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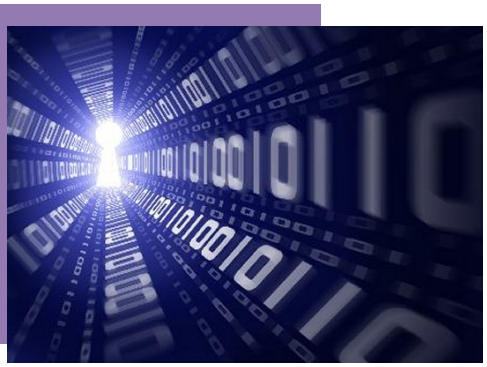
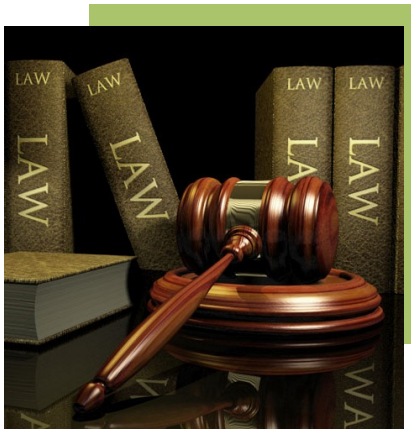
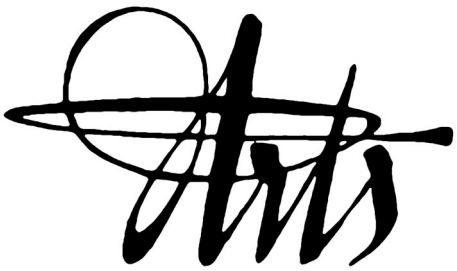
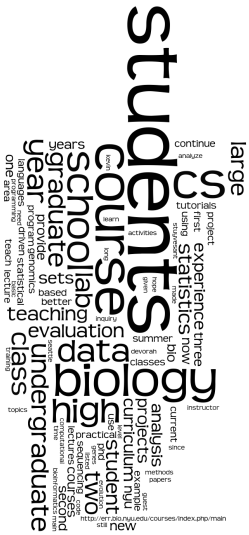
+ Research Day 2013









Pace University's First Annual Research Days

Hosted by the Office of Sponsored Research

Pleasantville Campus April 25, 2013
10am-3pm

New York City Campus April 30, 2013
10am-3pm

Agenda

10:00 am – 11:45 am Faculty Presentation of Current Research

12:00 pm – 1:00 pm Remarks

- Opening Remarks & Introductions– Victor Goldsmith, PhD., Associate Provost for Sponsored Research
- Uday Sukhatme, PhD., Provost & Executive Vice President, Academic Affairs
- Mark Poisel, PhD., Associate Provost, Student Success
- David N. Rahni, PhD., Interim Associate Provost, Academic Affairs
- Mark Godwin - Director of Corporate and Foundation Relations, Development and Alumni Relations

Presentation of External Funding Awards

1:00 pm – 3:00 pm Light Lunch and Faculty Presentations of Current Research

Introduction

At the suggestion of Provost Uday Sukhatme, the Office of Sponsored Research and the Faculty Research Planning Committee has organized these exciting two days at PLV and NYC. In mirroring a practice undertaken by most of Pace's peers, and universities in our 'neighborhood,' this is a clear signal from the Provost of the increased importance of research and scholarship in all aspects of academic life at Pace. These include promotion and tenure considerations, applying for external funding to support the research, involving students in these exciting endeavors, bringing the latest cutting edge research into the classroom (i.e., 'scholar teachers'), spreading the word within Pace of research being undertaken in the different Schools and thereby providing opportunities for interdisciplinary research, and use as a recruitment tool, just to name a few benefits.

It is rewarding to see that the faculty has risen to the occasion with over 150 research and scholarly presentations offered on both campuses. Much of this research is being supported by external funding obtained competitively. In the last complete FY, Pace faculty and staff submitted 141 proposals and achieved success with 97 awards. Those who received external funding are being recognized by Pace, and also receive 5% of the indirect costs in their awards to use to further their research. Awards will also be given to those with the best Research Day presentations, as determined by the Faculty Research Planning Committee.

Although this is the first Pace-Wide Research Day involving all six Schools, and with emphasis on the faculty and staff, there are other Pace-Wide events such as the Annual Undergraduate Research Showcase by The Office of Student Success which involve students partnering with faculty, and the Faculty Research Forum. Most of the individual School events emphasize undergraduate students such as Undergraduate Science Research Day and the Society of Fellows Research Day, in Dyson College of Arts and Sciences. Others include Nursing Scholarship Day in the College of Health Professions and the Michael L. Gargano Annual Student Faculty Research Day in Seidenberg School of Computer Science and Information Systems. Lubin School of Business has had a Research Day several years ago but in recent years the departments have held their own "brown bag lunches" to discuss research. Other events include The Helene and Grant Wilson Center for Social Entrepreneurship and the Pace Academy for Applied Environmental Studies. Thus, the Schools have a history of recognizing research and scholarship with an emphasis on student-faculty interaction.

It is our hope that by bringing faculty and students from all the Schools together in one event, we will learn more of each other's cutting edge research and scholarship at Pace, and that the results will be greater than the sum of the individual Schools.

Victor Goldsmith, Ph. D.

Associate Provost for Sponsored Research and Economic Development

Grant Achievements

Awards for Grants Obtained
Fiscal Year 2011-12
Presented by: Uday Sukhatme and Victor Goldsmith

College of Health Professions

Joanne Singleton

Dyson College of Arts and Sciences

Jack Horne
Nancy Krucher
Maria Iacullo-Bird
Demos Athanasopoulos
Nigel Yarlett
Dianne Zager
Christopher Malone

Pace Law School

Franz Litz
Thomas Bourgeois
Jane Aoyama-Martin
Cindy Kanusher
Jessica Bacher
Tiffany Zezula
John Nolan

Lubin School of Business

Ira Davidson

School of Education

Mary Rose McCarthy
Christine Clayton
Leslie Soodak & Roberta Wiener
Francine Falk-Ross
Jennifer Efferen

Seidenberg School of Computer Science and Information Systems

D. Paul Benjamin
Darren Hayes
Anthony Joseph & James Lawler
Pauline Mosley
Narayan Murthy

Administration

Richard Shadick
James Stenerson

Acknowledgements

President Stephen J. Friedman

Provost Uday Sukhatme

Schools

Dean Harriet R. Feldman, College of Health Professions
Dean Nira Herrmann, Dyson College of Arts and Sciences
Dean Michelle Simon, Law School
Dean Neil S. Braun, Lubin School of Business
Dean Andrea Spencer, School of Education
Dean Amar Gupta, Seidenberg School of Computer Science and Information Systems

Research Day Organizing Committee Faculty Members

Dr. Linda Jo Calloway, Seidenberg School of Computer Science and Information Systems
Dr. Carol Diane Epstein, College of Health Professions
Dr. John Hynes Horne Jr, Dyson College of Arts and Sciences
Dr. Iuliana Ismailescu, Lubin School of Business
Prof. Andrew C. Lund, Law School
Dr. Shobana Musti-Rao, School of Education

Administration

Provost's Office

Katherine Y. Chung, Administrative Director
Adrian E. Rivero, Senior Staff Associate

Office of Sponsored Research

Edward Leight, Director of Sponsored Research Administration
Eric Torres, Assistant Director of Sponsored Research Administration
Beatrice Moy, Senior Staff Associate
Mitsuko Rendon, Coordinator of Research Grant Opportunities
Wassim K. Abedrabbo – Student Assistant

Abstracts

College of Health Professions

Dyson College of Arts and Sciences

Lubin School of Business

Pace Law School

School of Education

Seidenberg School of Computer Science and Information Systems

Administration

College of Health Professions

Integrating Simulation Scenarios in the Classroom: Pharmacology to Medical-Nursing

Principal Investigator: Professor Elizabeth Berro
Co-Investigator(s): Carol Epstein PhD

Department: Nurse Education
School: College of Health Professions
Campus: NYC

High tech simulation may be used with many goals in mind, including providing a safe environment for novice practitioners to acquire new skills and offer a challenging exposure for more advanced students in the care of patients during critical care events. Yet, simulation has many additional and exciting uses. At Pace University, CHP, high-tech, high-fidelity simulation plays a more vital role as a method of instruction in the lecture classroom. In a feasibility pilot, clinical simulation scenarios are selected (Evolve-Elsevier Simulation Learning System (SLS)) or created based on the course syllabus. Typically three scenarios per course are scheduled per semester. Students prepare by reading the SLS materials, providing a general knowledge of the presented patient. The scenarios take place during the class time and where students move from the lecture hall to the nursing lab. Students may self-select or be assigned by the faculty to play the inter-professional roles in the simulation. Depending on the class size, observers may remain in the room, or watch on video in an adjoining room. The pilot is in its second semester and evaluation is ongoing. Additionally, a simulation session was used as a clinical make-up. The simulation was enhanced because of the mix of participating students. Scenarios were designed to accommodate medical- surgical, pediatric, and obstetrical students. Sophomore through senior level students from a tradition RN program along with students in the accelerated nursing program participated together. This unique mix provided an opportunity for students to provide direct care and observe exemplars of leadership in the simulated scenario.

Child Abuse Elective for Residents and Medical Students: Effect on Child Abuse Comfort and Knowledge Survey Scores

Principal Investigator: Professor Rose Mary Daniele
Co-Investigator(s): Stephen Ajl, MD, FAAP

Department: Graduate Department
School: College of Health Professions
Campus: NYC

Aim: To discover the effects of the Child Abuse Elective on learning among residents and medical students. To seek ways to improve our educational process with respect to child abuse. To disseminate results to a wider audience through publication. Background: There continues to be a lack of child abuse knowledge on the part of health care providers (Horner & McCleery 2000; Lentsch & Johnson 2000; Starling, Heisler, Paulson, & Youmans 2009). This is seen in reported cases of child abuse as well as in cases that are not reported in a timely manner. Child abuse education would appear to be an important way to fill this gap. The Department of Pediatrics currently offers a Child Abuse Elective to 3rd year Pediatric residents and 4th year medical students as well as a Community Pediatrics Elective to 1st year Pediatric residents. These electives expose the participants to the field of child abuse. It is important to investigate the impact of the electives on the learning of residents and students and to seek ways to improve the educational process if necessary. Study Design and Methodology: The study will be a prospective before and after design with a comparative control. Intervention group participants will include 1st year Pediatric residents taking the Community Pediatrics Elective, 3rd year Pediatric residents and 4th year medical students taking the Child Abuse Elective. Control group participants will include 1st and 3rd year Family Practice residents and 4th year medical students taking a Pediatric Emergency Medicine Elective. It is anticipated that the study will include approximately 70 participants for the intervention group and 70 for the control group. They will be drawn from the larger, very diverse pool of approximately 1500 4th year medical students, 24 1st and 3rd year Pediatric residents, and 14 1st and 3rd year Family Practice residents. Consent to participate in the study will be obtained, after which the intervention group participants will be asked to complete a short Child Abuse Comfort and Knowledge Survey. At the end of the four week elective, there will be a debriefing, at which time residents and students will again complete the Child Abuse Comfort and Knowledge Survey as well as a short questionnaire to indicate the sites visited during the rotation. Written permission for use of the Child Abuse Comfort and Knowledge Survey was obtained from the author of the survey. Control group participants will be asked to take the Child Abuse Comfort and Knowledge Survey. All participants in the control group will be asked to repeat the Child Abuse Comfort and Knowledge Survey four weeks later. Surveys will be numbered in order to blind the identity of subjects. Post-tests will have matching numbers in order to pair pre-tests and post-tests. Analysis: Before and after results for intervention and control groups will be analyzed using SPSS. Conclusions: Results of this study will be used to assess and to improve upon the Community Pediatrics and the Child Abuse Electives, to evaluate methods of disseminating child abuse knowledge to health care providers, and to highlight the need for child abuse knowledge for all health care providers.

Assessing functional health literacy: Strategy to reduce health disparity among elderly Hispanic patients with chronic disease.

Principal Investigator: Professor Renee McLeod-Sordjan

Department: Graduate Department
School: College of Health Professions
Campus: NYC

Patients' ability to access health care, obtain medications and comprehend discharge instructions can be affected by their functional health literacy. Functional health literacy can be diminished by a lack of education, cultural factors, and inability to comprehend the language. Hispanic Americans aged 65 and older are a vulnerable population at risk for diminished health literacy. Improvement in health literacy can lead to better control of chronic disease. This poster outlines four evidence based standardized approaches to assessing functional health literacy among Hispanic American elderly patients and their caregivers. A culturally competent tailored approach to reduce Hispanic health disparities is also discussed.

No Practitioner is an Island!

Principal Investigator: Dr. Joanne K. Singleton
Co-Investigator(s): Michelle Santomassino, Lucille Ferrara, Kathleen Roche, Susan Cappelmann, Christine Amendola, Tracey Kramar, Jason T. Slyer, Renee Mcleod-Sordjan.

Department: Graduate Department
School: College of Health Professions
Campus: NYC

Pace University's, College of Health Professions (CHP) was established in fall 2010 in an effort to showcase the breadth of health science professionals at Pace University. The College comprises the Lienhard School of Nursing (LSN), established in 1966, and the Pace University–Lenox Hill Hospital Physician Assistant Studies Program, established in 1997. Both programs are known for quality education and, preparing competent practitioners. CHP faculty engage in interprofessional (IP) practice through their own practice, and in overseeing students in clinical practica. Faculty attend conferences to enhance their IP understanding and incorporate this knowledge and experience in the respective programs. Faculty in the CHP participate in committees and activities together; however, the initiative this IP team will present is the first formal IP learning opportunity for CHP faculty and students. The purpose of this project is to enhance the education of family nurse practitioner (FNP) and physician assistant (PA) students, focusing on effective interprofessional communication, collaboration, and teamwork. This enhanced program is supported by electronic health record (EHR) technology and simulation for interprofessional practice (IP), with the goal of improved health-care quality, safety, and delivery. There is an increasing local, regional, and national need for a diverse IP workforce who are highly skilled at providing patient-centered care through IP teamwork, working with colleagues from other health professions and using electronic health records (EHR) as a key communications tool. These competencies are essential in meeting the demands of chronic care management, an urgent and growing need across health care in New York and nationally. IP colleagues must prepare for the mandated transition to EHR, which will improve the quality, safety, and outcomes of patient care provided by IP teams.The broad objectives for this project are to: 1. Enhance faculty readiness for IP learning, attitudes toward health care teams, and self-efficacy in IP practice; 2. Enhance faculty preparation to teach effective IP communication, collaboration, and teamwork supported by EHR technology and applied to patient engagement/activation in chronic disease management utilizing an IPE model; 3. Enhance FNP and PA students' readiness for IP learning, attitudes toward health care teams, and self-efficacy in IP practice; 4. Enhance FNP and PA students' competency in technologically supported IP practice through the use of an electronic health record (EHR); 5. Enhance FNP and PA students' competency in patient engagement/activation through simulation approaches, using the IPCC framework and an electronic health record (EHR) to technologically support IP documentation and communication, improving health care quality, safety, and delivery. It is estimated that up to 250 students per year will participate in this initiative. This presentation will detail the work of the faculty in the design and implementation of this learning opportunity. Discussion of the design will include: faculty development; strategies to promote interprofessional education; collaborative sessions; scenario selection and development; student participation; working with standardized patients; technology and staff support for the project; tools to assess outcomes, including developing and piloting a new Interprofessional Core Competencies Self-Efficacy Tool; implementation; debriefing; lessons learned; and having fun in the process!

Connecting the Dots: Nurse Practitioner Core Competency Skill Acquisition in University FNP Students: A Multidimensional Approach to Assessment

Principal Investigator: Dr. Joanne K. Singleton
Co-Investigator(s): Lucille Ferrara, Lillie M. Shortridge-Baggett

Department: Graduate Department
School: College of Health Professions
Campus: PLV

Nurse practitioner education continues to advance in response to meeting the health care needs across populations. The AACN in its landmark recommendation (2006) calls for transition to the doctor of nursing practice for entry into advanced practice nursing by 2015 to meet these needs. Correspondingly, standardization across the curriculum for nurse practitioner education has been introduced through the Consensus Model (2008). The goal of this initiative is to move to full scope of practice for NPs. The National Organization of Nurse Practitioner Faculties, building on its past work, has developed nurse practitioner core competencies (2011). These nine core competencies are essential behaviors that students are expected to demonstrate at the completion of their program, regardless of the population focus of their program. Further, NONPF recognizes that the NP students' ability to demonstrate NP competencies, both the core competencies which are foundational to any NP practice, and the population focus have greater value than the number of clinical hours the student completes (NONPF, 2008 b). This education evaluation project will allow us to use a multidimensional assessment process to assess FNP students in their nurse practitioner core competency skill acquisition though teacher lead simulation. Within the overall project multiple dimensions of the NP core competencies will be assessed through the clinical simulation scenarios. Immediately following the clinical simulation scenarios students will complete several instruments to help assess skill acquisition in dimensions of the NP core competencies. As part of this overall project the team will develop of a new NP Core Competency Self Efficacy Tool, and a qualitative debriefing inventory. Additional critical dimensions of NP core competencies to be assessed thought the clinical simulation itself or additional tools to be completed immediately following the simulation include: leadership practices (as measured by the Leadership Practices Inventory; the student simulation experiences as they progress through the clinical portion of the program (with the use of the qualitative debriefing inventory) which will contribute to content validity of the new NP Core Competency Self Efficacy Tool. Finally, this presentation will also report on lessons learned and preliminary outcomes of the study.

Tissue Oxygenation in Postoperative Patients: Is There a Relationship to Complications?

Principal Investigator: Dr. Carol Diane Epstein
Co-Investigator(s): Dr. Karen Toby Haghenbeck, PhD, FNP-BC, RN-BC, CCRN, & Joan Madalone, RN, MS, CCRN BC

Department: Nurse Education
School: College of Health Professions
Campus: PLV

This pilot study examined the relationship between tissue oxygen saturation (StO2) levels and postoperative complications in adult patients. Expressed in percent, StO2 represents the ratio of oxygenated hemoglobin to total hemoglobin in the skeletal microcirculation. It is expected that normal reference values of StO2 in this patient population will be described. Crookes, Cohn, and Bloch1 reported that in healthy volunteers (n = 707), the mean thenar muscle StO2 was 86.6 % (+ 6.4).

Dyson College of Arts and Sciences

Handbook for the Humanities

Principal Investigator: Dr. Janetta Rebold Benton
Co-Investigator(s): Robert DiYanni

Department: Fine Arts
School: Dyson College of Arts and Sciences
Campus: PLV

Intended for the general public as well as for university courses in the humanities, this book offers a compact yet extremely comprehensive overview of the humanities: Art (painting, sculpture, architecture), literature, history, and philosophy/religion, as well as music, dance, drama, and film. Information is presented in a concise, organized, readily accessible style. Although focus is on the western tradition, representative examples of global accomplishments from all eras are included. Richly illustrated with hundreds of color photographs, supplemental illustrations are available online. Special features aid the reader's understanding of the humanities: Learning Objectives at the beginning of each chapter identify key aspects of the chapter's content. Spotlights highlight specific individuals and accomplishments. Global Perspectives include non-Western humanities, such as these of Africa, Asia, and Mesoamerica. Materials and Methods describe the various techniques artists have used throughout the ages and around the world. Ethical Considerations focus on aspects of human behavior. Critical Thinking questions encourage thoughtful assessment and evaluation of the material presented. Cultural Legacy discussions conclude each chapter and consider the ways each civilization or historical period has had an impact on the future.

Arts and Culture: An Introduction to the Humanities

Principal Investigator: Dr. Janetta Rebold Benton
Co-Investigator(s): Robert DiYanni

Department: Fine Arts
School: Dyson College of Arts and Sciences
Campus: PLV

Now in its 4th edition, this book is intended for the general public as well as for two-semester university courses in the humanities. Included are art (painting, sculpture, architecture), literature, history, and philosophy/religion, as well as music, dance, drama, and film. Many hundreds of color and black and white illustrations, as well as diagrams, timelines in each chapter, and a glossary of key terms aid the reader. Special features include: Interdisciplinary Connections between, for example, mathematical ratios in architecture and in music. Cultural Cross Currents that reflect the ways artistic ideals, literary movements, and historical events influence the arts of other cultures. Then & Now offers connections between past and present. Cultural Impact, a feature at the end of each chapter, explains how a culture or civilization impacts the future. Critical Thinking poses specific questions intended to encourage the reader to ponder important aspects of each culture or civilization. Coverage of the humanities from around the globe has been expanded in the 4th edition. Greater emphasis is placed on the accomplishments of women than is found in any other book on global humanities. The material is published in 2 volumes containing a total of 24 chapters. The information is also published in a single volume with the long literary excerpts omitted.

A Proposed Inhibition Mechanism for Ethacridine with Topoisomerase IA

Principal Investigator: Dr. Daniel Bernard Strahs
Co-Investigator(s): Sylvia Kelly

Department: Biology and Health Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Topoisomerase IA (Topo1A) is essential for regulation of DNA supercoiling in E. coliand related prokaryotes. The compound Ethacridine (ETC) has been shown to specifically inhibit Topo1A. This is hypothesized to occur due to ETC binding to the interface between Topo1A and DNA. We are currently investigating the interactions between ETC and Topo1A , and the role of DNA specificity using VMD software to model and observe the inhibition mechanism. After creating a model of Topo1A we inserted various DNA sequences to create a model of the cleaved state with and without ETC. The NAMD software package is used to simulate and observe the motion and events associated with the Topo1A-DNA complex and inhibitor. It has been shown that DNA specificity at the cleavage site contributes to the reaction by enhancing the inhibition. Early data suggests that this enhancement is linked to the presence of pyrimidines at the cleavage site, and that ETC may prefer to bind at cleavage sites containing pyrimidines rather than purines. Our investigation will continue to explore the role of DNA sequence specificity in the enhancement of Topo1A inhibition by ETC.

