111 by bridging gaps in their knowledge of algebra. We are requesting funds from the Presidential Summer Incentive Award in order to produce mathematics instructional videos for use in the boot camp. The Boot Camp will utilize a flipped classroom environment to help students remediate deficiencies and accelerate the learning required to experience success in College Algebra.

[1] https://dcmathpathways.org/sites/default/files/resources/2019-03/CaseforMathPathways_20190313.pdf, last accessed 10/3/2019.

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Maternal Stress, Sleep, and Breastfeeding Outcomes Among First-time Mothers

Dr. Joanna Carrega

Assistant Professor, Tenure Track, Nursing, Health Sciences & Professions

Abstract

Background/Significance

Over the past decade, several initiatives have been implemented to improve breastfeeding rates and support across the United States (U. S. Department of Health and Human Services [U. S. DHHS], 2011a). Currently, most new mothers in the U.S. choose to initially breastfeed; however, 60% do not meet their intended breastfeeding goals (Antsey, MacGowen, & Allen, 2016). Perception of inadequate milk supply is an important factor associated with early discontinuation of breastfeeding during the early postpartum months. Stress and significant sleep disturbance during pregnancy or the early postpartum period may disrupt secretion of prolactin and oxytocin resulting in low milk volume (Van Cauter & Tasali, 2017; Stremler, Sharkey & Wolfson, 2017) for some new mothers.

Purpose

To examine the impact of maternal stress and sleep disturbance during pregnancy and early postpartum period upon 24-hour milk volume among first-time mothers. Factors associated with postpartum sleep disturbance and postpartum well-being will also be explored.

Methods

A descriptive correlational study will be conducted that follows 50 first-time mothers of healthy newborns from the third trimester of pregnancy through one month postpartum. Mothers will be recruited from childbirth classes or primary care offices during the third trimester. Objective measurement of sleep characteristics using a wrist actigraph will be performed during pregnancy and postpartum. Self-report measures of stress, sleep disturbance, fatigue and depressive symptoms will be collected at two week's postpartum. Infant test weights as a measure of milk volume also be performed at age two weeks. Infant's feeding method will be assessed at age one month. Pearson's product moment correlation and hierarchal regression analyses will be used for data analysis.

Implications

Findings from this study will be useful in developing future interventions that reduce stress, promote sleep, and improve well-being along the perinatal continuum to support new mothers in achievement of their breastfeeding goals.

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The John Henry Legend: Redemptive Violence in the Contact Zone

Dr. Derek Thiess

Assistant Professor, Tenure-Track, English, Arts & Letters

Abstract

*From sociological examinations of prison structures (Wills 2014) to historical approaches to American Indian genocide (Cothran 2014), the Myth of Redemptive Violence as a conceptual framework has become synonymous with any framework in which violence is encouraged at the periphery of power in order to stabilize that power's centrality. First formulated in 1992 by theologian Walter Wink, this "myth" is defined simply as "the victory of order over chaos by means of violence." But what are the consequences of referring to violence as "myth," particularly in colonial contexts in which mythological appraisals of violence may differ between colonizer and colonized? Does treating violence as "myth" potentially obscure the experience of its victims, or diminish the importance of acts of resistance? I seek funding to support a book project, tentatively titled *Redemptive Violence and Other Fantastic Fictions* that explores the meeting of such mythologies in the colonial contact zone. This project offers a comparative analysis of folk tales (from which myths proceed to authorize belief) and speculative fiction (sf) stories that highlight the embodied acts of resistance and decolonization typically forgotten in calls to eradicate the myth of redemptive violence.*