The Portrait's Subject: Picturing Inner Life in Nineteenth-Century America

Principal Investigator: Professor Sarah Blackwood

Department: English
School: Dyson College of Arts and Sciences
Campus: NYC

The Portrait's Subject offers an original account of how the nineteenth-century portrait changed our understanding of inner life. Focusing on the period between the introduction of photographic technology in 1839 and the discovery of the X-ray in 1895, the book examines a diverse array of portraits produced in literature, fine art, photography, and popular media. My central claim is that new ways of representing the human exterior spurred literary and visual imaginings of the human interior. Specifically, I argue that portrait representations of the human exterior coalesced a burgeoning aesthetic and scientific language of the self that would come to be called "psychology." This language located human subjectivity in the mind (rather than the soul) and described it as a function of the brain's capacities for thought, will, perception, and consciousness. Through close consideration of the insistent appearance of portraits in works by writers and artists such as Nathaniel Hawthorne, Harriet Jacobs, Hannah Crafts, Frederick Douglass, Thomas Eakins, and Henry James, The Portrait's Subject explains how the emergence of psychology as a keyword in the United States was propelled by writers' and artists' fascination with the portrait.These otherwise very different writers and artists were united in the sense that their artistic investigations of inner life constituted, as one anonymous reviewer writing in the journal Arcturus in 1841 put it, "a new array of circumstances." Writers and artists began to shift their attention from what characters do and say to how characters think and perceive. The portrait enabled this shift in attention by suggesting that a single image could capture and exhibit an individual's inner life, in essence helping to fashion the interior qualities it purported to transcribe. The rapid democratization of portraiture quickly made the question "what do portraits capture?" a pressing one. For many authors and artists, what now sounds like a static truism—that a portrait should capture, as painter and daguerreotypist Marcus Aurelius Root declared in 1864, "the soul of the original,-- that individuality or selfhood, which differences him from all beings"—was instead an invitation to develop new visual and fictional languages through which to picture inner life. During this period, new visual technologies invited the viewer's gaze to penetrate a sitter's opacity, at first imaginatively (in gazing at a portrait photograph) and then actually (in gazing at an X-ray image of a now-transparent body).

THE SACRE PROJECT: RE-VISITING THE AVANT GARDE THROUGH STRAVINSKY'S RITE OF SPRING

Principal Investigator: Associate Professor Luke Hegel Cantarella
Co-Investigators: John Crawford

Department: Performing Arts
School: Dyson College of Arts and Sciences
Campus: NYC

"The Sacre Project" is dance performance/installation project presented in coordination with the xMPL (Experimental Media Performance Lab) @ UC Irvine and the Pacific Symphony. The concept for the project is a re-envisioned and re-assembled "Rite of Spring," ("Le sacre du printemps") investigating the work's role in shaping the myths of the avant-garde. Initial workshops of the piece will be presented in Feb. 2013 at the xMPL followed by a performance at the Segerstrom Center for the Performing Arts in June 2013 in tandem with a concert reading of *Rite of Spring* performed by the Pacific Symphony. The project is staged in non-traditional setting for dance, a performance environment that reference both gallery and theater. As the performance begins, the viewer walks up a ramp to a round platform from which a panorama of exhibits can be surveyed. Sections of choreographic material are presented within these distinct exhibition spaces (*'pods')*. The environment is spatialized a response to the temporal structure of Stravinsky's score. As the viewer negotiates the space, he/she assembles a complicated, discontinuous, individually-constructed experience. As the piece progresses, the visual, spatial and aural environment shifts. The framing moves from the individual context of gallery to the collective consciousness of performance. Choreographic gestures that had been bound within the pods expand. The soundscape simplifies, becomes more organized and semantically referential to Stravinsky. The last section of the piece unifies the performance space on to the circular platform (now a stage). The visual landscape is singular. The soundscape resolves itself into a four-hand two piano arrangement of the score. The dancers perform the ritualized circular formations of Stravinsky's "Danse Sacrale," the sacrificial dance of the chosen one. The performance is assembled from new dance material created by three choreographers of widely differing styles and approaches, contextualized by the design and visual language of the performance space. This reflects our interested in implementing a process of *radically collaborative non-negotiated* aesthetic production. , a post-Cage/Cunningham strategy for aesthetic production. At the core of the piece exist two competing propositions of the European Avant-Garde: 1) We will make a new art from *scratch* that is a historical. 2) We will find the true form of art (living) in "primitive" or folk culture that is unpolluted by bourgeois European society.

Chiroptical Fluorescent Sensors for Mercury

Principal Investigator: Dr. Zhaohua Dai
Co-Investigator(s): Patrick Carney, Steven Lopez, Amanda Mickley, Kirill Grinberg, Wenyao Zhang,

Department: Chemistry & Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Two multi-mode Hg(II) sensors, L-MethBQA and L-CysBQA, were obtained by fusing methionine or S-methyl cysteine, into a bis-quinolyl amine based chiral podand scaffold. Quinolyl groups serve as the fluorophore and possess nitrogen lone pairs capable of chelating metal ions. Upon exposure to Hg2+ or Zn2+ these sensors show signal enhancement in fluorescence. However, Cu2+ quenches their fluorescence in 30:70 acetonitrile/water. L-CysBQA complexes with Hg2+, producing an exciton-coupled circular dichroism spectrum with the opposite sign to the one that is produced by Cu2+ or Zn2+ complexation. L-CysBQA binds Hg2+ more strongly than Zn2+ and is shown to differentiate Hg2+ from other metal ions, such as Zn2+, Cu2+, Ni2+ and Pb2+, exceptionally well. The synergistic use of relatively soft sulfur, quinoline based chiral ligands and chiroptically enhanced fluorescence detection results in high sensitivity and selectivity for Hg2+.

Syntheses of Chiral Tripodal Ligands for Enantiospecific Alkane Hydroxylation

Principal Investigator: Dr. Zhaohua Dai
Co-Investigator(s): Amanda Mickley, Patrick Carney, Steven Lopez, Jennifer Lee

Department: Chemistry & Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

A better understanding of the interactions operating in chiral recognition is helpful in advancing chemical sensor technology, modeling electron-transfer processes in biological systems, and producing new catalysts. Converting saturated C-H bonds directly into alcohols is very important to synthetic organic chemistry, fuel industry and other industries using petrochemical feed stock. The Fe(II) complexes of tris(2-pyridylmethyl)amine (TPA) have been shown to catalyze the hydrxolyation of alkanes stereoselectively. We systematically developed TPA-base chiral podands, piperidines and quinuclidines. The Fe(II) complexes of these chiral tripodal ligands can be used as green asymmetric catalysts in enantiospecific hydroxylation of alkanes by H2O2. The chiral podand, piperidine and quinuclidine molecules we developed provide an excellent platform for systematically studying the stereochemical impacts of chirality and rigidification on metal ion coordination and catalyst-substrate interaction, leading to better prediction of sensing outcome and product control in catalytic reactions.

CHIRAL ANALYSES OF CONTROLLED SUBSTANCES

Principal Investigator: Dr. Zhaohua Dai
Co-Investigator(s): Lyanne Valdez, Charles Cusumano

Department: Chemistry & Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Ephedrine, pseudoephedrine, amphetamine and methamphetamine are a class of controlled substances of drugs that contain chiral center(s). Ephedrine and pseudoepherine are common ingredients in nasal decongestants and they are used as starting materials in illicit "meth" (or "ice") labs. In the US, forensic science laboratories are requires to identify the enantiomers in the analyses of methamphetamine and related compounds. We have successfully separated and identified the optical isomers of these substances by GCMS using an achiral HP-5 column with the help of a chiral derivatization reagent L-TPC and using a b-cyclodextrin based column without derivatization. Chiral separation of such optical isomers has also been achieved using capillary electrophoresis with the help of a dynamic coating process. The advantages and disadvantages of these separation methods will be presented and discussed. The analyses of these compounds, other controlled substances, and their derivatization products using IR and Raman spectroscopic methods will also be presented.

GRAPHS WHOSE VERTICES ARE FORESTS WITH BOUNDED DEGREE: Traceability

Co-Principal Investigators: Edgar G. DuCasse, Louis V. Quintas, and Marcelo O. Zimmler

Department: Mathematics
School: Dyson College of Arts and Sciences
Campus: NYC

A graph G is said to be an *f-graph*, if G has no vertex of degree greater than *f.* Define $F(n, f)$ to be the graph with vertices the set of unlabeled *f*-forests of order n with vertex v adjacent to vertex u if and only if, up to isomorphism, v and u differ by exactly one edge. Note that if v is adjacent to u, then either v is a one-edge deleted subforest of u or v is a one-edge extended super *f*-forest of u. The Hamilton path properties of $F(n, f)$ are studied.

Social Cognition and Imagination

Principal Investigator: Dr. Thalia R. Goldstein

Department: Psychology
School: Dyson College of Arts and Sciences
Campus: NYC

My research interests lie at the intersection of social cognition and imagination. We engage with imagined worlds daily, via books, television, films, theatre, and stories. Yet psychologists know little about the effects of such fictional engagement. My work investigates how children and adolescents engage in, understand, and react to fictional and pretense worlds, and how this engagement interacts with social cognition. I study how actors participate in and create fictional worlds onstage, the effects of such intense and prolonged engagement on the actor's social cognitive abilities, and how young children understand and react to watching fictional worlds both as audience members and when engaging in their own role play. A central question guiding my research is whether acting training and role play can increase theory of mind, empathy and emotion regulation. Actors must portray multiple and varied characters over time--whether or not they identify with those characters. Thus, they may become experts in understanding others' (and their own) minds and emotions. It is common to hear far-reaching claims made about the kinds of skills children learn from the arts, but these claims are almost always based on correlational rather than causal evidence. My research demonstrates that acting experiences may be causally implicated in increased theory of mind, empathy and the use of adaptive emotion regulation strategies. A second area of research examines the experience of viewing fictional worlds, specifically how children and adults understand, react to, and insert themselves into the fictional worlds they view. I investigate preschool children's social cognitive judgments of individuals in pretend and enacted scenarios. I am specifically exploring how children (aged 3-8) understand the relationship between an actor (or pretender) and the character enacted, and how they understand the differences between clearly demarcated pretense and acting, which is presented realistically despite also being false. I examine how children understand the constancy of biological, psychological, moral, and learned skills during pretense and acting: how one can pretend to be someone else but keep one's own traits. Along these lines, I am currently examining whether children believe that moral actions undertaken in the pretend world transfer to the real world. That is, do children believe that if you commit a morally negative action in the pretend world you should be punished the real world? And is the converse, with positive actions, true as well?

Recent Art Projects

Principal Investigator: Professor Linda Herritt

Department: Art
School: Dyson College of Arts and Sciences
Campus: NYC

As an artist, my focus over the past two years has been on text-based wall installations, paintings on paper, and short animations. The work in each medium uses a warped grid derived from digital wireframe images, found or created, as a framework for short passages of text. The text typically defines in shorthand a specific cultural topography, from a listing of bands in Brooklyn, a compendium of traditional Chinese brushstrokes, to a collection of prescription drug side effects. The text, overlaid onto the warped grid, while recognizable, becomes nearly unreadable and functions as a sort of puzzle, confounding the expectation of legibility and of language making sense. The physical presence of the form often overtakes the process of reading. Devices I have used include choosing linear materials like fabric trim, yarn, or tape to outline letters; using fringe to create a 3D box-like shadow/illusion; using the negative spaces between letters to form them (rather than using the outlines of the letters); flipping between negative and positive letters; and tearing, cutting, or ripping fabric to create effects like shading in a drawing. The animations developed out of my teaching and are still in an exploratory stage. Working with students, I learned to film and edit hand drawn animations, and was able to adapt these techniques to a stop-motion approach with my own work. Each piece is incrementally de-installed and filmed, and then the collected stills are joined in reverse. This approach is appealing in that it actualizes the implied movement of the warped grid. Currently I am exploring 3D digital and sculptural means of achieving greater three-dimensionality in the wall installations. The work evokes space with several different illusionistic devices, including a torqued grid and a shadow-box effect with the text, as well as using actual materials like yarn or cord tacked to the wall to simulate drawing materials like charcoal or ink. I am interested in breaking off the wall and more assertively entering the space of the room, presenting language as an environment.

Long-Term Trends in Fish Communities in the Hudson River Estuary

Principal Investigator: Akino Higa
Co-Investigators: Erika Crispo, Nina Zain, Cathy Drew, and Michael Levandowsky

Department: Biology & Health Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

The River Project has been collecting data on the presence of fish species in the Hudson River estuary since 1988. Using this data, I determined which species tend to cohabitate in the estuary. These results may provide insight into which species share the same environmental needs and identify indicator species for community health. I performed Spearman rank correlations for the abundances of each pair of species caught in the traps every month. Also, I tested whether changes in water temperature influence the abundances of different fish species in the estuary. For this second analysis, I performed quassipoisson regressions to compare the number each species caught to average water temperatures. The Spearman rank analyses revealed 2 pairs of species for which the two species' abundances covaried significantly. These 2 pairs were the Oyster Toadfish and Tautog, and the Oyster Toadfish and Northern Pipefish. The quasipoisson regressions revealed significant correlations between catch abundance and temperature for 7 species. Positive correlations between catch and temperature occurred for the Atlantic Silverside, Oyster Toadfish, Winter Flounder, Northern Pipefish, and Tautog. Negative correlations between catch and temperature occurred for the Rock Gunnel and Longhorn Sculpin. This research will provide valuable information on fish community variation in the Hudson River estuary. By understanding how species covary with each other and vary with temperature, we will have a better understanding of how disruptions to the ecosystem may affect fish communities.

Memory, Speech, and History in "The Dance of Cortés," an Achi Maya dance-drama in Cubulco, Guatemala

Principal Investigator: Dr. Maury Hutcheson

Department: History
School: Dyson College of Arts and Sciences
Campus: NYC

My current research explores the traces of historical memory embedded within festival performance and ritual dance. "The Dance of Cortés" is the oldest bilingual dance-drama (Spanish and K'iche'/Achi) still performed today in highland Guatemala. Multiple manuscript versions dating from the eighteenth century have been preserved in research collections here and in Europe, but the musicians and dancers who present it today rely on embodied memory, rather than text, to curate and produce the work. The senior members of the troupe are, by and large, illiterate, and rely on the experiential qualities of music and dance to structure the play and encode its mnemonics. Although the oldest manuscripts call for a cast of two dozen, and contain more than 200 separate speeches, mostly set in verse, the current production relies on only eight performers and collapses the story of the Spanish conquest of Mexico and Guatemala into a sixty-seven minute dance-tableau of abstract choreography and music. Nonetheless, its narrative is carried forward through eighteen spoken passages, with the prophecy and commentary of the K'iche' delivered in rapid bursts of staccato incantation and the Spaniards' couplets sung in quavering falsetto. Curiously, the dancers are generally unable to recall or reproduce their individual speeches unless they are actually dancing, wearing their costumes, listening to the music, and moving through the stations of their choreography. Working with the performers over several seasons to record their dance tunes and patiently re-elicit their speeches, I have been able to transcribe and translate many of the spoken passages, and to gain an understanding of the symbolic elements of conflict and engagement that are encoded in the musical program and its choreography. My research demonstrates how the dancers' mnemonic practice preserves and reanimates the layered traces of ritual speech and historical memory from several centuries of festival performance. This performative process of reanimation sustains an embodied legacy of memory and presence within the community which links the celebrants with their ancestors.

Pace 9/11 Oral History Research Project

Principal Investigator: Dr. Maria Iacullo-Bird

Department: Ctr for Undergraduate Experiences
School: Dyson College of Arts and Sciences
Campus: NYC

The Pace 9/11 Oral History Research Project took shape as an undergraduate history course in Dyson College of Arts and Sciences. This course was offered three times in 2004, 2005 and 2006. A Thinkfinity grant in 2011 funded the digital phase of this undergraduate research project and included collaboration with the University Archives and the Seidenberg School. The Pace University 9/11 Oral History Website http://webpage.pace.edu/911oralhistoryproject was launched to commemorate the 10th anniversary of 9/11 in 2011. Given the direct impact of the World Trade Center attack on the University and its neighbors, the Pace University 9/11 Oral History Project afforded the Pace faculty, staff and students the opportunity to document and give voice to that traumatic experience in a manner that could provide special insight and knowledge about September 11, 2001 from a Pace perspective. Concurrently, the Pace 9/11 Oral History Project also included opportunities for Pace students to interview family and friends external to Pace and members of the larger public that underscored the university's long-standing relationship with New York City and especially Lower Manhattan. Located only several blocks from the World Trade Center site, Pace University experienced first-hand the catastrophic terrorist attack on September 11, 2001. Pace was one of two institutions of higher education in close proximity to the World Trade Center, the other being CUNY's Borough of Manhattan Community College (BMCC). Pace's distinctive location across from City Hall Park adjacent to the Brooklyn Bridge--a route of escape from Lower Manhattan--produced a uniquely tragic and inspiring narrative as to how the University coped both during and after the tragedy. The resulting body of interviews provides poignant and revealing insights into the tragic events of that single most destructive day in the history of the City of New York and the most devastating attack on civilian populations in American history. Historical materials from the University Archives furnish additional documentation of the Pace 9/11 experience. As witnesses to tragedy on an enormous scale, the interviews contribute knowledge generated by undergraduate student research that documents both the university response to an unprecedented level of emergency and the average citizen's confrontation with extraordinary disaster. In the immediate aftermath and the following weeks and months, the university continued to cope with ongoing challenges directly relating to the tragedy. The interviews illuminate how the chronicling of recovery in Lower Manhattan from 9/11 is also the story of how a comprehensive urban university both coped with and recovered from unfathomable circumstances.

Detection of Illicit Drugs and Explosives by THz spectroscopy

Principal Investigator: Professor Canan Karaalioglu

Department: Forensic Science
School: Dyson College of Arts and Sciences
Campus: NYC

Terahertz wave is the electromagnetic radiation in a frequency interval from 0.1 – 10 THz. The demand for more secure and robust techniques in safety is pushing demands for security systems into these frequencies since the neighboring regions (microwave and infrared) have already been filled and well developed with many applications. THz research has mainly focused on two fields: sensing and communications. There has been a dramatic increase in interest of implementation of THz spectroscopy and imaging techniques for security applications as well as spectrum analysis over the past 10-15 years. There have been studies to utilize THz radiation to identify concealed weapons, to detect suicide bombers and biological threats, to screen passengers, to detect and identify illicit drugs or other prohibited and/or dangerous chemicals. The three major points which make THz field very attractive for homeland security and social safety are: First of all, THz radiation can detect concealed weapons and illicit drugs since THz radiation can penetrate many non-metallic, non-polar materials, which make them transparent to THz radiation. Secondly, illicit drugs and explosives have very unique spectra in the THz region, which help us to identify them easily. Finally, last but not least, THz radiation poses no health risk for scanning of people since THz radiation has low photon energy in comparison with x-rays, which make them potentially more suitable for people screening. Real-world street "samples" are contaminated by adding dilutents, adulterants, and impurities, which complicate the spectral analysis. Fortunately, the added impurities are often crystalline organic materials, such as caffeine or lactose, which have their own unique spectral features in THz range. This contamination issue is valid in analyzing of explosives as well. However, since most of nonexplosive components of these impurities are transparent to THz radiation, spectral analysis of plastic explosives are simpler than the drug mixtures.

The Paradox of Glutathione: Mycobacterial Growth Inhibitor or Stimulator?

Principal Investigator: Dr. Marcy Kelly
Co-Investigator(s): N. D. Patel, J. Blair, J. Rivera

Department: Biology and Health Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Mycobacterium tuberculosis is responsible for nearly 2 million deaths yearly. Upon inhalation, mycobacteria are engulfed by alveolar macrophages. The immune defenses of these cells, including the reactive oxygen and nitrogen intermediates (ROI's and RNI's) that are produced, are ineffective against invading mycobacteria. Formation of a tubercle to sequester the infected macrophages initiates latent tuberculosis infection, in which the mycobacteria enter a state of non-replicative persistence (NRP). Glutathione (GSH), a host tripeptide thiol-based detoxification molecule, protects host cells from ROI/RNI toxicity. It has recently been demonstrated that GSH is toxic to in vitro and early infection mycobacteria. There have been no studies to determine if GSH is toxic to latent mycobacteria. We have demonstrated that the growth of mid-logarithmic M. bovis-BCG (BCG) is inhibited by 4 mM and 8 mM GSH. The growth of NRP mycobacteria exposed to 4 mM GSH was inhibited similar to that of unexposed NRP mycobacteria. In contrast, the growth of NRP BCG is stimulated four fold following exposure to 8 mM GSH. We conclude that exposure of NRP BCG to 8 mM GSH triggers an exit from the NRP state into an actively metabolizing state. We confirmed this result by performing viability studies and by analyzing the amount of free ATP present in the cytoplasms of 8 mM GSH exposed and unexposed NRP mycobacteria. It was initially hypothesized that toxicity to GSH was due to redox potential imbalances in the mycobacterial cytoplasm. Mycobacteria possess a detoxification system to cope with GSH but, the underlying mechanisms surrounding the balance between the activation of this system and mycobacterial growth inhibition is poorly understood. HPLC analyses on the cytoplasms of mid-logarithmic and NRP mycobacteria exposed to 4 and 8 mM GSH demonstrated that the activation of the detoxification system and the oxidative states of the mid-logarithmic and NRP cytoplasms were similar. This suggests that the activation of the detoxification system and the oxidative state of the mycobacterial cytoplasm may not play a direct role in mycobacterial growth inhibition and/or exit from the NRP state. Genetic profiling studies are underway to better understand the mechanism responsible GSH-stimulated exit from the NRP state.

Academically Underprepared STEM Majors Enrolled in a Comprehensive Introductory Biology Workshop Demonstrate Improvements in Overall Course Performance, the Development of Cognitive Thinking Skills, and Persistence at an Undergraduate Institution.

Principal Investigator: Dr. Marcy Kelly

Department: Department of Biology and Health Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

This study was designed to assess the impact of a program developed to enhance the performance, cognitive development, and persistence of academically underprepared STEM majors enrolled in introductory biology. This program, CAPSTART, includes an intensive summer, online, at-home laboratory workshop, weekly peer tutoring, a dedicated laboratory section, and a weekly first-year seminar facilitated by a mentor specifically trained to assist academically underprepared students. The results from this study demonstrated that the CAPSTART students earned grades in introductory biology that were similar to the grades obtained by the mainstream students. In addition, the students enrolled in CAPSTART made gains in their cognitive development and self-regulatory learning behaviors as determined by an assessment of their answers to exam and quiz questions designed to test cognitive development. CAPSTART students persisted as STEM majors at the university as compared to students that were not enrolled in the program. Although it has been previously demonstrated that introductory biology intervention programs enhance the performance of academically underprepared students, this is the first study to assess the impact of a program on the cognitive development of this population of students

Interactions of Phosphate With Differerent Metals Monitored by Vibrational Spectroscopy

Principal Investigator: Dr. Elmer-Rico E. Mojica
Co-Investigator(s): Amanda A. Falade, Arianna J. Porrata-Doria

Department: Chemistry & Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Phosphate groups are important building blocks for many essential intracellular compounds – nucleic acids, phospholipids, enzymes, nucleoproteins. They are employed in many of the intracellular messenger chemicals (cyclic AMP and cyclic GMP). They are known to stabilize DNA and RNA structure as well as play an important role in protein function. Because of the many roles the phosphate plays in stabilizing the fundamental units of life, it is of utmost importance how phosphate interact with different metal ions. In this study, we monitored using vibrational spectroscopy (infra-red and Raman spectroscopy) the interaction of phosphate with common metal ions (such barium, calcium and magnesium). Results showed differences in terms of the spectra before and after addition of the metal ions. In addition to this, the experimental results were also compared with theoretical calculations carried out using density functional theory (DFT). Results from the theoretical calculations showed a direct correlation with that obtained in the experiments.

Utilization of Vibrational Spectroscopy to Determine Expired Medications

Principal Investigator: Dr. Elmer-Rico E. Mojica
Co-Investigator(s): Orkhan Mammadov

Department: Chemistry & Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Medications usually contain active ingredients or chemicals with different functional groups. These functional groups upon interaction with water, oxygen molecules or reaction to light energy undergo changes that can alter their structures and properties. Once this alteration happens, the drug may lose its efficacy. This is the reason why medications have expiration dates. In this study, several expired medications were analyzed using vibrational spectroscopy techniques (infra-red-attenuated total reflectance and Raman) side by side with new ones to determine if there is a way to differentiate them. Both techniques required minimal sampling preparation (grinding of tablets) making it easier in doing analysis. Difference in the spectra of the new and expired medications was observed and can be correlated in identifying whether the medication analyzed is expired or not.

Binding of Different Nanoparticles With a Lectin as Monitored by Different Techniques in Spectroscopy

Principal Investigator: Dr. Elmer-Rico E. Mojica
Co-Investigator(s): David B. Collins

Department: Chemistry & Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Nanomaterials are of great interest lately due to their wide variety of applications. The extremely fascinating and useful properties of nanomaterials, which can be exploited for a variety of structural and non-structural applications, made them versatile materials in various fields of science ranging from material science, energy and medicine. Because of this, knowledge on the interactions of nanomaterials with different biomolecules must be known. Phytohemagglutinin (PHA) or Phaseolus vulgaris lectin, a glycoprotein commonly found in legumes, was used as the binding biomolecule. The binding interactions were monitored using various spectroscopic techniques such as UV-Vis, fluorescence, infra-red (IR) and circular dichroism. Results showed the preferential binding of some nanomaterials with the phytohemagglutinin. This study reported on the binding of the nanomaterials with the lectin and the effect of different parameters (pH due to addition of acid and base) on the binding interactions. The effect of denaturants (acid, base, urea and sodium dodecyl sulfate on the PHA was also monitored.

Binding of Different Proteins With Different Nanoparticles Monitored by Spectroscopy

Principal Investigator: Dr. Elmer-Rico E. Mojica
Co-Investigator(s): Claudia Sobolewski

Department: Chemistry & Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

The interactions of several proteins such as bovine serum albumin (BSA), human serum albumin (HSA) and hemoglobin with nanoparticles (metal oxides) was monitored by various spectroscopic techniques (i.e. absorbance, fluorescence, circular dichroism). Serum albumins were selected and used because both served as a model protein in many and diverse biophysical, biochemical and physicochemical studies due to its role in the transport and deposition of a variety substance in blood. Results showed the preferential binding of some nanomaterials with the proteins. This study will report on the binding of the nanomaterials with the three proteins and the effect of different pH (addition of acid and base) on the binding interactions.

Spectroscopic Properties of Tetracyclines

Principal Investigator: Dr. Elmer-Rico E. Mojica
Co-Investigator(s): Mariya Rozov

Department: Chemistry & Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Tetracyclines (TCs) are an important family of low molecular weight and broad spectrum antibiotics. They have been widely used in the prevention and treatment of infectious diseases and as food additives for growth promotion, as well, in fish farming. Tetracyclines are amphoteric molecules containing several ionizable functional groups that exist predominantly as zwitterions at a given pH value. TCs are reported to undergo a wide variety of reactions at different pH values. As an example, TCs undergo reversible epimerization at position C-4 to form 4-epi-TCs between pH 3 and 6. The formation of anhydrotetracyclines at low pH and isotetracyclines at high pH values are also known. In this presentation, we report on the pH-dependent absorbance and emission properties of several tetracyclines. We also report on the absorbance and emission of some tetracyclines in various alcoholic solvents.

Screening of Various Nanomaterials for the Removal of Lead Ions in Aqueous Samples

Principal Investigator: Dr. Elmer-Rico E. Mojica
Co-Investigator(s): Arianna J. Porrata-Doria, Amanda A. Falade

Department: Chemistry & Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Nanomaterials are materials possessing grain sizes on the order of a billionth of a meter (nanometer). Nanomaterials possess unique, beneficial chemical, physical and mechanical properties and they have been used for a wide variety of applications. They have been used as a remediation material in removing pollutants such as chlorinated solvents (polychlorinated biphenyls) and heavy metals (chromium). In this study, nine commercially available nanomaterials have been screened for the removal of lead ions (Pb2+) in aqeuous samples. Fixed amount of the nanomaterials were added to Pb2+ solutions of known concentrations. The amount of Pb2+ that bound to the nanomaterials was determined using atomic absorption spectroscopy (AAS). The effect of pH and the presence of humic acid on the aqueous solution containing the metal ions was also performed to determine the optimized conditions in the removal of lead ions out of the aqueous solutions.

The Impact of the "Great Recession" on the Financial Resources of Nonprofit Organizations

Principal Investigator: Dr. Joseph Morreale

Department: Economics
School: Dyson College of Arts and Sciences
Campus: NYC

This research paper analyzes the impact of the recent Great Recession on nonprofit organizations. More specifically, it studies the impact of the recession on their ability to raise funds and remain financially viable. The four key research questions discussed are: What has been the overall impact of the Great Recession on nonprofit organizations?; How has the Recession impacted the fundraising capability of nonprofit organizations?; How well have different types of organizations weathered the Great Recession's impact on their revenue sources?; and What strategies have nonprofit organizations found to be useful in surviving this severe downturn? The study uses the most recent data on nonprofit financing from 2007-2010. The results show that nonprofits as a whole have seen general declines in contributions and funding. But there are clear differences in the impact of the eleven sectors studied. Moreover, the size of the organization matters as does its main source of revenue. The paper concludes with a set of strategies that have been successful at stemming the decline in nonprofit funding. The study provides valuable insight into the ability of nonprofit organizations to survive such difficult economic times and also to reveal the various practices that have been successfully utilized for their survival.

Friends or Enemies? Youths' Perceptions of U.S.-China Economic and Political Relations

Principal Investigator: Dr. Joseph Morreale
Co-Investigator(s): Anna Shostaya PhD.

Department: Economics
School: Dyson College of Arts and Sciences
Campus: NYC

This paper is a study of the perceptions of young adults in the U.S. and China on the relations between the two nations and the growing role of China in the global economic environment. Past studies and surveys (such as Pew, Gallup, and the Committee of 100) have focused on either perceptions of experts or of citizens in each nation. The authors herein believe that it is important to get the perceptions of future generations in both countries to help understand and perhaps determine possible future direction of such relations. The authors, who have access to undergraduates in both nations in similar urban settings, NYC and Shanghai, developed a 19 question survey and distributed to 201 American undergraduate students (Pace University, NYC)and 164 Chinese undergraduate students (University of Shanghai Science and Technology, Shanghai). The questions probed their sources of news information, their view of U.S. and China's economic and political systems, the future economic growth and political power in the world of the two nations and the future political and economic relations between the two powers. The results of our study reveal a number of important perceptions that both U.S. and Chinese students have, some being similar and others being in sharp contrast. Both groups named the Internet as their primary source of information about the U.S. and/or China, followed by television. The vast majority of the American students have never been exposed to a course in U.S.-China economic or political relationships, while almost half of their Chinese counterparts have taken such a course. Most of the U.S. students believe that China has been and will continue to grow at a much faster rate than the U.S. Chinese students' opinions exhibit much less uniformity. Though they agree that China has been and will continue to grow at a much faster rate than the U.S., they are more likely to believe that this rate of growth is unsustainable. They also express that both nations will slow down but China will eventually catch up with the U.S. Most students in both countries view future political and economic relations between the U.S. and China predominantly as cooperative but only based on each nation's self-interests. Both Chinese and American students agree that China is gaining political strength and economic influence among the advanced and the emerging nations of the world. U.S. students are more likely to believe that the U.S. is still a dominant political figure in both the developed and emerging nations. We believe that the study provides valuable insights into the similarities and differences in viewpoints of the next generation of adults in both nations about future U.S.-China relations and China's position as an economic and political superpower. It also suggests the need for creating greater opportunities to build a better understanding between the youth of the two societies and their futures.

Occupying Political Science: The Occupy Movement From New York to the World

Principal Investigator: Dr. Meghana V. Nayak
Co-Investigator(s): Emily Welty, Matthew Bolton,and Christopher Malone

Department: Political Science
School: Dyson College of Arts and Sciences
Campus: NYC

Occupying Political Science is a new book edited by members of the Pace NYC political science department, featuring essays by New York City based scholars, researchers, and activists, which takes an unconventional look at the Occupy Wall Street movement through concepts found in the field of political science. Both normative and descriptive in its approach, Occupying Political Science seeks to understand not only the origins, logic, and prospects of the OWS movement, but also its effect on political institutions, activism, and the very way we analyze power. It does so by asking questions such as: How does OWS make us rethink the discipline of political science, and how might the political science discipline offer ways to understand and illuminate aspects of OWS? How does social location influence OWS, our efforts to understand it, and the social science that we do? Through addressing topics including social movements and non-violent resistance, surveillance and means of social control, electoral arrangements, new social media and technology, and global connections, the authors offer a unique approach that takes seriously the implications of their physical, social and disciplinary location, in New York, both in relation to Occupy Wall Street, and in their role as scholars in political science. Occupying Political Science was published by Palgrave Macmillan in January 2013.

Christianity and the Detective Story

Principal Investigator: Dr. Walter Raubicheck
Co-Investigator(s): Professor Anya Morlan

Department: English
School: School of Education
Campus: NYC

"Christianity and the Detective Story" is the first book to gather together academic criticism on this particular connection between religion and popular culture. The articles cover the origin of this relationship in the works of G. K. Chesterton, examine its development through the "Golden Age" of mystery writers such as Dorothy L. Sayers, and include discussions of recent television crime dramas. The volume makes a strong case for viewing mystery writing as a valid means of both entertainment and religious insight."

Synthesis of Novel Compounds to Treat Neuromuscular Disorders

Principal Investigator: Dr. JaimeLee Iolani Rizzo

Department: Chemistry & Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Ion channels have potential as drug targets in diseases of cellular excitability, and we have discovered a compound with the highly desirable property of being a K+ channel 'opener'. The ability of said compound to increase mouse skeletal muscle contractile force is an exciting advance toward the goal of developing drugs to combat muscle weakness, a primary symptom of a variety of skeletal muscle diseases. Our laboratory has been awarded two patents and has published the discovery a small molecule that acts as an agonist for Kv3.4 in vitro, and also improves ex vivo skeletal muscle contractile force in mice. Our current efforts are directed towards the synthesis of other novel compounds, which will also be tested against K+ channel Kv3.4. These compounds are all based on quaternary ammonium salts terminating with a free amine site. Given a prospective discovery of further improved molecules with the capacity to safely improve skeletal muscle function in mouse models, we aim for future clinical trials to prove the efficacy of our compounds.

The Synthesis of a New Surface Based on the Natural Product, Hemp Oil

Principal Investigator: Dr. JaimeLee Iolani Rizzo

Department: Chemistry & Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

In recent years, hemp oil has been used in beauty products. It is the fatty acids in hemp oil that make it beneficial in a variety of skin and hair care products. Hemp oil contains gamma-linoleic acid, which allows the oil to easily permeate the skin. When applied to the skin, it nourishes the skin cells and has anti-inflammatory properties. We have been generating formulations incorporating hemp oil, hemp seeds, and chitosan that result in a smooth surface. The material is to be tested against gram positive and gram negative bacteria. We are also working towards the modification of hemp oil, targeting linoleic acid, to develop a new antimicrobial agent.

The Synthesis of a New Surface Based on the Natural Product, Chia

Principal Investigator: Dr. JaimeLee Iolani Rizzo

Department: Chemistry & Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Most recently chia seeds have become popular in the U.S. as a high energy food source. Similar to our hemp oil work, we have been synthesizing a formulation based on chia seeds that may be used as a water-insoluble wound dressing.

Online Vs. Traditional: Future of Higher Education An Agent-Based Modeling Approach

Principal Investigator: Dr. Mohsen Shiri-Garakani

Department: Chemistry & Physical Sciences
School: Dyson College of Arts and Sciences
Campus: PLV

Remote education, especially at the level of the higher education, has become one of the most important factors in development planning and resource allocations for educators and policy makers. The fast speed and large bandwidth of information transfer, along with features such as reliability, flexibility, reproducibility, and comfort, has drastically impacted the way that educators conduct teaching. Online courses are offered more than ever and even the most conservative estimates predict an exponential growth of remote education. The dynamics of such a strong trend toward online teaching has made us rethink the way that institute higher education institute should approach the task of teaching and training. While online teaching has gained a lot of popularity among various academic disciplines, many opponents believe that, in general, nothing can replace the traditional in person teaching, and online teaching is, at best, only suitable for particular courses within certain disciplines. We propose to model the higher education as part of a realistic typical society with reasonable diversity in its population. The society will be modeled as a complex network and the dynamics of the system will be simulated through agent-based modeling technics. In agent-based modeling a system is modeled as a collection of autonomous decision-making entities called agents. Each agent individually assesses its situation and makes decisions on the basis of a set of rules. We claim that this model could efficiently capture the essence of the problem of the future of higher education and predict the behavior of members of the society in regard to making a choice (or combination of choices) about the education style they prefer. The predictions of this model then could be used by policy makers and educators in planning and development and to decide the most efficient mixture of traditional (in person) and remote (online) teaching models.

To Play or Not to Play: How Video Games and other Media Usage Affect Students' Performance

Principal Investigator: Dr. Anna Shostya
Co-Investigator(s): Mike Shostya, Robert McLoughlin

Department: Economics
School: Dyson College of Arts and Sciences
Campus: NYC

Game industry is a multi-billion behemoth that has been growing at a staggering rate, fueled by a vast audience both in the U.S. and around the world. According to Entertainment Software Association, in 2011 alone, U.S. consumers spent $24.75 billion on video games, hardware and accessories, purchasing on average eight computer and/or video games during every second of every day. Today, more than seventy percent of American households play computer or video games, of which eighty two percent are adults. The truth is that one does not need a game console anymore in order to play games. PC, smartphones and other portable device became much more convenient and thus popular. As a result, video game usage has reached record levels and has been constantly on a rise. Gamers spend more than 10 hours a day, often exhibiting symptoms of addictive behavior -- not keeping up with domestic chores or school activities, lying about computer or video game use, choosing to play games rather than see friends, etc. Since their inception, in the second half of the 20th century, the effects of video games have been a topic of hot debates among parents, educators, politicians, and general public. Numerous researchers have proposed potential positive effects of video games, especially on some aspects of social and cognitive development. At the same time many studies have found significant adverse effects of video games playing, particularly on teenagers and young adults. The two major culprits are time spent playing and level of violent content. This empirical study contributes to the exploration of the latter one using a sample of approximately 200 Pace University undergraduate students. The students were given a survey that questioned them about their weekly activities (such as studying, reading, playing games, watching TV, etc.) and time spent on them. The survey also included questions related to their parents' attitudes toward video game playing (whether or not their parents allowed them to play games; whether or not they limited the hours or censored the content; whether or not their parents play games themselves). The study finds considerable evidence that students at Pace university face a trade-off between studying and reading on one hand and playing games and using other media on the other hand. The choice is often made in favor of such nonproductive pursuits, such as TV viewing, Facebook networking, and video game playing. This has a negative effect on students' academic performance. The results of this research support the time-displacement hypothesis by suggesting that time spent by students in one activity prevents them from being engaged in another, more fruitful activity/activities, in this case, studying and reading.

Mass Spectrometric Analysis of Eicosapentaenoic Acid, a Fatty Acid Found in Fish Oil

Principal Investigator: Dr. Rita K. Upmacis
Co-Investigator(s): Kelsey D. Jordan

Department: Chemistry & Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Eicosapentaenoic acid (EPA) is an omega-3 polyunsaturated fatty acid (PUFA) found in fish oils. Many beneficial effects of EPA supplementation are noted, including (i) the potential to sensitize cancerous tumors towards chemotherapy, (ii) promote cardiovascular health and (iii) alleviate some mental disorders, but results from clinical trials are sometimes controversial. In this study, we investigated the autoxidation of solid EPA by mass spectrometry, and report a number of oxidized products and their possible assignments. A differential response to EPA may occur given the oxidative stress level of the patient and perhaps this may, in part, explain the divergent results sometimes obtained from clinical trials.

Deviance and transgression: “monstrous” bodies in nineteenth-century women’s fiction

Principal Investigator: Dr. Ying Wang

Department: Modern Languages and Cultures Department
School: Dyson College of Arts and Sciences
Campus: NYC

This project investigates how representations of disabled figures function in nineteenth-century women’s novels. From a feminist perspective, considering Disability Studies in socio-cultural and literary contexts, I examine four works of fiction to probe the relation between and among representations of disability, gender and women’s writing. My corpus includes Anatole (1815), Olivier ou le secret (1822), Monsieur le Marquis de Pontanges (1835) and Laide (1878), written respectively by Sophie Gay, Claire de Duras, Delphine de Girardin and Juliette Lamber. The goal of this project is to show that the transgressive potential of the disabled body operates as a destabilizing element that challenges the so-called norm in terms of body, sexual relationship and narrative structure. By incorporating in their writing the disabled figure—bearer of corporeal deviance, women writers transfigure the social reality and question the hegemony of the “normate” that excludes disabled people as well as women. In this sense, the representation of disability should be considered as a strategy of emancipation that women writers incorporate in their writing activity.

“Digital Humanities and the Preservation of Culture”

Principal Investigator: Dr. Adelia Williams

Department: Modern Languages/Cultures
School: Dyson College of Arts and Sciences
Campus: PLV

Romeo Musa (Musa da Calice, 1882-1960), an accomplished Italian painter, printmaker, photographer, illustrator, and author, produced many works in his lifetime that evoke peasants' lives in the Parmesan countryside. His prodigious artistic and literary output is now important cultural documentation of a centuries-old way of life that is all but over. They include the fresco decorations of numerous churches and municipal buildings throughout northern Italy; and book illustrations for Kenneth Grahame's 1935 edition of Il Bosco Selvaggio, (The Wind in the Willow), and an unfinished illustrated version of Manzoni’s I promessi sposi. Musa also wrote and illustrated several of his own stories - - most notably a book of poetic fables written in his native valtarese dialect entitled "Disolla e Tognu (1955). Musa taught art at the Istituto Magistrale of Milan from 1933 until 1952. Today the literary and artistic oeuvre of Romeo Musa is permanently on display in the cultural center of Bedonia, Italy. In 2000, I published an annotated translation of Romeo Musa’s, La luna sul salice/The Moon on the Willowtree (Bordighera Press, Lafayette, Indiana). Written and illustrated by the author, it was published as a serial in the children's scholastic periodical La nostra penna, (Our Pen) between 1951 and 1952.The book, an adventure novel whose protagonists are animals who behave and dress like human being, is a seemingly simple child’s tale. Set at the turn of the last century in the fields, streams, farms and forests surrounding the author's rural birthplace of Calice, the series is splendidly illustrated with over 100 intricate woodcuts. Musa’s choice of woodcut, a primitive form of printmaking that relies on crude tools, is a potent gesture, denoting simultaneously a repudiation of the modern world’s technology, and an effort to preserve a moribund art form in which narrative, pictorial, and imaginary space converge. La luna sul salice, while a charming tale with enchanting illustrations, is also an important, enduring document for Italian cultural studies. After a 2012 visit to the Musa Museum, which included meeting with local cultural historians and scholars, I decided to embark on a project to consolidate Musa’s written and visual production in digital format for a wider audience.* The bilingual (Italian/English) site will include literary works, a digitized catalogue raisonné, videos, and recordings of Musa’s poetry in dialect which is now spoken by a handful of people. This digital humanities project is intended to memorialize an important Italian folk artist, as well as a disappearing culture.