*In this project I build on insights gained in my prior published research, especially my last book with Liverpool University Press, as well as in my ongoing service to the field of sf studies (e.g. at conferences or in editorial work for the *Journal of the Fantastic in the Arts*). The central intervention this book offers to the ongoing narrative regarding redemptive violence is to resist the "mereness" implied in this formula. To suggest that such a "myth" is an untruth, or that it represents a kind of failed narrative, is an act fraught with colonial forgetting. The combination of the performative and embodied folk tale with the sf story allows a critical distance from which to explore redemptive violence from previously marginalized perspectives. Even within sf studies, John Rieder suggests in his *Colonialism and the Emergence of Science Fiction*, that in mapping colonial ideologies onto the history of the science fiction genre, "we are not dealing with myths or dreams or neurotic symptoms. We are dealing with conscious works of art" (21). I respectfully disagree with the distinction between these terms, although Rieder's larger point coincides with the argument of my own project: there is a very real colonial past with which even critical sf studies must reckon. *Redemptive Violence and Other Fantastic Fictions* extends critical consideration to both myth and fiction, in particular to a combination of speculative fiction and folk tale that allows for both remembering colonial and other violences, and for renegotiating the manner in which we engage them.*

Two chapters are fully drafted—the first examining the portrayal of violence towards children in the works of Eleanor Arnason and the Horatio Alger myth, while the second explores the clash between colonizers and colonized in the history of surfing via the Hawaiian mo'olelo (chant/song/history). A third chapter, published as an article, explores Dan Simmons's retelling of the doomed 1845 Franklin

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Expedition to find the Northwest Passage and its encounters with Inuit folk traditions. Later chapters will focus on the image of pirates in western culture (five) and the portrayal of violence towards U.S. citizens abroad in body horror films (six).

The chapter for which I seek funding for research and drafting, however, examines the “legend” of John Henry. I will specifically compare historical versions of the Ballad of John Henry to contemporary speculative fictional retellings, especially the work of Balogun Ojetade, a local Atlanta artist and writer. I examine the protagonist’s shift in subjective violence from hammering “his fool self to death” to more overtly killing his captors and training for war; this escalation from coded self-violence to redemptive violence signals a shift in our considerations of violence within a colonial context and a greater willingness to engage the embodied violence of the past. I have begun to examine the digitized versions of some of the older song versions held at the Southern Historical Collection at UNC Chapel Hill. The grant will help with travel to Chapel Hill to examine the materials not digitized in the Guy B. Johnson papers. I may also begin research for the chapter on pirates as there are several resources in that area dedicated to piracy.

A Presidential Incentive Summer Award will allow time and travel funding to find and organize the initial research for chapter four primarily, and chapter five secondarily. A book proposal is currently under review at several University Presses, and academic book publication is the ultimate goal for public dissemination, while I will also deliver a public lecture internally at UNG.

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The Modeling and Simulation of Generalized Darcy–Forchheimer Flows for Slightly Compressible Fluids with Fractures Modeled as an Interface

Dr. Think Kieu

Associate Profesor, Tenure, Mathematics, Science and Mathematics

Co-Applicants - Dr. John Cummings, Assistant Professor, tenure-track, Mathematics, Science and Mathematics

Abstract

The study of fluid flows in porous media plays an important role in environmental and industrial technology research. This proposal addresses challenging issues in the modeling, analysis and numerical solution of coupled nonlinear problems to the general class of fluid flow in porous media formulated from experiments. The modeling of fluid flows in a dimensional medium n with a single simple fracture in an $n-1$ dimensional interface in which the fluids flow in the fracture, as well as in the surrounding medium, is governed by generalized Darcy-Forchheimer law. This class of problems attracts increasing attention from the scientific and engineering community, as it relates to fracturing technologies for oil and gas recovery. This approach will provide better evaluation tool for selecting wells for remedial operations such as workover or stimulation. The results will equip reservoir engineers with a robust technique to analyze well performance. They will further illuminate known discrepancies in well test analysis and help to ratify a fundamental source of uncertainty in well test models.

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When the Stars Threw Down Their Spears, a Novel

Dr. Phillip Mitchell

Assistant Professor, Non-tenured on tenure-track, English, Arts & Letters

Abstract

*I write to apply for support to finish a novel-length work, *When the Stars Threw Down Their Spears*. The project has interesting interdisciplinary intersections, including history, philosophy (particularly aesthetics), anthropology, and, of course, creative writing.*

GABRIEL LIVESAY, a recent philosophy graduate, is unmoored upon moving into his mother's trailer in Murray County. When he goes to the back of Dirty Dave's to answer a Craigslist ad that seeks "strong men with vision" he is knocked out with a crowbar and thrown into the back of a van.