SCYX-7158: An Orally Active Benzoxaborole for the Treatment of Central Nervous System Stage Human African Trypanosomiasis

Principal Investigator: Dr. Nigel Yarlett
Co-Investigator(s): Cyrus Bacchi

Department: Chemistry & Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Human African trypanosomiasis (HAT) represents a significant public health problem in sub-Saharan Africa affecting hundreds of thousands of individuals. An urgent need exists for the discovery and development of new, safe, and effective drugs to treat HAT, as existing therapies have poor safety profiles, difficult treatment regimens, limited effectiveness, and a high cost of goods. From a collaborative discovery effort between SCYNEXIS, Anacor Pharmaceuticals, Pace University, and DNDi, we have identified a novel class of boron-containing compounds, the oxaboroles. An optimized lead from this class, SCYX-7158, is active in vitro against relevant strains of Trypanosoma brucei, including T. b. rhodesiense, and T. b. gambiense. The compound is safe and effective against all disease stages in mouse models for HAT. Physicochemical and in vitro ADME properties of SCYX-7158 are consistent with the compound being orally available, metabolically stable, readily CNS permeable and with low risk for drug–drug interactions. SCYX-7158 is effective orally at doses as low as 12.5 mg/kg (QD per 7 days) against CNS HAT in mice. In vivo pharmacokinetic characterization of SCYX-7158 shows that the compound is highly bioavailable in rodents and non-human primates, has low plasma clearance, a 24-hr elimination half-life, and a volume of distribution that indicates good tissue penetration. Brain exposure of SCYX-7158 in rodents is high, with Cmax higher than 10 μg/mL and AUC0-24hr greater than 100 μg*hr/mL following a 25 mg/kg oral dose. Furthermore, SCYX-7158 readily distributes into the CSF to achieve therapeutically- relevant concentrations in this compartment. Based on these properties, which promise lower rates of recrudescence than with current standard of care, SCYX-7158 has been progressed into preclinical evaluation for treatment of stage 2 HAT.

Involvement of polyamines in host cell endoplasmic reticulum stress response induced by Cryptosporidium parvum

Principal Investigator: Dr. Nigel Yarlett
Co-Investigator(s): Mary Morada

Department: Chemistry & Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Invasion of human intestinal epithelial cells (HCT-8) by Cryptosporidium parvum results in rapid induction of host-cell spermidine/spermine N1-acetyltransferase (hSSAT-1) mRNA which resulted in a 10-fold increase in SSAT-1 enzyme activity after 9 hours of infection. In contrast host cell spermidine/spermine N1-acetyltransferase-2 (SSAT-2), spermine oxidase (SMO) and polyamine oxidase (PAO) remained unchanged during this period. Intracellular polyamine levels of C. parvum infected human epithelial cells were determined and it was found that spermidine remains unchanged and putrescine increased 2.5-fold after 15 hours then decreases after 24 hours, whereas spermine levels remain the same at 9 hours then increases at 24 hours. Increased SSAT-1 has previously been shown to be involved in ER stress response that will eventually lead to apoptosis. Using C. parvum infected HCT-8 cells we demonstrated that several ER stress response signals were significantly elevated. ER stress proteins that were increased include: calreticulin, a major calcium binding chaperone in the ER; Grp78/Bip, a pro-survival ER chaperone; Nrf2, a transcription factor that binds to antioxidant response elements activating them. However, Poly (ADP-ribose) polymerase (PARP), a protein involved in a number of cellular processes involving mainly DNA repair and programmed cell death was decreased. Cumulatively these results suggest that the invasion of HCT-8 cells by C. parvum results in the involvement of several ER stress responses by the host that leads to an increase in SSAT-1 which is required for the parasite to complete its life cycle.

Mode of Action of two meta bis-benzimidazoles towards Trichomonas vaginalis

Principal Investigator: Dr. Nigel Yarlett
Co-Investigator(s): Emmanuel Bujans

Department: Chemistry & Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

This study was performed to determine the mode of action of two meta bis-benzimidazole compounds with varying chain length spacer carbons, 2,2'-[α-ω-propadiylbis{oxyphenylene}] bis-1H-benzimidazole (3m) and 2,2'-[α-ω-hexadiylbis{oxyphenylene}] bis-1H-benzimidazole (6m) towards the sexually transmitted parasite Trichomonas vaginalis. These compounds were tested for ability to be reduced by the parasite enzyme pyruvate ferredoxin oxidoreductase (PFO) and compared with 1-ethoxy 5-nitroimidazole (Flagyl), which is known to be reduced by this enzyme. Chemical reduction utilizing dithionite was performed from which enzymatic reduction by parasite extracts could be compared. It was found that the ease of reduction of the compounds by parasite PFO was: 2,2'-[α-ω-hexadiylbis{oxyphenylene}] bis-1H-benzimidazole (6m), 2,2'-[α-ω propadiylbis{oxyphenylene}] bis-1H-benzimidazole (3m), 1-ethoxy 5-nitroimidazole. Both 6m and 3m exhibited low minimum inhibitory concentration values and were effective in curing a mouse model infection supporting their chemotherapeutic potential.

Formulations Containing Benzethonium Chloride Prevent the Spread of Antibiotic Resistant Bacteria

Principal Investigator: Dr. Nigel Yarlett
Co-Investigator(s): Mary Morada

Department: Chemistry & Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Nearly 2 million infections are acquired each year by patients in a hospital setting. These infections develop in patients who already have compromised health, which hinders recovery and lengthens recovery time. Nearly 100,000 patients die each year from antibiotic resistant bacteria such as methicillin resistant Staphylococcus aureus (MRSA), vancomycin resistant Enterococcus sp. (VRE), Carbapenem resistant Klebsiella sp and Carbapenem resistant Enterobacter sp. (CRK and CRE). Drug-resistant strains of bacteria are spreading faster than the development of new antibiotics to combat these superbugs. The development of effective sanitization is therefore paramount as a first line of defense to protect patients from these deadly strains of bacteria. Using the American Society for Testing and Materials (ASTM) method 1882-05 the residual time of activity of each bacterial species was determined on pigskin to simulate human skin. MRSA, VRE and several other bacteria were tested using this procedure. The results reveal that a single application of 0.3 mL of the benzethonium chloride containing sanitizer applied to a 16 cm2 area was 100% effective at preventing spread of standard bacterial load (104-5 x 104 bacteria) after 2 min, 100% effective after 1 hour, and 99.8% effective after 4 hours. This compared to the alcohol based sanitizer that was 100% effective after 2 min, 99% effective after 1 hour, and 98% effective after 4 hours. When formulated into hand soap benzethonium chloride the product was 100% effective after 2 min and 91% effective up to 1 hour post application. The products were also tested using a modification of ASTM 1882-05 involving pig skin washing with 130 mL of tap water the results revealed 50% reduction in efficacy of the hand soap and the sanitizer after 3 washings, and this was reduced to zero reduction after 6 washings of the soap but remained at 50% with the lotion. The results support the use of the hand soap to provide immediate removal of clinically relevant bacteria and reduce person to person contamination. The sanitizer provide long term and sustained protection preventing transmission from patient to surfaces (linens, examining tables, stethoscopes, etc) and person to person.

Transformative Works and Cultures

Principal Investigator: Professor Nancy Reagin

Department: History
School: Dyson College of Arts and Sciences
Campus: NYC

This journal is an international, peer-reviewed MLA-indexed journal that publishes research on popular culture and audience reception. Prof. Anne Rubenstein of York University and I were invited to guest-edit a special historical issue, "Fan Works and Fan Communities in the Age of Mechanical Reproduction," which examined audience reception and the emergence of fan organizations that were engaged with spectator sports, silent movies, and popular music in the first part of the 20th century.

We also co-authored a review essay for this issue, "I'm Buffy and You're History: Putting Fan Studies into History." This essay offered an overview of the ways in which fan communities have been studied by academic historians, and how fan studies has written the history of fan communities. The essay discussed historical work done by amateur fan historians throughout the 20th century; why academic historians could benefit from studying fan communities as part of the history of popular culture; and what fan studies as a discipline might gain from a broader historical analysis of fan communities.

Wiley Popular Culture and History Series

Principal Investigator: Professor Nancy Reagin
Co-Investigator(s): George Lucas

Department: History
School: Dyson College of Arts and Sciences
Campus: NYC

I'm the editor of a series that examines the use of history and historical backdrops in popular fiction and film series; I have edited or co-edited four volumes in this series since 2010, and have a fifth volume currently in press. In most of these volumes, I have published one or more chapters authored by Pace students, who researched and wrote their essays under my supervision. In 2012-2013, I published the two volumes described below:

Nancy Reagin and Janice Liedl (eds.), Star Wars and History (New York: Wiley & Sons, 2012).

Note: this volume was done in collaboration with George Lucas, who shared his historical inspirations and models with us, and allowed us to make extensive use of images from the Star Wars series.

Nancy Reagin (ed.), Star Trek and History (New York: Wiley & Sons, 2013).

Note: I have been invited to give a public lecture on "Star Trek and History" at the Smithsonian's Air and Space Museum this May, in conjunction with the opening of a new exhibition there.

Promoting Academic Engagement for College Students with Autism Spectrum Disorders

Co-Principal Investigators: Professors Dianne Zager*, Carol S. Alpern*, Barbara McKeon*, Catherine Mastricovo (Pace Student)

*Equal Collaborators

Department: Biology and Health Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Today, with growing numbers of students with autism spectrum disorders (ASD) and other significant learning differences entering college, the gap between the level of college support currently available and the needs of this rapidly increasing population has become increasingly apparent (Hart, Grigal, & Weir, 2010; Stodden, Zager, & Hart, 2010: Wolf, Brown, & Bork, 2009). This presentation addresses the topic of postsecondary education for students with autism, examines the results of a survey of college faculty with regard to their understanding and expectations of students on the spectrum, and presents suggested guidelines for engaging all learners, including those on the spectrum in college classes. In particular, this research is directed toward helping college professors facilitate the engagement of students with autism and other disabilities in their classes. To begin the process of providing faculty development to help college professors engage students with ASD more fully in their courses, and to gain an understanding of faculty perceptions about individuals on the spectrum, the authors conducted a survey of college faculty to learn about their experiences with students with learning differences. This study was supported through a grant from Autism Speaks, with the intended outcome of improving the knowledge base of college faculty to enhance academic success for college students with ASD. A preliminary survey (Alpern, McKeon, & Zager, 2011) of university faculty was constructed to better understand how students with ASD and other disabilities were viewed by their professors. Responses to this questionnaire were used to develop a manual that included strategies to help professors provide learning opportunities to accommodate the language and learning behaviors of this population.

What elementary students experience outside of the classroom: Children's responses to social exclusion

Principal Investigator: Dr. Sheila H. Chiffriller
Co-Investigators: Kelsey Kangos, MS & Lisa Milone, MS

Department: Psychology
School: Dyson College of Arts and Sciences
Campus: PLV

The present study examines social exclusion and the behaviors, thoughts, and feelings it evokes in children. Two forms of exclusion are identified: being rejected and ignored. Each form of exclusion leads to a different set of behaviors, thoughts, and feelings that can further be categorized as prevention-focused or promotion-focused. Although social exclusion research has been done with college-aged students, little is known about how children respond when socially excluded. Surveys were administered to third and fifth grade students in a Northeastern suburb in the United States to see how children respond overall and if younger and older elementary school students respond similarly. Prevalence of social inclusion and exclusion among the students was assessed by asking students both how often they are excluded and how often they exclude their peers. The students were then asked to imagine themselves in four different peer situations in which they were included, rejected, or ignored and to indicate how they would respond in terms of their behaviors, thoughts, and feelings. Chi-square analyses as well as follow up tests were conducted with differences all significant at the .001 level. Overall, results of this study confirm that children's responses to exclusion are similar to those of college-aged students; when children are ignored, they try to promote themselves and when they are rejected, they try to prevent it from happening again (e.g. by removing themselves from the situation). The findings of this study have implications for parents, teachers, and counselors. With relational aggression and "bullying" on the rise, these findings can be useful in planning and understanding intervention efforts to both prevent and help children cope with different forms of social exclusion.

Athletes and Delinquency.

Principal Investigator: Dr. Sheila H. Chiffriller
Co-Investigator(s): Mayers, L., Falcone, G., & Hornung, J.

Department: Psychology
School: Dyson College of Arts and Sciences
Campus: PLV

Although it is commonly believed that child and adolescent involvement in school and sports is associated with "staying out of trouble," previous research findings regarding delinquency in athletes and non-athletes have been inconsistent. This study was conducted to examine and compare current delinquent behavior between college varsity athletes, involved college students who are not athletes, and students who are neither varsity athletes nor involved in any campus organizations. The sample consisted of 146 college students. Delinquent behavior was measured by a modified delinquency scale consisting of items in five categories: minor delinquency, street delinquency, other major delinquency, drug delinquency, and alcohol delinquency. In addition, the relations between child and adolescent involvement in organized sports and clubs and delinquent behavior were examined. Child and adolescent involvement was measured via a questionnaire which asked questions regarding involvement in athletics and non-athletic organized activities as a child and teenager. Independent sample t-tests were used to evaluate delinquent behavior in varsity college athletes and non-varsity athlete college students who are involved in organizations. The results found no significant difference in any form of delinquency (i.e., minor delinquency, street delinquency, other major delinquency, drug delinquency, and alcohol delinquency) in non-varsity athletes and varsity athletes. Correlations were conducted to examine the relation between child and adolescent involvement and current delinquent behavior. Significant positive correlation were found between involvement in sports as a child and both drug and alcohol delinquency, suggesting that children who are involved in sports at a young age are more likely to engage in illegal drinking and drug use as college students. Potential explanations and implications are discussed.

Reservoir of Inventive Genius: President Richard Nixon's Environmental Message to 21st Century America

Principal Investigator: Professor John Cronin

Department: Academics for Applied Enviornmental Studies
School: Dyson College of Arts and Sciences
Campus: PLV

Reservoir of Inventive Genius is a deep analysis of the environmental section of President Richard M. Nixon's first State of the Union address, delivered on January 22, 1970, three months to the day before the first Earth Day. Taken alone, it stands as the most eloquent and substantive environmental speech delivered by a U.S. President or presidential candidate. Despite what awaited in the decades ahead, the 1970 SOTU launched a new brand of federal environmentalism, to a largely welcoming audience. Its rhetoric was strong, its proposals direct, its philosophy in keeping with American exceptionalism and strengthening the American economy. "Reservoir of inventive genius" is a phrase taken from the address, a beautifully written speech by Ray Price, the president's chief speechwriter. Mr. Price told me that the relatively few times President Nixon relied on prepared remarks, he pored over them fastidiously to assure they were in keeping with his vision of America. "There was no sneaking anything into the President's speeches." In connecting the future of the American environment with the future of the American economy, Price and Nixon used this extraordinary statement: "We must turn toward ending congestion and eliminating smog the same reservoir of inventive genius that created them in the first place," It was a call to the marketplace to create innovations that solve environmental problems, a message from which contemporary environmentalists can take a lesson. The president said that for a safe environment and a good economy to be one and the same the cost of wastes should be incorporated into the cost of production. He called for the cleanup of the nation's waters, aggressive preservation of open space, creation of parks, remedies for sprawl and urban decay, and a new era of individual responsibility. He summoned every American to join the environmental cause. The 1970 State of the Union is a profound and seminal work that reveals as much about the arc of American environmental history these last forty years as it does about its own era. My further research for Reservoir of Inventive Genius will decide whether the address was a cunningly executed piece of political stagecraft, or a consciously propitious body of environmental policies, missing in our own fractious era. Or perhaps both. It will shine a light on a uniquely progressive era in American political life and, thereby, on the present day regressive era of attacks on a four-decade old environmental vision for America, as articulated by a Republican Conservative president. A note on further research. My further research will include time at the Nixon Presidential Library and Museum reviewing the president's personal notes on the address, presidential staff collections, speech files, and briefing documents. Archivist Jason Schultz has prepared an annotated list of relevant materials for me. I also plan interviews with key staff. In addition to further discussions with Ray Price, I plan to interview John Whitaker and Pat Buchanan, Bob Semple of The New York Times, and former congressmen Richard Ottinger and Pete McCloskey.

Stress and Coping: Studies from the Pace Psychology Lab - Resilience to Hurricane Sandy: A Prospective Study

Co-Principal Investigators: Dr. Paul Griffin, Anthony Mancini, PhD, Maren Westphal, PhD (listed alphabetically)

Department: Psychology
School: Dyson College of Arts and Sciences
Campus: PLV

Resilience to Hurricane Sandy: A Prospective Study- Although the literature on adaptation to acute stress has grown substantially in recent years, research that includes assessments of functioning before the stressor occurred is relatively rare. In this study, we took advantage of an existing data collection effort to examine stress responses following Hurricane Sandy, a Category 2 storm that devastated the Mid-Atlantic and Northeast. The storm resulted in over 285 deaths about $75 billion in property damage, mostly along coastal regions. We focused on student's experiences during Hurricane Sandy (N = 196). We administered questionnaires at three time points to students enrolled in introductory psychology courses using our web-based research participation system. We found that students' exposure to the storm was modest but nevertheless significant. For example, 10% of students reported perceiving some life threat, approximately 7% witnessed injury to others, and about 5% had their home damaged or destroyed. Students reported low levels of posttraumatic stress disorder following the storm, with about 5% displaying moderate levels of PTSD symptoms and about 2% a probable PTSD diagnosis. Over 90% reported minimal to no PTSD symptoms following the storm. These findings support that despite the damage and disruption of Hurricane Sandy, psychological distress resulting from the storm was minimal and resilience was the norm.

Stress and Coping: Studies from the Pace Psychology Lab - Romantic Break-ups: Predictors of Distress

Co-Principal Investigators: Dr. Paul Griffin, Anthony Mancini, PhD, Maren Westphal, PhD

Department: Psychology
School: Dyson College of Arts and Sciences
Campus: PLV

Romantic Break-ups: Predictors of Distress - The initiation and development of close relationships presents an exciting and meaningful part of college life. By the same token, dissolution of a romantic relationship is one of the most common distressing life events students will experience over the course of their studies. Prospective research has shown that romantic relationship break can increase risk for the onset of Major Depressive Disorder among adolescents, but few studies have used longitudinal designs to examine personal and situational factors that might predict distress and functioning following relationship breakup in an undergraduate population. To improve understanding of the psychological consequences of romantic breakups and the protective and vulnerability factors associated with effective coping, we administered questionnaires at three time points to students (N= 231) enrolled in introductory psychology courses using our web-based research participation system. Data analysis is currently under way focusing on the subset of students who experienced a relationship breakup since the first assessment. We are exploring both well-established predictors of distress from the bereavement

LOSS-OF-FUNCTION ANALYSIS OF RAC FUNCTION IN DEVELOPMENT OF THE ZEBRAFISH OLFACTORY BULB

Principal Investigator: Dr. Jack Horne
Co-Investigator(s): Kelly R. Fisher

Department: Biology and Health Sciences
School: Dyson College of Arts and Sciences
Campus: PLV

Development of the vertebrate brain requires that axons and dendrites grow and elaborate into specific projections, resulting in characteristic cell shapes that allow synaptic partners to appropriately connect. Through experiments in model organisms, much is known about the extracellular molecular cues, and their receptors expressed by neurons, that guide axons to their appropriate targets. What is less well understood is the molecular coupling between axon guidance receptors and the cytoskeletal regulatory apparati. Recent work has identified some prototypical regulatory molecules that feed directly into the cytoskeletal machinery for specific differentiation processes. For example, the Par3-Par6-aPKC complex is known to be important for establishing neuronal polarity. The Rho family of GTPases, including Rho, Rac, and Cdc42, are known to regulate the elongation, growth, and guidance of neurites. Also, the Ena/VASP family of actin regulators is known to be important for controlling the structure and motility of the growth cone – the motile end of a growing neurite. We have established a method that combines in vivo electroporation with Gal4-based transgenic zebrafish lines that can be used to specifically target developing neurons of the olfactory bulb. Neurons targeted through this method show stereotypical axon projections of mitral cells, the major output cells of the olfactory bulb. In addition to spatial targeting of GFP expression, this technique also allows us to incorporate a loss-of-function reagent at a specific stage in neural development, providing excellent temporal control of the knockdown. Here we use this approach to determine the function of the Rac GTPase for the growth and guidance of the mitral cell axon projection. We target the function of Rac by co-electroporating an expression plasmid coding for a dominant negative form of Rac (T17N). We have characterized the phenotype of Rac loss-of-function using confocal microsopy and three-dimensional reconstruction of the morphology of the olfactory bulb projection. We show that embryos expressing DN Rac display shorter axon projections down the lateral olfactory tract, and have drastically reduced crossing of axons to the contralateral side. Thus, Rac function appears to be necessary for proper formation of the axon projection of mitral cells from the olfactory bulb.

MODELING STRUCTURAL TRANSFORMATIONS WITHIN BACTERIAL SPORES

Principal Investigator: Dr. Sergey Kazakov

Department: Chemistry & Physical Sciences
School: Dyson College of Arts and Sciences
Campus: PLV

Students contributed to this project. Nicholas Imperial'12, William Ambler'11, Hisham Hosein'11, Felix Danso'08, Elizabeth Bonvouloir'06. Goals: uncover regulatory mechanisms controlling electromechanics of spore structure, namely: cortex swelling/shrinking, inner membrane permeability, core water uptake, and cortex degradation by lytic enzymes. Specific aims: (1) determine the swelling/shrinking kinetics of the intact and coat-defective spores, cortical peptidoglycan, and cortex-mimetic hydrogels in response to proton concentration at different temperatures, (2) correlate the Ca2+ and dipicolinic acid (DPA) release from the spore core with the swelling/shrinking of the spore cortex, (3) identify the effect of exogenous germinants (CaDPA, dodecylamine, L-alanine) on the cortex matrix dimensions, and (4) model the effect of swelling and shrinking of cortex mimetic hydrogels on an enzyme activity. We believe that new sensory mechanisms and pathways of metabolic dormancy control uncovered in this work can be applied in biosensors for the purposes of biomedicine and biotechnology. Recent publications and presentations: (1) Olga Tarasenko, Pierre Alusta, Sergey Kazakov, Kalle Levon, (2012) Bacilli Spore Properties and Detection Methods in Food and in Medical Settings. In book: Bacterial Spores: Current Research and Applications, Edited by Ernesto Abel-Santos (Caister Academic Press) Ch14, pp. 239-252. (2) Kazakov S. and Hosein H. Electrochemical mechanics of nanometer-scaled structural layers of bacterial spores. NSTI-Nanotech 2010, 3, 486-489. (3) The 2013 Pittsburg Conference (PITTCON 2013), Philadelphia, PA, March 2013 – Modeling structural transformations within bacterial spores. (4) The 2012 Pittsburg Conference (PITTCON 2012), Orlando, FL, March 2012– Optical microscopy and UV-VIS spectroscopy for determination of concentration and extinction coefficients of bacterial spores in aqueous suspensions.

LIPOGEL-ENCAPSULATED ANTICANCER DRUGS

Principal Investigator: Dr. Sergey Kazakov

Department: Chemistry & Physical Sciences
School: Dyson College of Arts and Sciences
Campus: PLV

Students contributed to this project: Khushbu Kanani'14, Christopher Aronoff'12, Andrea Aquilato'07, Laura Elbakry'05, Korki Miller'05. Goals: a new principle of the targeted anticancer chemotherapy with superior tumor response and minimum side effects even at a greater loading concentration by reaching and killing the targeted malignant cells without healthy cells being affected. Specific aims: (1) double protection through a greater mechanical stability due to lipid layer and hydrogel compatibility, (2) variation of loading capacity, (3) new ability to control drug release by external conditions (e.g., temperature, pH, ion concentration), (4) focused drug release at certain location, (5) consecutive multistep triggering of drug release, (6) possibility of a combined drug delivery: different drugs entrapped in different lipobeads can be simultaneously delivered to the targeted organ but released in a desired order. Recent publications: (1) Kazakov S., Kaholek M., Levon K. (2011) Nanogels and their production using liposomes as reactors. US Patent 7943067, (2) Kazakov S., Kaholek M., Levon K. (2011) Lipobeads and their production. US Patent 7883648. (3) Kazakov S., Levon K. (2013) The principle of lipogel-encapsulated anticancer drugs. Patent under preparation.

Hydrogel Film On Optical Fiber Core: Towards the Evanescent Wave Spectroscopy

Principal Investigator: Dr. Sergey Kazakov

Department: Chemistry & Physical Sciences
School: Dyson College of Arts and Sciences
Campus: PLV

Students contributed to this project: Christopher Aronoff'12, Matthew Charello'10, Dwight Campbell'10, Jessica Sproul'07, Korki Miller'05. Goals: the new design of a spectroscopic instrument in order to compete with those induced by conventional spectroscopic approaches in the market. Specific aims: (1) the scheme for the proposed instrument and preliminary specification of the constituting modules and their desirable characteristics, (2) light source module, (3) light collection system and its throughout, (4) sample holder and reaction chamber, (5) data acquisition system, (6) final design and specifications for the modular spectroscopic instrument in terms of combination of multifunctionality, miniature compactness, long-term stability, and feasibility for end-user. Recent publications: (1) Kazakov S. (2012) Hydrogel films on optical fiber core: properties, challenges, and prospects for future applications. In book: New Polymers for Special Applications, Edited by Ailton De Souza Gomes (InTech) Ch2, pp. 25-70. (2) Kazakov S. (2010) Evanescent wave spectroscopy for studying swelling/de-swelling kinetics of soft matter. Soft Matter, 6, 1191-1196.

Riding Out the Economic Storm: The Role of Volunteer Management During Economic Adversity to Strengthen Nonprofit Service Delivery

Principal Investigator: Dr. Hillary J. Knepper
Co-Investigator(s): Helisse Levine, PhD, Maria D'Agostino, PhD

Department: Public Administration
School: Dyson College of Arts and Sciences
Campus: PLV

This interdisciplinary research project examines how nonprofit administrators approach volunteer management during challenging economic times and identify nonprofit management practices to strengthen volunteer management capacity. In light of the increasing role of nonprofits and volunteers in service delivery, this study provides important contributions to the field and academic literature in identifying practices utilized by managers of nonprofit organizations to successfully cope with volunteers. Using secondary data analysis and structured interviews, the researchers are gathering real time data to better inform nonprofit management practice. Faced with compromised revenue sources, continued devolution of state governments and severe budget cuts at all levels of government; nonprofit organizations will increasingly be compelled to cope in new ways to manage volunteers among unprecedented challenges to successfully ride out the economic storm.

Implementing ACA: The Role of Public Administrators and Nurse Practitioners in Reframing & Reforming State Regulatory Policy

Principal Investigator: Dr. Hillary J. Knepper
Co-Investigator(s): Andréa Sonenberg, DNSc, WHNP, CNM, & Joyce Pulcini, PhD, PNP-BC, FAAN, FAANP

Department: Public Administration
School: Dyson College of Arts and Sciences
Campus: PLV

The Patient Protection and Affordable Care Act is poised to extend health care to millions of Americans during a time when there is already a primary health care provider shortage. Estimated shortages of primary care providers (physicians, physician assistants, and nurse practitioners) are projected to exceed 40,000. Yet, the connections among prevention, equity, healthy environments, and access to the primary care providers who provide preventative care and chronic care management are well documented in the literature. This study explored NP regulatory policy and its role in improving access to primary care and its influence on patient outcomes in the 50 U.S. States and the District of Columbia. Correlations and multiple regression were used to identify significant relationships, which were supported in the primary care literature. Ultimately, the authors find evidence to support their assertion that a reframing of extant regulatory policies of NPs must be undertaken. Notably, as the U.S. reforms its health care system, the authors suggest reducing scope of practice restrictions on NPs to build primary care capacity and increase primary care access for the newly insured.

Local government & Web 2.0: Emerging best practices or are we still just guessing?

Principal Investigator: Dr. Hillary J. Knepper
Co-Investigator(s): Christopher John Godfrey, PhD & Maudry-Beverley Lashley, Ph.D. & Dr. Phyllis Curtis-Tweed

Department: Public Administration
School: Dyson College of Arts and Sciences
Campus: PLV

This interdisciplinary research project examines local government Web 2.0 best practices and perceptions of public managers and users within a framework of media richness, mediated communications, transparency and accountability. Through focus groups and surveys, this study explores characteristics of Web 2.0 use (e.g., How often do you use video chatting to communicate with colleagues?), beliefs about Web 2.0's influence on personal and professional communication patterns (e.g., How would describe the influence that instant messaging has had on your professional communications?) and demographic characteristics. Beyond simple efficiency, social media has the potential to improve not only public sector transparency and accountability, but also better engagement among citizens (Mergel, Schweik, Fountain, 2009). Carizzales (2008) identifies the relevance of e-democracy in promoting civic engagement. Bevarly & Ulma (2007/2008) note how social media has changed how government interacts with citizens; depending less upon town hall meetings and more upon social networking. This movement toward efficiency is paralleled with technology moving us toward greater transparency. Yet while we move toward this transparency, questions remain about what exactly is being revealed and what is the overall utility of these revelations and unparalleled public access.

Single phosphorylation site mutant of Rb blocks Apoptosis caused by UV stress

Principal Investigator: Dr. Nancy A. Krucher
Co-Investigator(s): Brandon Lentine, Ray Hunce, Lisa Antonucci

Department: Biology and Health Science
School: Dyson College of Arts and Sciences
Campus: PLV

Much of cancer research today focusses on the identification and study of molecular targets that may be useful clinically for the development of cancer treatments. Cellular proteins called tumor suppressors inhibit the development of cancer. One important tumor suppressor, Retinoblastoma (Rb), is dysfunctional in all types of human cancer. Cancer develops when this protein is chemically modified by the addition of phosphate groups, which change its structure and inactivate its ability to suppress tumor formation. This phosphorylation occurs on 16 amino acids in Rb, which is extensive for this type of modification. We previously developed a method to target Rb phosphorylation on this protein as a possible therapeutic strategy using RNA interference. When breast and colon cancer cells were treated with our RNA interference methods to reverse Rb phosphorylation (dephosphorylation), cancer cells undergo cellular suicide, called apoptosis. When normal breast or colon cells were treated identically, they were unaffected. Thus we have developed a new method to induce the specific killing of cancer cells. In the current study, we aimed to determine the specific sites on Rb that were involved in the induction of apoptosis. To do this, we utilized site-directed mutagenesis by which we can generate mutants in the Rb protein that cannot be dephosphorylated, thus allowing us to determine which (of the 15 sites) of dephosphorylation is most important for the induction of apoptosis. We utilized cancer cells that lacked Rb and expressed our 15 phosphorylation site mutants individually in cells that were then subjected to UV radiation, which is a cellular stress that causes apoptosis. We were able to determine that blocking dephosphorylation at one site of Rb called Threonine-821 was able to block apoptosis. This indicates that this part of the protein is important for apoptosis induction and is a good target for the development of clinically relevant treatment strategies. Our current studies are aimed at the development of treatments that specifically target this modification. This project was presented at the national meeting of the American Association for Cancer Research (AACR) in April 2012, and published in the journal: Cell Cycle 11:17, 3324-3330 in September 2012; and was supported by a grant from the NCI of the NIH awarded to NA Krucher.

The Impact of Calling Site on Call Degradation and Female Discrimination in the Gray Treefrog

Principal Investigator: Professor Joshua Schwartz
Co-Investigator(s): Ray Hunce, Kristie Powers, Brandon Lentine & Darrelle George

Department: Biology and Health Sciences
School: Dyson College of Arts and Sciences
Campus: PLV

Breeding aggregations of gray treefrogs (Hyla versicolor) form during early evenings in and adjacent to wetlands. In a typical chorus, females approach calling males using phonotaxis from areas adjacent to the chorus (e.g. surrounding forest). Males vocally advertise for females from a range of calling sites: the water surface, shore edge, emergent vegetation, shrubs, saplings, and trees. The specific height, orientation and location of males on vegetation are quite variable. Males produce calls of adjustable duration which consist of trains of pulses, and females often discriminate in favor of males producing calls with more pulses in their calls. The pulse structure of the advertisement calls is especially important to call recognition and species discrimination by females yet is vulnerable to structural degradation when calls are transmitted through natural habitats. A major goal of this study was to determine the consequences of calling site choice by males for call degradation and ultimately female choice of a mate. We also examined the height of male perches in the field to assess the possibility that males choose calling sites for which their calls would be less vulnerable to degradation. To evaluate the effects of calling site on call degradation we broadcast synthetic advertisement calls through forest, over open terrain, and across water at areas where gray treefrogs breed. The calls were recorded at distances of 1, 2, 4, 8, 16 and 32 meters. We varied speaker and microphone heights for a total of five elevation combinations (ranging from ground level to a height of 1.5 m). We quantified structural degradation in recorded calls using "Delta V", a measure of relative sound energy in call pulses and interpulse intervals. Delta V is expected to decrease with call degradation. A subset of recorded calls was used in two-speaker discrimination tests with females. Finally, we examined male selection of perch height by recording the locations of calling males on 8-rung trellises positioned around the periphery of a breeding pond in a forest. We found the greatest degradation for calls broadcast through forest followed by calls transmitted across open terrain and then water. At relatively small source-receiver separations, elevation had only small effects on degradation. However, for separations greater than 4-meters (especially through forest), elevation had a significant impact on Delta V - with calls broadcast and recorded near the substrate particularly vulnerable to degradation. Choice tests demonstrated that such levels of degradation could significantly reduce a male's attractiveness. Perhaps for this reason, males only seldom called from low rungs of trellises.

The Diel Rhythm of Transcriptional Changes of Host and Symbiont In the Mture Squid-Vibrio Association

Principal Investigator: Dr. Andrew M. Wier
Co-Investigator(s): M. Mandel, E. G. Ruby, M. McFall-Ngai

Department: Biology and Health Sciences
School: Dyson College of Arts and Sciences
Campus: PLV

The mature symbiosis between the squid Euprymna scolopes and the luminous bacterium Vibrio fischeri offers a unique opportunity to elucidate the daily molecular dialog that occurs between the epithelia of the host and its monospecific symbiont. In this study, the host and symbiont transcriptomes from the light organ central core characterized at time points throughout the diel cycle (400, 1000, 1600 and 2200 h) to examine the nature of differential gene regulation in the symbiosis. Comparisons of host gene expression were performed using a glass-slide array containing a UniGene set of nearly 14,000 clusters derived from an EST database of the juvenile light organ. For the symbiont, we used a custom Affymetrix GeneChip that represents >99% of the annotated open reading frames in the V. fischeri ES114 genome. Many hundreds of genes were differentially regulated in both partners over the diel cycle with distinct periods of increased differential gene regulation and quiescent periods. These fluctuations corresponded to distinct events. Specifically, the gene regulation of the symbiont indicated abrupt metabolic shifts during its diel cycle; the diel change in host gene expression reflected the symbiont changes with dramatic alterations in genes associated with host cytoskeleton. Examination by microscopy of light organ bacteria-containing tissues demonstrated that these changes in host gene expression correlated with periodic epithelial effacement and tissue restructuring. This study suggests a diel cycle in which host and symbiont express an elaborate and dynamic molecular conversation that promotes stability of the symbiosis.

“Digital Humanities and the Preservation of Culture”

Principal Investigator: Dr. Adelia Williams

Department: Modern Languages and Cultures
School: Dyson College of Arts and Sciences
Campus: PLV

Romeo Musa (Musa da Calice, 1882-1960), an accomplished Italian painter, printmaker, photographer, illustrator, and author, produced many works in his lifetime that evoke peasants' lives in the Parmesan countryside. His prodigious artistic and literary output is now important cultural documentation of a centuries-old way of life that is all but over. They include the fresco decorations of numerous churches and municipal buildings throughout northern Italy; and book illustrations for Kenneth Grahame's 1935 edition of Il Bosco Selvaggio, (The Wind in the Willow), and an unfinished illustrated version of Manzoni’s I promessi sposi. Musa also wrote and illustrated several of his own stories - - most notably a book of poetic fables written in his native valtarese dialect entitled "Disolla e Tognu (1955). Musa taught art at the Istituto Magistrale of Milan from 1933 until 1952. Today the literary and artistic oeuvre of Romeo Musa is permanently on display in the cultural center of Bedonia, Italy. In 2000, I published an annotated translation of Romeo Musa’s, La luna sul salice/The Moon on the Willowtree (Bordighera Press, Lafayette, Indiana). Written and illustrated by the author, it was published as a serial in the children's scholastic periodical La nostra penna, (Our Pen) between 1951 and 1952.The book, an adventure novel whose protagonists are animals who behave and dress like human being, is a seemingly simple child’s tale. Set at the turn of the last century in the fields, streams, farms and forests surrounding the author's rural birthplace of Calice, the series is splendidly illustrated with over 100 intricate woodcuts. Musa’s choice of woodcut, a primitive form of printmaking that relies on crude tools, is a potent gesture, denoting simultaneously a repudiation of the modern world’s technology, and an effort to preserve a moribund art form in which narrative, pictorial, and imaginary space converge. La luna sul salice, while a charming tale with enchanting illustrations, is also an important, enduring document for Italian cultural studies. After a 2012 visit to the Musa Museum, which included meeting with local cultural historians and scholars, I decided to embark on a project to consolidate Musa’s written and visual production in digital format for a wider audience.* The bilingual (Italian/English) site will include literary works, a digitized catalogue raisonné, videos, and recordings of Musa’s poetry in dialect which is now spoken by a handful of people. This digital humanities project is intended to memorialize an important Italian folk artist, as well as a disappearing culture.

An Investigation of Educational Student Services Reputation and Internal Stakeholders

Principal Investigator: Dr. Paul Ziek
Co-Investigator(s): Julio A. Rodriguez-Rentas, Caity Kirschbaum

Department: Media & Communication Arts
School: Dyson College of Arts and Sciences
Campus: PLV

The purpose of the current study is to examine how measurements of reputation can be used to mitigate stakeholder perceptions. It is a mixed method study where both survey data and content analysis of news coverage was used to determine the reputation of the department of student accounts at a mid-sized university in the northeast. The results indicate that the department had a communication issue related to how stakeholders perceived the department, not how the department handled stakeholder requests and problems. The implication of the current study is that it speaks to how reputation can be used as a foundation for models of communication management in education.

Communication, Conversation and Project Management

Principal Investigator: Dr. Paul Ziek
Co-Investigator(s): Zeynep Ertem

Department: Media & Communication Arts
School: Dyson College of Arts and Sciences
Campus: PLV

The purpose of the current study is to explore the communicative practices of project managers. Semi-structure interviews were conducted with 12 project managers from a large international bank. The results show that communication is either viewed as a competency or a factor for success and not part of the conversation that occurs between the project manager and project stakeholders. The implication is that project communication is not simply delivering messages and information but is a way of working out the content, direction, and outcomes of the project.

Lubin School of Business

The effects of the accelerated deadline on Form 20-F filing lags among U.S.-listed foreign firms

Principal Investigator: Professor Kam C. Chan
Co-Investigator(s): Samir El-Gazzarb, Rudolph A. Jacobb, and Picheng Leeb

Department: Accounting
School: Lubin School of Business
Campus: PLV

Motivated by the Securities and Exchange Commission's new accelerated deadline for Form 20-F filings, we examine both the impact of this new regulation on foreign firms' filing practices and the factors associated with these practices. Form 20-F is the annual report that U.S-listed foreign firms filed with the Securities and Exchange Commission. Using a sample of 20-F filings for 338 U.S.-listed foreign firms for fiscal years ending 2010 and 2011, we find that there is a significant reduction in the filing lags and a change in their distribution for fiscal year 2011, as compared to the preceding year when the accelerated deadline was not applicable. Thus, the SEC has clearly achieved its goal of enhancing the timeliness of 20-F filings to investors. We also contribute to the extant literature by providing new evidence that 20-F filing lags are negatively related to the use of International Financial Reporting Standards or U.S.-GAAP in 20-F reports, and the use of English language in foreign firms' home countries. Our results also reveal a significant negative relationship between 20-F filing lags and foreign countries' legal strength.

Multiple Institutional Logics and Inter-organizational Partnership: The Dynamics of Cooperation Between Social Enterprises

Principal Investigator: Dr. Imran G. Chowdhury

Department: Management and Management Science
School: Lubin School of Business
Campus: NYC

This paper presents a study on the evolution of partnerships between social enterprises, organizations that are embedded in competing social and economic logics. Through longitudinal case studies of the interaction between four pairs of social enterprises operating in emerging economy settings, I analyze the factors which influence the evolution of knowledge transfer partnerships. Evidence from these case studies suggests that a variety of logics, not simply social and economic logics, were guides for organizational action, and that the extent to which these logics were aligned between firms determined the how firms managed the knowledge transfer process.

The Effect of FASB Statement No. 123R on Stock Repurchases: An Empirical Examination of Management Incentives

Principal Investigator: Professor Steven R. Hegemann

Department: Finance and Economics
School: Lubin School of Business
Campus: NYC

This study explores the unintended consequences of the changes in accounting for stock-based compensation under SFAS No. 123R. SFAS No. 123R mandates the expensing of employee stock options' fair market value. For new options this is required to be done at the time options are granted, for unvested options this is required to be done when the new rule is applied. Repricing or reissuing outstanding options requires that they be valued and expensed in the same manner as new options. The implementation of SFAS No. 123R is expected to reduce reported income. To cope with this impact, management may be motivated to decrease the use of stock options as part of compensating employees and engage in stock repurchases in an attempt to increase the value of outstanding employee stock options. This study examines management's use of repurchases after the mandate of SFAS No. 123R via the magnitude of changes in the determinants of repurchases. A significant decrease in the number of stock options issued and a significant increase in the number of shares repurchased for all industries in the S&P 500 is demonstrated. For industries that made extensive use of employee stock options in their compensation schemes, there are significant changes in the magnitude of the repurchase determinants that are not observed in other S&P 500 industries. The results highlight changes in management incentives to repurchase stock in order to influence share prices and the unintended consequences of accounting rule changes.