He arrives at a small colony in the Cohutta Wilderness the next morning where a building crew is stacking stones. Though forced into slavery, Gabriel is slowly drawn to the vision of JAVIER GARZA, an accomplished architect back from Spain who seeks to build a "Monument to Beauty" in the rural South in order to subsume the ugliness of its past atrocities.

At the same time, Gabriel forms a deep friendship with SKAGGS LEEMORE, a black man from Union City, GA and falls in love with a fellow worker, TRIZ HOLLYFOOT, who, Gabriel discovers later, has arrived under different pretenses.

*What ensues is akin to *The Great Gatsby* in the mountainous Southern wilderness—an obsession with wealth and power, unrequited love, a vision diametrically opposed to the social order, and a history that bears so heavily on the present that none of the actors in the drama can hold it up.*

This history weaves its way into the novel through the violent Joseph Vann--a half-Cherokee, half Caucasian plantation owner-- the Moravian missionaries, and the Cherokee people who populated Spring Place, GA and who were later removed to Oklahoma. These narratives will be rendered in between chapters to tell the "whole [fictional] truth," compressed into the present narrative of Gabriel, Triz, Skaggs, and their relationship to Javier.

In order to tell this whole "truth," researching the journals of the Moravians held at the Chief Vann House and at the Moravian Museum in Old Salem (NC) will be of paramount importance.

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A Practical Ransomware Detection and Prevention Technique

Dr. Ahmad Ghafarian

Professor, Tenured, Computer Science and Information Systems, Business

Abstract

Ransomware is a special type of malware, which infects a system and limits a user's access to the system and its resources until a ransom is paid. It does that by creating a denial of service of a system to its own user by encrypting files and/or locking the machine. The malware takes advantage of people's fear of revealing their private information, losing their critical data, or facing serious hardware damage. In the past few years, this malware has become popular among cybercriminals and it is regarded as a billion-dollar industry. Cybercriminals launch ransomware attack to extort money. Some of the most recent well-known ransomware include WannaCry, Petya and Bad Rabbit. WannaCry attacked known Windows network vulnerabilities using various exploits, which allowed an intruder to execute arbitrary code on a targeted system by transmitting customized data packets. WannaCry made global headlines after infecting more than 230,000 systems in over 150 countries and causing an estimated \$5 billion in damages. Like WannaCry, Petya used Windows vulnerabilities to propagate itself. It impacted large organizations in multiple countries with billions of dollars damage. Another example of rapidly growing ransomware is Bad Rabbit, which appeared shortly after the WannaCry and Petya ransomware families, made headlines. Bad Rabbit targeted Ukraine's Ministry of Infrastructure and Kiev's public transport system.

Due to the significant growth of ransomware attacks, it is necessary to develop mitigation strategies and techniques for this malware. In this research, we propose and implement a technique for detection and prevention of ransomware. Our proposed technique would complement some of the existing methods in various ways including the environment, the tools, dataset and the structure. The proposed technique monitors the running machine's processor usage, memory usage, I/O rates and other system activities that demonstrate the process with abnormal behaviors. If the process running a suspicious ransomware is detected, the proposed system will report the situation to system administrator's engine which in return will stop the process and take steps to confirm the deletion of programs associated with the process from users. The technique uses a statistical approach to generate and detect highly active processes and label them as suspicious and possibly ransomware processes.

To Implement the proposed technique, we use various open source software tools and simulate the ransomware attacks and prevention task. The resources include VMware virtual machine, Process Monitor, Cuckoo Sandbox, Ransom-as-a Service (RaaS) and VirusTotal. VMware is a virtual machine, which provide a safe and reliable platform for our experiment, which avoids the risk pf damaging the physical machine. Process Monitor is a free software that tracks the changes in the system in terms of file system activities, registry modifications, and network communication. In addition, we use the free Cuckoo Sandbox automated malware analysis system for preventing a suspicious process from spreading and damaging the machine. Finally, we use the ransomware dataset that is provided for free to

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researchers by VirusTotal and Ransom-as-a-Service (RaaS). Each dataset consists of hundreds of the most recent real ransomware files.