The Association between Students' Evaluation of Teaching and Grades

Principal Investigator: Dr. Peter Hoefer
Co-Investigator(s): John Byrne, Jack Yurkiewicz

Department: Management and Management Science
School: Lubin School of Business
Campus: NYC

All institutions of higher education are using methods that supposedly enable them to "measure" the performance of their faculty. Some of the approaches involve professional class visitations, outcomes of standardized examinations, the evaluation of teaching materials ("teaching portfolio"), and the students' evaluation of teaching ("SET"). One of the most used methods is the "SET." When schools elect to use the SET, they are allowing the students, who are usually being evaluated by the professor, to evaluate the professor. This certainly has raised many questions over the lifetime of the SET, and caused concerns among faculty, administration and students. This paper attempts to address some of the concerns and answer some of the questions on a local level. We have taken a semester's worth of SET data from the Lubin School and analyzed it using standard statistical techniques. We compare our results with a classic meta-analysis of data from a large number of schools. We also specifically attempt to understand the answer to questions such as "is there a relationship between students' grades and the faculty members' SET scores?" And finally we attempt to see if the relationship between SET and student grades is the same, or different, for variables such as gender, academic level and subject matter. Some of the material in this paper was previously published in the July 2012 issue of the Decision Sciences Journal of Innovative Education.

Dependence between Extreme Events in the Real and Financial Sectors

Principal Investigator: Dr. Iuliana Ismailescu
Co-Investigator(s): Loran Chollete and Ching-Chih Lu

Department: Finance and Economics
School: Lubin School of Business
Campus: NYC

Extreme events affect both the real economy and financial markets, and it is valuable to understand their interrelationship. We compare rare disaster data from Barro and Jin (2011), crisis data from Reinhart and Rogoff (2009b), real time macroeconomic data from Aruoba et al. (2009), and a unique industry dataset of Turbulence Indices. We analyze the predictability and dependence of crises in the macroeconomy and in financial markets using annual and daily data. For annual data, the dependence between crises in the real and financial sectors increases over time for emerging markets, but decreases for OECD countries. We also document persistence at the one year and two year horizons for disasters in the real economy. For daily data, there is, surprisingly, little relation between turbulence in US equity and the real economy. However, there is strong evidence of two-way predictability up to two weeks out for the US economy and global turbulence. A dynamic copula model indicates that the real economy and various turbulence indices alternate between regimes of positive and negative dependence.

Parental Influence on Skepticism to Advertising

Principal Investigator: Dr. Vishal Lala

Department: Marketing
School: Lubin School of Business
Campus: NYC

This paper examines the role played by parents in the development of skepticism towards advertising. A study of parent-child dyads revealed considerable similarity between parents and children in terms of skepticism towards advertising. This similarity is attributable to an active learning process resulting from the advice parents give children on the trustworthiness of advertising.

What Makes Happy Customers Say Good Things about your Brand? An Investigation of the Drivers of Consumer Generated Content Following a Positive Customer Experience

Principal Investigator: Dr. Vishal Lala
Co-Investigator(s): Brad Carlson

Department: Marketing
School: Lubin School of Business
Campus: NYC

This paper examines the antecedents of consumer responses following a delightful experience. Results indicate that favorable consumer responses by way of positive WOM occur when consumers feel like they received special treatment, they think others hold a positive view of the service, the effort involved in sharing the experience is minimal, perceived benefits from sharing are high, and they have a high attitude toward promotion.

Let Me Tell You! When Consumers Talk Bad about Brands

Principal Investigator: Dr. Vishal Lala
Co-Investigator(s): Brad Carlson

Department: Marketing
School: Lubin School of Business
Campus: NYC

Customers frequently experience dissatisfaction with the products made or services rendered by a company. Customer responses to such experiences include doing nothing, not purchasing from the company in the future, complaining to the company, or telling others about the bad experience. The purpose of this paper is to investigate the situational and personal variables that affect consumers' propensity to complain to the company, friends and family, or others. This paper explores consumers' complaining behavior in response to a bad experience as well as intentions to complain if the incident were to recur. Additionally, these behaviors and intentions are explored in the context of both online and offline communication channels. An online survey was conducted with 334 participants using the critical incident approach.

BRIDGES: Building Resources by Integrating Disciplines for Group Effectiveness in Science *

Principal Investigator: Dr. Theresa K. Lant
Co-Investigator(s): Maritza Salazar

Department: Management and Management Science
School: Lubin School of Business
Campus: NYC

Finding solutions for many of society's most challenging problems requires the collaboration and integration of teams of individuals from diverse fields of science. Millions of dollars are spent in the public and private sectors to support research collaborations among scientists who possess the breadth and depth of expertise to address these complex problems. An increasingly prevalent approach to integrating diverse expertise is the use of interdisciplinary science teams. Although interdisciplinary scientific collaboration has many success stories, evidence suggests that in many cases these teams do not achieve the goal of successfully integrating knowledge to solve a joint problem. The goal of knowledge integration among diverse scientists is often elusive due to the make-up of the teams, lack of understanding about best practices for managing collaborations, and team leaders who are scientific experts but have not been trained to lead diverse teams of professionals. The consequence can be a costly investment in scientific endeavors that do not reap the expected benefits. It is critical that interdisciplinary science teams have the capability to collaborate and integrate their knowledge. A team's integrative capacity is a core competence necessary for these teams to perform successfully. Integrative capacity is a capability that is sustained through an interactive system linking social, psychological, and cognitive processes and emergent states in the team that can provide them with the resources needed to succeed. This research investigates how the development of a team's integrative capacity and subsequent knowledge outcomes are impacted by: (1) boundary-spanning leadership behaviors and (2) communication structuring interventions. Exposure to these interventions can nurture team members' trans-disciplinary intellectual orientation, the enduring values, beliefs, skills, and behaviors that support collaboration with teammates who have diverse disciplinary backgrounds, which in turn fosters the development of integrative capacity. Broader Impact : Given the reliance of society on interdisciplinary science teams for advancement in key areas such as medicine, education, security, and technology, the development of theoretical and practical knowledge about how to build and maintain integrative capacity in these teams is imperative. This research directly supports the aims of the SciSIP program and the NSF by investigating the structures, processes, and interventions that facilitate the development of usable knowledge by interdisciplinary science teams. First, this study sheds light on how leader and communication interventions can enhance a team's integrative capacity and team members' trans-disciplinary intellectual orientation, both of which can support teams working across boundaries to generate new solutions to complex problems. Second, training material and digital metrics developed in this research can be leveraged to foster improved scientific collaboration in teams beyond those included in this study. The insights gained from this research can foster improved scientific collaboration and the resulting scientific breakthroughs that are the promise of interdisciplinary science teams. * This research is supported by the Science of Science and Innovation Policy (SciSIP) at the National Science Foundation, Pace University, and Claremont Graduate University.

"The Impact of an International Field Study on Students' Learning and Consumer Ethnocentrism"

Principal Investigator: Professor Mary M. Long
Co-Investigator(s): Dennis M. Sandler and Pradeep Gopalakrishna

Department: Marketing
School: Lubin School of Business
Campus: NYC

Interest in globalizing the curriculum continues to increase as business schools in the U.S. and abroad try to remain relevant. A variety of methods exist for globalizing the marketing curriculum via experiential learning through internships, short study tours, and academic year abroad programs (Toncar and Cudmore, 2000). Although undergraduate marketing majors strongly believe in the importance of the international market to American business, many feel that their schools have not done a good job of preparing them for a career in international marketing (Turley and Shannon, 1999). Ethnocentrism has been noted as a predictor of student attitudes and enrollment intentions toward international business courses. There is a widely held view that meaningful international travel can lead to a less ethnocentric mindset (Douglas and Jones-Rikkers, 2001; Saghafi 2001). But when it comes to attitudes towards foreign products, would business students display more or less ethnocentrism after a short international travel experience? Utilizing the CETSCALE (Shimp and Sharma, 1987), 128 undergraduate U.S. business students participating in an international field study course were measured on their consumer ethnocentric tendencies before and after travel to Europe. Contrary to past research, this exploratory study suggests that students became slightly more ethnocentric regarding their attitudes toward foreign made products after the travel experience. Regarding this aspect, we were surprised to find that students did not become more open to foreign made products after their travel experience. While students might become less ethnocentric in terms of understanding other cultures (as has been found in other research) this does not necessarily mean they are more open to foreign products. Measures of student attitudes toward study abroad and learning outcomes were quite positive indicating that a short international field study is a valuable experience for students who might not otherwise have the option to travel abroad. Long, M. M., Sandler, D., & Gopalakrishna, P. (2011). The Impact of an International Field Study on Students' Learning and Consumer Ethnocentrism. International Journal of Business Innovation Research, 5 (6), 704-713.

Starbucks – A Finance Case Study

Principal Investigator: Dr. Raymond H. Lopez

Department: Finance and Economics
School: Lubin School of Business
Campus: WP

This case requires students to restructure the capital structure of Starbucks and project financial statements for the next 5 years. They will be selling new debt and repurchasing common stock in varying amounts in order to achieve an optimal capital structure.

Sula Vineyards (B)

Principal Investigator: Dr. Raymond H. Lopez

Department: Finance and Economics
School: Lubin School of Business
Campus: WP

This case examines how this Indian wine producer handled the "trading down" phenomenon that affected the industry in 2008 and 2009. It analyses these challenges and requires financial forecasts to be generated and evaluated for maximizing shareholder and stakeholder values over the next 5 years.

Apple, Inc. – A Finance Case

Principal Investigator: Dr. Raymond H. Lopez

Department: Finance and Economics
School: Lubin School of Business
Campus: WP

The case examines the financial management of Apple over the last 6 years. It also focuses on the firms cash holdings, new dividend policy, share buyback programs and proposals for decreasing the firm's cost of capital over the next 3 years.

Auditor Judgments: Are Auditors Influenced By the Formal or Informal Clothes Worn by Inventory Managers?

Principal Investigator: Dr. Susanne O'Callaghan
Co-Investigator(s): Umesh Patel, MBA

Department: Accounting
School: Lubin School of Business
Campus: NYC

Companies need auditors to provide opinions on their annual financial statements. Auditors do so by planning the audit to effectively and efficiently collect evidence to support their opinions. As part of this process, auditors must make many professional judgments. For companies with inventories (such as clothing, drugs, computers, books) auditors are required to inquire about, observe, and randomly test such inventories. To study the behavioral aspects of auditor judgments, student auditor subjects were asked to watch two, one minute videos of inventory managers, one wearing business clothing and one wearing casual inventory clothing. Based on the videos, the auditors were asked to assign seven staff auditors to observe the inventory managed by the two inventory managers. The subjects assigned more staff auditors to observe inventory managed by the person wearing informal clothing. The implications of our findings are that by not addressing the bias that clothing has on auditors, auditors may be ineffective in their audits by assigning too few resources than needed or inefficient in their audits by assigning too many resources than needed.

Valuation of Corporate Innovation

Principal Investigator: Professor Richard E. Ottoo

Department: Finance & Economics
School: Lubin School of Business
Campus: NYC

Academics and practitioners are still grappling with a major issue in financial management. Market valuations of high-tech companies continue to raise doubts about the validity of available equity valuation metrics further demonstrating evidence that there is a huge disconnect between early-stage high technology stock valuations and traditional tools of security analysis. In the early period of the emergence of the Biotechnology and the Internet industries in the 1980s and 1990s, respectively, most analysts failed to correlate the pricing of these enterprises with the available valuation metrics. Even sophisticated and reputable investors like Warren Buffett argued that valuing these emerging technology firms was meaningless (*Money Magazine*, 1998), citing Gramm and Dodd who in 1934 wrote that "*unseasoned companies in new fields of activity provide no sound basis for the determination of intrinsic value….Analysts serve their discipline best by identifying such companies as highly speculative and not attempting to value them*." More than two decades later, the goal of providing a model to explicitly value intangible investments still remains elusive. For instance, on September 5, 2012, *The Wall Street Journal* reported that investors were beginning to question how much the stock of Facebook, Inc. was really worth after the company had lost almost fifty percent of its value in six months since it went public. Despite the critical shortcomings in existing valuation models, investors are increasingly finding that these high-tech companies that continue to build on their patented ideas are now a permanent feature of the marketplace and will change the global economy forever. Moreover, for companies heavily dependent on trading high-tech products and related services, constant innovation is a requirement for survival. Indeed, history has shown that innovation is the engine of industrial and economic growth and development. Thus, while the task of valuation under uncertainty remains daunting, the need for developing a good model is compelling. In this paper, we present a unified valuation framework for corporate innovation by blending contingency-claims models and discounted cash flow techniques. The approach has direct implications for innovative firms and start-up enterprises. We focus on the valuation of high-tech ventures by examining, in particular, the biopharmaceutical industry to advance the discussion and application of the model. Our notion of corporate innovation is that of an investment that results in a patentable and profitable product, process, formula, or design. We specifically value a new biopharmaceutical product at Gilead Sciences Inc. and propose a six-step process: (1) forecast the product's operating cash flows for the real growth options for the entire industry; (2) estimate the cost of capital for the industry's growth options; (3) determine the present value of the operating cash flows; (4) incorporate competition and estimate the firm's competitive advantage; (5) estimate the required capital investments for the growth opportunity; and (6) derive the value of the new innovation.

Sharing stories of the 9/11 experience: Collective meaning reconstruction as a path to healing

Principal Investigator: Dr. Katherine M. Richardson

Department: Management and Management Science
School: Lubin School of Business
Campus: NYC

This study examines the importance of public story-telling as a means to meaning reconstruction in the aftermath of trauma and loss. A group of 103 volunteer docents who were directly affected by the September 11th terrorist attacks were surveyed about their experiences conducting walking tours around the World Trade Center site. During the tours docents share their personal stories related to the events of 9/11 and its aftermath with tourists from all over the world. Results revealed that participation in the program and publicly sharing their narratives enabled docents to experience two aspects of meaning reconstruction: making sense of the event in one's larger world view and finding an individual benefit or silver-lining from the experience. The majority of respondents reported that volunteering assisted with their personal healing related to 9/11. This study is one of the first to examine public story-telling rather than one-on-one or private group-based therapy as a path to healing from trauma and loss. Furthermore, although the trauma literature suggests that most coping happens within the first weeks and months following a traumatic event, a significant contribution of this study is that the Tribute Center walking tours provide an important forum for meaning reconstruction and healing even though many years have passed since the WTC attacks.

Economic Growth Destroying Developments in the 21st Century Globalized Economy: Some Inconvenient Truths

Principal Investigator: Dr. Robert G. Vambery

Department: Marketing
School: Lubin School of Business
Campus: NYC

The past two decades have witnessed the evolution of the concept of ‘‘globalization’’ into reality. Along the way much has been written about globalization’s potential to bring about enhanced economic development throughout the world, but also about its limitations and some of its harmful effects. It is clear by now that it would be desirable to control the evolutionary and implementation processes associated with globalization so as to increase its positive and to decrease its adverse impacts. This paper seeks to find, expose and further question developments during the processes of seeking to create ‘‘positive globalization’’ that along the way generated and continue to cause unplanned economic harm and destruction. The paper then raises questions about the causes and remedies of what for the time being is proving to be ‘‘negative globalization’’. Keywords: Negative globalization, distortions in finance, stakeholder interests.

Value Creation Through International Acquisitions In A World Of One-Way Globalization: Toward A New Paradigm

Principal Investigator: Dr. Robert G. Vambery
Co-Investigator(s): Kathleen Park

Department: Marketing
School: Lubin School of Business
Campus: NYC

Cross-border mergers and acquisitions have typically resulted in relatively poor returns for acquiring firm shareholders. Yet subsets from the universe of M&A deals have demonstrated positive returns, leaving open the question of determining the characteristics of cross-border deals that would be conducive to wealth formation. We use a study of large-capitalization firms as a springboard to investigating the performance of differentiated large-scale international acquisitions. We note that large acquisitions take place in a world frequently characterized by one-way rather than reciprocal globalization. This ongoing study seeks to identify determinants of value creation subject to imbalances in how the benefits from transnational business processes are distributed among the countries which accommodate the transactions. Keywords: Mergers & Acquisitions, Globalization, Trade Imbalances

PLC and SWOT Reengineered: Strategy Development Tools for Service. Industries in Global Competition

Principal Investigator: Dr. Robert G. Vambery
Co-Investigator(s): Peter Mayer

Department: Marketing
School: Lubin School of Business
Campus: NYC

Recently the businesses of some leading successful service industry companies have suffered greatly to the point of threatening their very survival, while other companies succeeded to protect and even strengthen their businesses by reinventing or "recycling" their services/products in response to the changes in their industries. Two widely used such strategic tools are the SWOT and PLC analysis and the SRCL (Service Re-Cycle for Life). This chapter offers revitalized tools aimed at finding ways to better manage and leverage changes to the benefit of services industry businesses.

Unbranding: threat to brands, opportunity for generics and store brands

Principal Investigator: Dr. Robert G. Vambery
Co-Investigator(s): Peter Mayer

Department: Marketing
School: Lubin School of Business
Campus: NYC

Purpose – Marketers devote great efforts to maintaining brand value. However, brand value can come under attack in the absence of sufficient product performance and image differentiation in a process called unbranding. This paper aims to provide insights and guidelines that will give marketing managers tools to deal with variables that impact consumer decisions on whether to buy a national brand or a store brand product. Design/methodology/approach – A consumer research study was based on a random, mall intercept with 188 respondents consisting of seven questions scored on a ten-point scale. The results are presented on a set of graphs accompanied with some analysis of means (ANOM) applications. Findings – Results indicated that a significant portion of consumers (from over 40 percent to a high of 85 percent) feel that the quality differences between branded and generic products have diminished and the price premiums charged by branded products are often no longer justifiable. Research limitations/implications – The findings of this study imply that in branded product premium image must be maintained and enhanced, otherwise it will be lost. In addition, the trend of brand value loss referred to as unbranding will vary significantly by and within a product category. Practical implications – Branded products must maintain their superior consumer perception and product performance. Store or generic brand marketers should exploit the favorable price-value relationship gained because of the loss of brand value through a process of store branding. Originality/value – The new concept of unbranding is introduced together with research-based recommendations for brand value protection strategies. Keywords: Unbranding, Brand values, Generics, Store brands, Price-to-value, Differentiation, Brand identity

Goodwill Impairment Losses and CEO Compensation

Principal Investigator: Professor Ping Wang
Co-Investigator(s): Masako Darrough, Lale Guler

Department: Accounting
School: Lubin School of Business
Campus: NYC

Prior research documents that executives receive large bonuses for completing M&A deals; yet many acquisitions do not create value for shareholders. We examine whether CEO compensation is reduced when the fair value of the acquired business units are written down (i.e. goodwill impairment losses are recognized). We find that there is a significant reduction in cash-based and option-based CEO-compensation as firms recognize goodwill impairment losses. We further document that, on average, various components of CEOs' compensation packages are downward-adjusted following the recognition of goodwill impairment charges when CEOs are in the early stage of their tenure, their firms have spent more for their targets, and their firms are not R&D intensive. Our results suggest that compensation committees make CEOs pay a price for non-value maximizing acquisitions and discourage them from further undertaking risky investments especially by reducing the risk-inducing component of their compensation packages.

Creating Ethical Work Climates: Some Institutional Factors

Principal Investigator: Dr. Susanna Cahn
Co-Investigator(s): Robert Wiener

Department: Management and Management Science
School: Lubin School of Business
Campus: PLV

This research reviews institutional factors that contribute to the creation of ethical work climates. There has been considerable research on both individual and institutional factors that contribute to ethical or unethical decisions at work. Decisions that prompt behavior are based on multiple criteria. Ethics may (or may not) be among those criteria; the decision process prioritizes some criteria over others. Institutional factors influence the decisions that individuals make at work. From a practical perspective, organizational factors are more meaningful than individual differences that may influence ethical decision making because it is the institutional factors that can be controlled by managers as part of organization design that creates an ethical work climate. Institutional factors that contribute to the creation of ethical work climates are categorized into structure, processes, people, or circumstances. We review research to date through the lens of administrative control. From a practical perspective, organizational factors are more meaningful than individual differences that may influence ethical decision making. For example, there have been a number of papers that studied the relationship between gender and ethical decision making. However, gender in the workplace can only be controlled by selective hiring and promotion; even if we knew conclusively that gender made a difference in ethical decisions, the probability of actually using that information in staffing decisions is very low. In contrast, institutional organization factors that are person-neutral could be used to create an ethical work climate, that is a work climate which raises the probability of employees making ethical business decisions. An example of a person-neutral factor might be a code of ethics, along with its tone, how it was created, and how it is enforced.

Entrepreneurial passion: Sources and sustenance

Principal Investigator: Dr. Melissa S. Cardon
Co-Investigator(s): Michael J. Glauser

Department: Management and Management Science
School: Lubin School of Business
Campus: PLV

Entrepreneurial passion helps coordinate cognition and behavior of entrepreneurs, providing the fire that fuels innovation, persistence, and ultimate success. But where does entrepreneurial passion come from? Using a phenomenological approach, we conduct a qualitative study of 80 entrepreneurs and analyze their oral histories to explore the sources of entrepreneurial passion, as experienced by entrepreneurs. Our discovery process in the interviews suggests six major sources of entrepreneurial passion: passion for building/developing the venture, passion for people, passion for the product or service, passion for inventing, passion for competition, and passion for a social cause.

Displayed passion and angel investing: interactions among enthusiasm, preparedness, and commitment

Principal Investigator: Dr. Melissa S. Cardon
Co-Investigator(s): Cheryl Mitteness & Richard Sudek

Department: Management and Management Science
School: Lubin School of Business
Campus: PLV

Entrepreneurial passion manifests in several different ways including affective display (enthusiasm), cognitive display (preparedness), and behavioral display (commitment) of the entrepreneur. We address mixed findings in the literature concerning which of these influence angel investor interest by 1) incorporating all three types of displayed passion in our model, and 2) examining not only independent effects but also potential interactions between affective, cognitive, and behavioral displays of passion. We test our hypotheses with decisions made by angel investors about live investment deals. Our findings suggest a relationship between preparedness and evaluations of funding potential, particularly when entrepreneurs have invested more of their own funds in the venture (a form of behavioral commitment). While we did not find a direct relationship between enthusiasm and evaluations of funding potential, our results suggest that there is a positive interactive effect of enthusiasm and efficient use of money and a negative interaction effect of enthusiasm and personal money invested, as well as enthusiasm and years pursuing the venture, on angel investor interest.

Corporate Governance and Finance Law

Principal Investigator: Professor Rosario Girasa

Department: Legal Studies & Taxation
School: Lubin School of Business
Campus: PLV

The topic is discussed in Chapter 8 of my new textbook on "Laws and Regulations in Global Financial Markets." The discussion in part relates to the need for financial literacy. Because of the financial crises that have continued to the present day especially in Europe, it became clear that there is a need for an understanding of essential financial products by consumers and investors. The crises illustrated that even so-called sophisticated persons could not understand the complexity of financial instruments, especially swaps and derivatives. Thus, it has been proposed by major organizations and governmental entities that individuals, as early as high school students, undertake a mandatory program of studies that will enable them to have at least a modicum of knowledge of basic financial instruments. There are additional much more complex programs sponsored by the International Organization of Securities Dealers and by accounting organizations for college and graduate students. The said Chapter 8 discusses in part these programs and suggestions for all persons irrespective of their home countries and level of studies.

LIBOR Scandal

Principal Investigator: Professor Rosario Girasa

Department: Legal Studies & Taxation
School: Lubin School of Business
Campus: PLV

A third topic is the LIBOR Scandal whereby banks manipulated the LIBOR interest rates so as to maximize their returns or conceal their banking difficulties. Investment bankers and traders made billions of dollars by such manipulation which caused consumers to pay much more money for mortgage and auto loans among other indebtedness.

Laws and Regulations in Global Financial Markets

Principal Investigator: Professor Rosario Girasa

Department: Legal Studies & Taxation
School: Lubin School of Business
Campus: PLV

Corruption. In a number of papers, the problem of bribery of public officials in other countries by foreign companies is of major concern because winning bids are often awarded based on the degree to which moneys are paid to senior officials rather than on the merits of the companies' offerings. In connection of this topic, there is a discussion of the U.S. "Foreign Corrupt Practices Act," the Organization of Economic Cooperation and Development's "Convention on Combating Bribery of Foreign Public Officials in International Business Transactions," and other initiatives by international organizations. The said topic is discussed in Chapter 6 of my textbook on "Corporate Governance and Finance Law."

Pace Law School

Environmental Courts and Tribunals: Improving Access to Justice and Protection of the Environment Around the World

Principal Investigator: Pace Environmental Law Review
Co-Investigator(s): Nicholas A. Robinson, Brian J. Preston, Domenico Amirante, Nicholas S. Bryner, Kenneth J. Markowitz, Jo. J.A. Gerardu, Robert Carnwath, Donald W. Kaniaru, Antonio Herman Benjamin, Hilario J. Davide, Jr.

Department: Environmental Law Programs
School: Pace Law School
Campus: PLV

The symposium provided here by the Pace Environmental Law Review explores the phenomenon of environmental adjudication and the roles of environmental courts and tribunals. These analyses offer unique insights into how access to environmental justice can be enhanced and professionalized. The symposium inaugurates the scholarly and professional study of environmental courts and tribunals, and promises to launch a new chapter in environmental legal scholarship. This issue of the Pace Environmental Law Review builds upon a related set of articles on "The Role of the Environmental Judiciary," published jointly by Pace Law School and the New York State Judicial Institute in their Journal of Court Innovation. Both publications grew out of Pace Law School's conference examining environmental adjudication, which brought judges and scholars from around the world to the New York State Judicial Institute in April of 2011. Together, these symposia provide empirical confirmation about how States recognize and observe their duty to provide access to justice. Their articles independently corroborate the analysis of other comparative reviews of environmental adjudication. The import of the articles published in both scholarly publications is not so much the substance of the actions taken, but a demonstration of the worldwide customary acknowledgement that States are duty-bound to provide judicial access for environmental law matters.
http://digitalcommons.pace.edu/pelr/vol29/iss2/

Neighborhood Development Floating Zone: A Model Ordinance to Foster Green Community Development Using the LEED for Neighborhood Development Rating System

Principal Investigator: Pace Land Use Law Center
Co-Investigator(s): John Nolon, Jessica Bacher, Tiffany Zezula, Jennie Nolon-Blanchard, Jeff LeJava, Meg Byerly & U.S. Green Building Council

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Department: Land Use Law Center
School: Pace Law School
Campus: PLV

When promoting sustainable development, local governments are faced with a common problem: current zoning regulations are not equipped to permit the types of density, connectivity, and mix of uses typified by green neighborhoods. Floating zones, or zoning classifications authorized for future use, are applied to a specific location when a developer demonstrates compliance. These flexible zoning agreements achieve desired development outcomes while saving municipalities time and money on otherwise expensive rezoning initiatives. See the Technical Guidance Manual for Sustainable Neighborhoods for more information on how local governments can use LEED-ND for land use planning. Sponsored by: Fund for the Environment and Urban Life of The Oram Foundation, Inc. (FUEL) and the Natural Resources Defense Council (NRDC)
http://new.usgbc.org/resources/neighborhood-development-floating-zone

Technical Guidance Manual for Sustainable Neighborhoods

Principal Investigator: Pace Land Use Law Center
Co-Investigator(s): John Nolon, Jessica Bacher, Tiffany Zezula, Jennie Nolon-Blanchard, Jeff LeJava, Meg Byerly & U.S. Green Building Council

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Department: Land Use Law Center
School: Pace Law School
Campus: PLV

Drawing from the experience of more than 60 municipalities that incorporated LEED-ND into their land use planning efforts, this Technical Guidance Manual provides elected officials, local planners, and other professionals and interested stakeholders with the tools necessary to improve communities through sustainable neighborhood development. The manual written by the Land Use Law Center at Pace Law School in conjunction with USGBC, outlines ways municipalities can integrate criteria from LEED-ND prerequisites and credits into local planning, regulatory, and policy initiatives.Sponsored by: Fund for the Environment and Urban Life of the Oram Foundation, Inc. (FUEL) and the Natural Resources Defense Council (NRDC).
http://new.usgbc.org/resources/technical-guidance-manual-sustainable-neighborhoods

U.S. Department of Energy Contract to operate the Northeast Clean Energy Application Center (NE-CEAC).

Principal Investigator: Professor Tom Bourgeois

Department: Energy & Climate Center
School: Pace Law School
Campus: PLV

Tom Bourgeois is Deputy Director, Pace Law School's Energy & Climate Center and Co-Director of the U.S. Dept of Energy's Northeast Clean Energy Application Center (NE-CEAC) will discuss the Energy & Climate Center's research activities. Since 2004, Mr. Bourgeois has been Co-Director of this U.S. Department of Energy Center in collaboration with Dr. Beka Kosanovic, Professor of Mechanical Engineering at UMASS/Amhest. In 2009 Pace was selected as the home of the U.S. Department of Energy's Northeast Clean Energy Application Center for the four year period Federal FY 2010-2013. This an entity providing support in NY and the New England States for high efficiency combined heat and power energy systems (CHP), microgrids and district energy systems with CHP. The Energy and Climate Center recently submitted a proposal to continue these activities for the next four year period, Federal FY 2014 – FY 2017

Can the U.S. Get There from Here? Using Existing Federal Laws and State Action to Reduce Greenhouse Gas Emissions

Principal Investigator: Dr. Franz Litz
Co-Investigator(s): Nicholas Bianco, Kristin Meek, Rebecca Gasper

Department: Energy Projects
School: Pace Law School
Campus: PLV

U.S. greenhouse gas emissions are expected to rise unless additional policy actions are taken. This report identifies a suite of policies that the Administration can pursue that do not require new legislation by the U.S. Congress. If pursued with "go-getter" level ambition, those policies can reduce U.S. emissions 17 percent below 2005 levels in 2020. Without new action by the U.S. Administration, greenhouse gas (GHG) emissions will increase over time. The United States will fail to make the deep emissions reductions needed in coming decades, and will not meet its international commitment to reduce GHG emissions by 17 percent below 2005 levels by 2020.The U.S. EPA should immediately pursue "go-getter" emissions reductions from power plants and natural gas systems using its authority under the Clean Air Act. These two sectors represent two of the top opportunities for substantial GHG reductions between now and 2035.The U.S. Administration should pursue hydrofluorocarbon (HFC) reductions through both the Montreal Protocol process and under its independent Clean Air Act authority. Eliminating HFCs represents the biggest opportunity for GHG emissions reductions behind power plants.U.S. states should complement federal actions to reduce emissions through state energy efficiency, renewables, transportation, and other actions. States can augment federal reductions.New federal legislation will eventually be needed, because even go-getter action by federal and state governments will probably fail to achieve the more than 80 percent GHG emissions reductions necessary to fend off the most deleterious impacts of climate change. http://pdf.wri.org/can_us_get_there_from_here_full_report.pdf

DO OUTSIDE DIRECTORS FACE LABOR MARKET CONSEQUENCES? A NATURAL EXPERIMENT FROM THE FINANCIAL CRISIS

Principal Investigator: Professor Andrew C.W. Lund
Co-Investigator(s): Steven Davidoff, Rob Schonlau

Department: Law Instruction
School: Pace Law School
Campus: PLV

The exogenous shock of the financial crisis made shareholders and regulators particularly attuned to financial firm performance. We thus use the financial crisis as a natural experiment to study labor market consequences for outside directors at banks and other financial companies. Examining 6,507 director years at bank and financial companies over the period from 2006 to 2010 we find that outside director turnover at financial firms is negatively correlated to lagged variables for stock returns. However, the increased chance of being replaced for poor performance is only 0.99% for a one standard deviation change in performance compared to 0.59% at non-financial firms, in either case an arguably trivial amount. We also find limited evidence of salience with respect to the financial crisis. We draw on these empirical findings to assess current board-centered responses to the financial crisis and their failings.

PAY AS RISK REGULATION

Principal Investigator: Professor Andrew C.W. Lund

Department: Law Instruction
School: Pace Law School
Campus: PLV

How do we prevent financial institutions from taking excessive risk when the public fisc serves as creditor? This is one of the central questions left over after the recent financial crisis and, for the past five years, there has been no shortage of proposed answers. Two of the more popular candidates – proprietary trading restrictions and enhanced capital requirements – are on their way to being enacted in one form or another, albeit with some controversy over their cost and efficacy. Meanwhile, a third, more indirect approach has sprouted in the pages of law and business journals pursuant to which bankers' compensation packages would be adjusted to include bank debt, thereby altering their risk-taking incentives. This approach has even been put in place at certain non-U.S. financial institutions. This Article offers a critical appraisal of regulating bank risk-taking through pay design. "Risk regulation by pay" is less likely to ameliorate risk-taking than more direct approaches because bank managers with career concerns will continue to face significant incentives to take on high levels of firm risk. Moreover, regulating by pay is an inapt solution where marginal monitoring costs for creditors are relatively low as is the case with bank monitoring. Instead, the case for regulating bank risk through pay redesign must be grounded in a pessimistic view of regulator agency costs. It is hard, however, to imagine an effective pay regulation regime implemented by anyone other than those same compromised regulators with a grant of broad discretion. Thus, the most effective version of risk regulation by pay will be afflicted with largely the same implementation problems as traditional, direct risk regulation. Even worse, the very fact of risk regulation by pay, no matter how modestly proposed, makes it more likely that traditional direct monitoring will further atrophy, leaving the government-as-creditor worse off than before.

Family Court Legal Program (FCLP)

Principal Investigator: Professor Jane Aoyama-Martin
Co-Investigator(s): Tracey Alter. Attorneys working on the project ; Elizabeth Best, Jennifer Cranstoun, Ellen Gatins, Tova Gozdzik, Amanda Stone

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Department: Women's Justice Center
School: Pace Law School
Campus: PLV

The Pace Women's Justice Center's Family Court Legal Program is a legal education program tailored to meet the needs of domestic violence victims while providing professional legal training to law students on handling domestic violence cases. Since its creation in 1999, the Family Court Legal Program has assisted nearly 1,000 victims of domestic violence each year, and provided hundreds of law students with practical hands-on legal experience both in and out of the courtroom. The Family Court Legal Program has offices in both the Yonkers and White Plains Family Courts, and on a walk-in basis, domestic violence victims can get immediate access to legal assistance and get help with obtaining emergency protective orders, securing child custody, obtaining essential financial support, and other interim emergency relief. The Family Court Legal Program is a collaborative partnership with Legal Services of the Hudson Valley, Victims Assistance Services, the Westchester County Office of Child Support Enforcement, the Department of Probation, and family court personnel of Westchester County, and is funded by the Westchester County Office for Women.

Pro Bono Legal Project

Principal Investigator: Professor Jane Aoyama-Martin
Co-Investigator(s): Natanya Briendel. Attorneys working on the project: Natalie Sobchak, Santa Santiago-Ramos

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Department: Women's Justice Center
School: Pace Law School
Campus: PLV

Pro bono attorneys, trained volunteers, and law students play a vital role at PWJC and donate an average of 7,500 hours of time each year. The Pro Bono Legal Project cultivates and trains PWJC's volunteers, coordinates volunteer activity, ensures proper supervision of volunteers, and carefully matches the skills of incoming volunteers with the programs that need them. Volunteers help provide a wide range of services, including answering the Center's Legal Helpline, which receives an average of 2,000 phone calls per year. The Pace Women's Justice Center's Pro Bono Legal Project is supported by the Westchester Community Foundation, NYS Unified Court System, US Department of Justice Office on Violence Against Women, and private donations.

Bridge the Gap: Legal Assistance for Victims (LAV)

Principal Investigator: Professor Jane Aoyama-Martin
Co-Investigator(s): Attorneys working on the project : Natanya Briendel, Laurie Epstein, Karen Johansen

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Department: Women's Justice Center
School: Pace Law School
Campus: PLV

Bridge the Gap: Legal Assistance for Victims provides a full range of comprehensive civil legal services to victims and survivors of domestic violence in Westchester and Putnam counties. The program's attorneys help with matters including orders of protection, custody, visitation, child support, spousal support or maintenance, property issues, divorce, and immigration. The project has three main goals and objectives: 1. To provide and expand delivery of comprehensive legal services for survivors of domestic violence, sexual assault, dating violence, and stalking; 2. To continue and expand collaborative services efforts through partnerships with community-based organizations (The Bridge the Gap program is a collaborative partnership with four community organizations); 3. To continue and expand outreach and service provision to the traditionally underserved Latino community. Bridge the Gap is funded by a grant from the US Department of Justice Office on Violence Against Women.

The Land Use Stabilization Wedge Strategy: Shifting Ground to Mitigate Climate Change

Principal Investigator: Professor John R. Nolon

Department: Law Instruction
School: Pace Law School
Campus: PLV

This article describes how local governments, through the application of existing land use techniques, can mitigate climate change. This strategic path follows one developed by Professor Robert Socolow, who identified fifteen categories for organizing society's climate change mitigation efforts. Five of Socolow's categories fall within the reach of local land use authority: reduced use of vehicles, energy efficient buildings, vegetative carbon sequestration, wind power, and solar power. Through the aggregation of these land use techniques, significant energy savings and CO2 reduction can be achieved. This article describes how local governments are attacking the causes of climate change and how state and federal policies can be used to launch a coordinated attack on perhaps the greatest challenge our nation faces.

The Law of Sustainable Development: Keeping Pace

Principal Investigator: Professor John R. Nolon

Department: Law Instruction
School: Pace Law School
Campus: PLV

This article describes the field of sustainable development law and then considers the relationship between change in society and the evolution of relevant legal principles, strategies, and practices. Documented in this review is the steady change exhibited in the common law applicable to natural resources, the rapid spread of zoning, and the current explosion of climate change litigation and regulation. The first half of the article demonstrates that the law can and does evolve in response to crises in society, particularly when lawyers, judges, professionals, and policy makers are trained to understand that law is an instrument for positive change. The article then turns to why law schools matter by drawing lessons from the author's personal experience at Pace University School of Law.

Climate Change and Sustainable Development Law in a Nutshell

Principal Investigator: Professor John R. Nolon
Co-Investigator(s): Patricia E. Salkin

Department: Law Instruction
School: Pace Law School
Campus: PLV

This Nutshell comprehensively explores international, federal, state, and local laws and policies regarding sustainable development and climate change management. It traces the historical development of sustainable development and climate change law, showing that they appeared on the world stage at the same time and illustrating how they can be best understood, implemented, and practiced as a single body of law and policy. The book illustrates the initiatives taken by all levels of government to achieve sustainable development, showing how these initiatives provide important opportunities to manage, mitigate, and adapt to climate change. The Nutshell explains how the U.S. legal system, particularly its reliance on the land use authority of local governments, fosters greenhouse gas reduction, energy conservation, and sustainable patterns of growth, including energy-efficient and sustainable buildings, the use of renewable energy resources, the protection of sequestering open space, and the adaptation of buildings and communities to sea level rise and natural disasters.

Regulatory Takings and Property Rights Confront Sea Level Rise: How Do They Roll?

Principal Investigator: Professor John R. Nolon

Department: Law Instruction
School: Pace Law School
Campus: PLV

This article discusses greenhouse gas emissions, global warming, sea level rise, and the ferocity of coastal storms associated with climate change. It explores the tension between these movements in nature and the policy of the State of Florida to fix property boundaries, which under common law would move landward as sea level rises. The property rights and title to land of littoral landowners are described and the effect of the Beach and Shore Preservation Act on them discussed. The article contrasts the Florida coastal policy regarding beach and shore protection with the policies and programs of federal, state, and local governments that use other approaches such as accommodating rolling easements, prohibiting shoreline armoring, requiring removal of buildings, purchasing development rights or the land itself, and imposing moratoria on rebuilding after storm events. These may be less expensive and more realistic approaches to long-term coastal erosion and avulsive events and the inevitability of sea level rise as the climate warms and worsens. The article concludes with a recommendation that the framework for federal, state, and local cooperation in coastal management be revisited and strengthened so that the critical resources and knowledge are brought to bear on this critical issue. It suggests that strengthening those ties, rather than radically restructuring the relationship between state and federal courts, is a more productive method of meeting the needs of a changing society.

Hydrofracking – Disturbances Both Geological and Political: Who Decides?

Principal Investigator: Professor John R. Nolon
Co-Investigator(s): Victoria Polidoro

Department: Law Instruction
School: Pace Law School
Campus: PLV

There is much controversy about the mining of shale gas through a process known as hydraulic fracturing (hydrofracking) in the Marcellus Shale formation, one of the largest shale gas areas in the world. A debate is raging about its economic benefits and environmental impacts as the New York State's Department of Environmental Conservation (DEC) considers what standards to require when it issues permits to drillers. New York State law gives permitting authority to DEC and calls into question the historical home rule authority of localities to control the location and land use impacts of gas wells, through comprehensive planning, zoning, and development regulations. This article describes and discusses this debate, the tension between state and local control, local zoning limitations imposed on drilling and ensuing litigation, and options available to municipalities to control the impact of drilling on their local environment and economies. The regulation, advocacy, and negotiation regarding hydrofracking raise critical questions for economic and environmental policy because the facts regarding this emerging technology are highly disputed, the forces pushing and resisting shale gas mining are powerful, and the authority of each level of government is unclear. At stake are critical policy issues about who decides issues that have national, regional, and local impacts and the role of regulation in developing effective strategies for resolving such complex environmental and economic conflicts.

Land Use for Energy Conservation: A Local Strategy for Climate Change Mitigation

Principal Investigator: Professor John R. Nolon

Department: Law Instruction
School: Pace Law School
Campus: PLV

Land use techniques have impressive potential to reduce energy consumption, improve the economy, and mitigate climate change. This article explores the little understood influence local land use decision-making can have on energy conservation, sustainable development, and climate change mitigation, if properly assisted by federal and state governments. The construction and use of buildings combined with extensive vehicular travel throughout the nation's settlements inefficiently consume large amounts of energy. By enforcing and enhancing energy codes, encouraging the use of combined heat and power and district energy systems, properly orienting and commissioning buildings, incorporating renewable energy resources, and reducing vehicle miles travelled, local land use law's potential to achieve energy conservation and sustainable development can be unlocked. The article proposes new federal and state policies, combining features of both the Coastal Zone Management Act and the Enterprise Zone initiative, which can facilitate local land use initiatives that will guide human settlements down a new path toward energy efficiency and climate change mitigation.

Managing Climate Change Through Biological Sequestration: Open Space Law Redux

Principal Investigator: Professor John R. Nolon

Department: Law Instruction
School: Pace Law School
Campus: PLV

Climate change management involves strategies that mitigate its causes and adapt human communities to its consequences. In light of those goals, a national biological sequestration policy will increase the amount of CO2 emissions that biologically sequestered and will enable human settlements to adapt to the harsh effects of a changing climate, while promoting open space preservation. The article sketches the influences of international and national climate change law, which largely ignore the benefits of biological sequestration on privately owned land in developed countries. It then turns to an analysis of climate change and its consequences before exploring how mitigation and adaptation can be accomplished by preserving and enhancing the natural landscape in both rural and urban areas. The local and state initiatives that have evolved to preserve and enhance open space provide the basis for a broader sequestration policy, one that builds on available legal technology and existing norms to respond to the looming global perturbation of climate change.

Affirmatively Furthering Fair Housing: The Search for Solutions that Are Just Right

Principal Investigator: Professor John R. Nolon
Co-Investigator(s): Tiffany Zezula

Department: Law Instruction
School: Pace Law School
Campus: PLV

A federal False Claims Act action against Westchester County, New York launched a unique effort to explore whether zoning, subsidies, and advocacy could significantly Increase the percentage of minorities living in largely white communities. A Voluntary Cooperation Agreement entered into by Marin County, California raises a similar question. This article describes the legal background of the lawsuit brought against Westchester County, the Settlement Agreement that arose from it, and the attempt by Westchester County to carry out its obligations to affirmatively further fair housing. It traces the evolution of exclusionary zoning law in New York State courts, contrasts it to statutory approaches in New Jersey and Connecticut, and reviews the tepid efforts of the New York State legislature to tackle the problem of articulating the affordable housing obligations of local governments. The authors detail the progress made in Westchester County and explain their own initiative to use training, education, and technical assistance to further the efforts by communities to provide fair and affordable housing. The article also explains the significance of the implementation of the Settlement Agreement and that while Westchester County will probably meet most of the literal terms of the Settlement, the goal of achieving significant racial integration in largely white census tracts, and all the benefits of diversity that integration achieves, remains elusive. Finally, it considers what can be done at the state level to achieve integration goals, while still pursuing other state policies regarding smart growth, climate change mitigation, energy conservation, and housing equity in densely settled urban areas.

Hydrofracking: State Preemption, Local Power, and Cooperative Governance

Principal Investigator: Professor John R. Nolon
Co-Investigator(s): Steven E. Gavin

Department: Law Instruction
School: Pace Law School
Campus: PLV

Advocates for the gas drilling technology known as hydraulic fracturing, or fracking, argue that it will bring significant economic benefits to the private and public sector. Its opponents dispute these claims and point to significant environmental and public health risks associated with fracking: risks that must be considered in adopting government regulations needed to protect the public interest. One of the many issues raised by fracking is which level of government should regulate which aspects of the practice. This debate is complicated by the fact that the risks associated with fracking raise concerns of federal, state, and local importance and fit within existing regulatory regimes of each of these levels of government. This article begins by describing the limited aspects of fracking that are currently regulated by the federal government, which leaves many of the risks unaddressed, opening the door for state and local regulation. This article describes the legal tension between state and local governments in regulating fracking in the four states that contain the immense Marcellus shale formation. Its particular focus is on court decisions that determine whether local land use regulation, which typically regulates local industrial activity, has been preempted by state statutes that historically regulate gas drilling operations. This investigation suggests that the broad scope and durability of local land use power as a key feature of municipal governance tends to make courts reluctant to usurp local prerogatives in the absence of extraordinarily clear and express language of preemption in state statutes that regulate gas drilling. The article concludes with an examination of how the legitimate interests and legal authority of all three levels of government can be integrated in a system of cooperative governance.

Land Use and Climate Change: Lawyers Negotiating Above Regulation

Principal Investigator: Professor John R. Nolon

Department: Law Instruction
School: Pace Law School
Campus: PLV

Sea level rise requires a new paradigm for controlling the development of coastal lands that are in harm's way, calling for adjustments in the law, legal practice, and legal education. This article discusses the historical tendency of the law to adjust to changes in society and the recent emergence of new legal institutions and strategies for mitigating and adapting to climate change, particularly sea level rise. It illustrates how the lack of certainty about the extent and pace of sea level rise collides with the total takings doctrine of the Lucas case to frustrate the application of traditional land use and environmental regulations. It then demonstrates how this causes lawyers and public officials to rise above regulations and adopt new approaches to limiting development at the ocean's edge where sea level rise and storm surges threaten lives, ecosystems, private property, and public sector investments. The article advocates the use of negotiated problem-solving strategies for controlling coastal development in this post-regulatory moment. It concludes with some reflections on the impact of these changes on both the practice of law and legal education.

Transportation and Land Use in Global Climate Change and U.S. Law

Principal Investigator: Professor John R. Nolon
Co-Investigator(s): Michael B. Gerrard & Jody Freeman

Department: Law Instruction
School: Pace Law School
Campus: PLV

This chapter adds a critical dimension to a book that is used extensively to teach law students Climate Change Law. It draws from Professor Nolon's other works to describe how shaping human settlement patterns through transportation planning and investment and land use planning and regulation can conserve energy, reduce emissions, and mitigate climate change. Prior to the addition of this chapter to this climate change law book, no text used to teach climate change in law schools emphasized the land use and transportation dimension of climate change management: both mitigation and adaptation. With the emergence of the Intergovernmental Panel on Climate Change Fifth Assessment Report, to which Professor Nolon contributed, the international community is focusing attention on how shaping human settlements through land use controls can help to mitigate climate change. The addition of this chapter to an American climate change case book, fills in an important gap in legal education in this country.

Shifting Paradigms Transform Environmental and Land Use Law: The Emergence of the Law of Sustainable Development

Principal Investigator: Professor John R. Nolon

Department: Law Instruction
School: Pace Law School
Campus: PLV

We began these two decades reacting to the adverse environmental impacts of developing greenfields and coastal property and end it wondering how to prepare more urbanized places for a growing population of smaller households who seek the amenities of urban living and some protection from the storms ahead. This essay discusses this and nine other fundamental paradigm shifts in environmental and economic conditions that are reshaping the law and changing the way state and local governments control land use and order human settlements.

Changes Spark Interest in Sustainable Urban Places: But How Do We Identify and Support Them?

Principal Investigator: Professor John R. Nolon

Department: Law Instruction
School: Pace Law School
Campus: PLV

Changes in climatic and demographic trends are sparking renewed interest in cities generally and sustainable communities particularly. On the one hand, residents and workers in denser, mixed-use neighborhoods served by transit have half the carbon footprint of those in spread-out suburban areas. On the other hand, many of the smaller households that characterize the nation's growing population prefer to live in precisely those compact, mixed-use neighborhoods. In New York, these changes align with several new state policies that encourage cities and towns to reduce carbon emissions, reduce vehicle travel, create sustainable buildings and neighborhoods, and preserve the landscapes that sequester nearly twenty percent of the nation's carbon emissions. These three shifts – climatic, demographic, and political - create opportunities for older cities and towns to revitalize themselves, while creating new roles for smaller, rural communities. After describing these trends, this article reviews the nascent movement to certify sustainable communities, noting that existing programs measure mainly the behavior of municipalities as building and vehicle fleet owners and educators of the public. These certification systems need to expand to measure how well local governments use their legal authority to control private sector development so that the millions of new homes and billions of square feet of commercial buildings needed to serve the growing population are sustainable. The article describes the creation of a certification system and policy initiative that measures and rewards municipal planning, regulation, and incentives that ensure the sustainability of future development in areas that should host much of the expanding population and of those areas where conservation should predominate.

Holding Ground: Protecting the Natural Environment through Land Use Law

Principal Investigator: Professor John R. Nolon

Department: Law Instruction
School: Pace Law School
Campus: PLV

Local governments have extensive authority to protect their natural resources. This book will explore that power and the methods localities use to mitigate the impact of development on their resources as well as the causes of climate change. It discusses the protection of natural, visual, scenic, and historic resources, open space, watersheds, waterfronts, and agricultural land. Each of these topics distinguishes itself from the others in some way, but strategically they are closely related. The protection of open vistas, viewsheds, and view corridors and the prevention of visually blighting developments advance aesthetic objectives, an important aspect of the public welfare. The law of many states authorizes localities to establish environmental boards or conservation advisory councils and architectural review boards as the stewards of these important resources. State law also encourages historic and landmark preservation by empowering localities to establish commissions or boards dedicated to the preservation of the community's cultural and historical heritage. Local waterfront management and agricultural land protection are encouraged by a variety of additional state statutes adopted to pursue important economic objectives while preserving and enhancing the existing character of the community. Taken together, these topics, beginning with local natural resource protection, constitute a body of local environmental law in many states. Their importance, however, transcends environmental protection. As a group, these local strategies can preserve and enhance the man-made and natural environment as a critical component in a comprehensive land use and resource conservation program. These strategies are integral to local efforts to create sustainable, environmentally secure, and economically vital communities. Increasingly, they are being used to manage climate change, both through mitigation and adaptation. Most books on environmental protection focus on the critical role of federal and state governments. In protecting and enhancing open space and natural resources, however, the role of local governments, their legislatures and administrative bodies, is paramount, although critically in need of state and federal guidance and assistance. Local governments in most states have been delegated primary responsibility for determining how private land is developed and conserved. It is the legislative and regulatory actions of those governments that dictate how much of the land is covered with impervious surfaces, how many miles of roads are built, how many septic systems, sewer plants, and water systems are created, and where buildings and improvements are located. These decisions greatly affect the watersheds, waterways, and other biological resources in areas that are rich in natural resources as well as in areas where remaining environmental assets are scarce.

Quotas and the Transatlantic Divergence of Corporate Governance

Principal Investigator: Professor Darren Rosenblum
Co-Investigator(s): Veronique Magnier

Department: Law Instruction
School: Pace Law School
Campus: PLV

The United States and Europe share a great deal in their economic governance. As the two largest developed economies, the commonalities have become especially apparent even as other regions develop more rapidly. The move to adopt quotas for women on corporate boards signals a departure from harmonization of corporate governance. France's adoption of a quota for women on corporate boards reflects an increasingly stakeholder oriented European corporate governance. (hereinafter "French Corporate Board Quota" or "FCBQ") France adopted this law following Norway's leadership in adopting a similar law in 2003. After the FCBQ, other European countries and regional institutions have begun viewing quotas as a legitimate and even necessary remedy, although their implementation of them has been far from homogeneous. This corporate governance culture stands in sharp contrast with the United States' shareholder governance. This Article provides a fuller comparative picture of this distinction by presenting the constitutional and corporate governance background that laid the foundation for the current developments in corporate governance. Further, the Article exposes the limits of convergentist corporate governance theory. Some scholars, notably Hansmann and Kraakman, have argued that national corporate governance mechanisms are on an inexorable path toward convergence, leading to the "end of history" for corporate law in which differences between nations fade away. Our Article demonstrates that some divergence has taken place across the Atlantic with regard to the shareholder/stakeholder divide, a divergence exacerbated by the adoption of corporate board quotas in France, Norway and elsewhere. Each part of the Article will contrast both national and regional developments to depict the widening discrepancy between United States and European corporate governance cultures. Part One will briefly detail the proliferation of quotas for women on corporate boards in the national and transnational European contexts, and will frame this shift in France and the resistance to it in the United States within their respective constitutional traditions. Part Two will explore the depth of the stakeholder/shareholder divide between these two vastly distinct societies, governed by vastly distinct public and private regimes. Part Three will explore the distinction between France and the United States with regard to stakeholder or shareholder orientations of corporate governance. France, on the one hand, has a long history of practical stakeholder participation. The United States' interest in stakeholder inclusion, in contrast, has remained an academic exercise. Part Four will argue that CBQs, both at the national level and at the European Union level, will strengthen the stakeholder orientation of European corporations and deepen the divide between European and United States corporate governance.

RENEWABLE ENERGY LAW AND DEVELOPMENT CASE STUDIES ANALYSES

Principal Investigator: Richard Ottinger

Department: Law Instruction
School: Pace Law School
Campus: PLV

This is a book of analyses of renewable energy initiatives in developing and emerging countries. The analyses address the most important factors in the success or failure of the programs covered, the problems experienced, and what was done to seek to remedy them. The book is designed to assist countries planning to initiate renewable energy projects. The research for the analyses and initial drafts were done by Pace Law School student research assistants almost all of whom are natives of the countries covered. The book has been accepted for publication by Edward Elgar publishers in the United Kingdom. There are many valuable lessons for all countries and companies aspiring to initiate renewable energy projects to be learned from the case studies analysed in this book. Surely the most important ingredient of successful projects is knowledgeable and dedicated leadership. There are many vitally important tasks to be performed for a successful project, and competent leadership is essential. The project leadership has first to ascertain in conjunction with local citizens and officials if the project is needed, affordable, legal and acceptable; what needs are sought to be satisfied and does the project fulfill those needs most advantageously; what mapping will be required to know what sites are most suitable from the standpoint of efficiency, environmental impact, delivery, maintenance and acceptance; what technologies are most appropriate and acceptable for the locales considered; what equipment will be required and how will it be obtained, delivered and maintained; what expertise and labor will be needed, from where it will be obtained, what training will be required, what will be the standards for such training and what redress will there be for training failures; how community participants will be informed about all aspects of the project, have input into its need and design and how will their approval be determined; how will arrangements be made for the construction, or import of the relevant technology components and maintenance and repair of them; arrangements for negotiation of contractual terms and conditions particularly where outsiders are involved, making arrangements to assure that the work is done properly and complies with all construction, safety, labor and environmental laws and regulations; provides that the companies contracted take responsibility for satisfactory performance of their work and for compensation for any damages or injuries resulting from negligent failures of performance; for training local workers, contracting for and training all personnel and government officials responsible for all aspects of the work, and for making arrangements for approvals by the appropriate government officials; provisions to assure that the host country shares adequately in the project revenues.

When projects are contemplated in low income developing countries, it is important to keep in mind that they cannot afford failures and that one failed project would likely discourage other similarly situated countries from undertaking projects. So great care in selecting, designing, obtaining participant and governmental approvals, selecting and training qualified personnel and contractors, assuring adequate protections and maintenance provisions in contracts, and executing and overseeing implementation and operation of projects, while avoiding even any hint of corruption; these factors all are critically important. If a proposed project is expected to fail any of these tests, it should not be undertaken.

The book analyses renewable energy initiatives in China, including parts on biogas, solar thermal utilization, photovoltaics and off-shore wind, with a chapter written by me on the Three Gorges Dam. Chapters include renewable energy initiatives in the Philippines, Morocco, India, Brazil, Indonesia and Pakistan.

School of Education

The Pace University STEM Collaboratory

Principal Investigator: Dr. Lauren B. Birney
Co-Investigator(s): Dr. Jonathan Hill

Department: School of Education
School: School of Education
Campus: NYC

STEM Education is commonly defined as the interdisciplinary teaching and learning of science, technology, engineering, and mathematics to a level of rigor sufficient to produce critical thinkers and problem solvers across all disciplines in this endeavor. It has become accepted that the American educational pipeline is not presently equipped to provide the skills necessary to meet the demands of the STEM workforce. As a result, the K-12 educational system is not sending enough students into the college ranks with the preparation necessary to be successful science and math students, a trend reflected in the global achievement gap (SDCOE/LEA, 2010). By 2016, the 10 fastest growing occupations in New York State will require STEM competencies (New York State Department of Labor, 2010). Furthermore, the rapid growth of jobs in STEM-related fields such as biotech, computer science, information technology, telecommunications, medicine, and pharmaceuticals has coincided with the realities of an aging workforce and unacceptably low percentages of women, Hispanics, and African Americans in the STEM workforce. Pace University intends to address the dramatic needs in Science, Technology, Engineering, and Math education by establishing the Pace University STEM Collaboratory. The "Collaboratory" will facilitate interdisciplinary research and the exchange of ideas among students, faculty, and staff in STEM disciplines from across the University. It will also support STEM teaching and learning at the middle and high-school levels through continued and expanded relationships with public schools in the region. The Collaboratory's goals include: Identifying and developing a pipeline of STEM students and teachers in the greater New York area in grades 6 – 12. Developing ways to motivate learners to persevere in the study of science, technology, engineering, and math; and Launching an interdisciplinary STEM research group based at Pace University that will be a clearing-house for successful initiatives in STEM education. A focus of our work will be the development of mobile "apps" for STEM learning that leverage the growing "bring our own device" movement, recognizing the proliferation of smart phones among middle and high school students and seeking to use the technology as a vibrant instructional delivery system. Pace University seeks to address these issues by partnering with teachers and students in New York metropolitan area schools to improve STEM teaching and learning. Over the past few years, STEM faculty from across Pace have come together to develop relationships with several underserved, diverse public schools in the New York region. Altogether, the schools reach nearly 5,000 students between Pace University faculty support teachers and students at these schools through: faculty/teacher mentoring relationships; curriculum development; creation of inquiry-based projects for students; and teacher training and development. Pace University's work with K-12 school partners employs the STEM Interdisciplinary approach to learning, defined by the coupling of rigorous academic concepts with heuristic lessons that students can apply to the content areas of Science, Technology, Engineering, and Mathematics. Students are then able to use this information to make connections between school, community, work, and the global enterprise, enabling the development of STEM literacy and with it the ability to compete internationally (Tspuros, 2009). STEM Inquiry-based learning support at several of our partner schools has indicated that providing these resources will increase interest in STEM fields, provide sufficient teacher support, and create innovative resource opportunities for schools. Building STEM Education with Multinationals. Participants will explore the creation of partnerships opportunities, mobile app building in the classroom through partnership support and innovative teaching constituents formed through lucrative STEM multinationals.

Upward Bound Program

Principal Investigator: Professor Jennifer Efferen

Department: Upward Bound 07-11
School: School of Education
Campus: NYC

The Pace University Upward Bound Program, based in the School of Education, is an academic program designed to generate and enhance the skills and motivation necessary for success not only in high school, but in higher education as well. The Upward Bound program is part of the U.S. Department of Education's TRIO program, which is a set of federally-funded college opportunity programs for students from disadvantaged backgrounds. Upward Bound participants receive instruction in literature, composition, mathematics, history, and science on Saturdays and throughout the summer. In addition, the program provides tutoring, personal and college counseling, mentoring, financial literacy, and other supports necessary to succeed at a post-secondary institution. Program participants are first-generation college bound and/or low-income high school students from six target schools in Brooklyn, NY: Boys and Girls High School, Clara Barton High School, Cobble Hill High School for American Studies, George Westinghouse High School, Williamsburg High School for Architecture and Design, and Williamsburg Preparatory High School. The Pace University Upward Bound program was awarded its first grant in 1995 and has provided services on a continued basis since that time, with a new proposal being written every 5 years. The Pace University Upward Bound program has served over 600 students since 1995 and the persistence rate of the Pace Upward Bound program graduates in college is roughly 91%. Pace Upward Bound students have been awarded millions of dollars in scholarships since 1995, including the prestigious Seinfield Foundation's PENCIL Scholarship, the Joshua Chamberlain Leadership Scholarship, The Posse Foundation Scholarship, and the Gates Millennium Scholarship.

MATHEMATICS CONTENT KNOWLEDGE, ANXIETY, AND EFFICACY AMONG TRADITIONAL AND ALTERNATIVE CERTIFICATION ELEMENTARY SCHOOL TEACHERS

Principal Investigator: Dr. Brian R. Evans

Department: School of Education
School: School of Education
Campus: NYC

The purpose of this study was to understand mathematical content knowledge, mathematics anxiety, and concepts of efficacy for mathematics elementary school traditional and alternative certification preservice and in-service teachers. The teachers in this study came from a traditional teacher preparation program and the New York City Teaching Fellows alternative certification program, and were given mathematics content examinations and mathematics anxiety and efficacy questionnaires in three reform-based mathematics methods sections. Additionally, teachers were required to keep reflective teaching and learning journals throughout the semester. It was found that there were increases in content knowledge and efficacy, but not anxiety levels, over the course of the semester. There were no differences between traditional and alternative certification teachers in content knowledge, anxiety, and efficacy. Findings in this study indicated that a reform-based methods course, coupled with field experiences, can improve teacher mathematical content knowledge and efficacy. Additionally, the findings indicated that alternatively prepared teachers are as capable as traditionally prepared teachers. In order to ensure that the students are receiving the best possible educations, further studies on teacher quality and student success are needed.

Tweed's English: A multimodal social semiotic analysis of an online secondary English course

Principal Investigator: Dr. Thomas L. Lynch

Department: School of Education
School: School of Education
Campus: NYC

The use of online courses in secondary school settings is on the rise yet little has been studied about how the nature of the software that powers such technologies affects learning. The author merges theoretical frameworks and methods from the field of software studies with those from multimodal social semiotics in order to analyze the ways in which one company's online secondary English course design, as well as the nature of software itself, enables and encumbers certain learning experiences. The author finds that the English course in question "managerializes" students' learning experiences and allows the needs of software to outweigh pedagogical considerations. A discussion follows with recommendations for companies and the educational research community.

Reading Challenges in Middle School: Literacy's Place in Common Planning Time

Principal Investigator: Dr. Francine Falk-Ross

Department: Literacy Program
School: School of Education
Campus: PLV

This qualitative case study investigated the extent to which teachers discuss strategic literacy practices as they explored topics of literacy challenges and literacy process while gathered together for common planning time meetings, adding a literacy lens to observations of common planning time discussions with a focus on how teachers address literacy development and literacy challenges during their common planning time, one inquiry question focused the study: What is the nature of teachers' talk on topics of literacy development and achievement during common planning time? The study was a part of a national study of the nature of middle-grade teachers' discussions during common planning time, teachers from 17 schools in 12 states were observed and later interviewed using protocols developed by the Middle Level Educational Research Special Interest Group's National Middle Grades Research Project (Roney, Mertens, Anfara, & Caskey, 2009). The underlying theoretical framework was that reading and writing abilities have been considered as the mediators of learning in educational tasks (Lemke, 1989). Therefore, it is important to identify the opportunities afforded by interdisciplinary team meetings (or common planning time for reading support in middle school practice. The participants were observed and their conversations were recorded and transcribed during one of their semester-long once-weekly 45-minute common planning time meeting and later for individual interviews. In order to validate the coding process, the data analysis followed the model provided by Corbin & Strauss (2007). Findings gleaned from the coding of transcripts and interviews revealed inconsistencies in the plans of teachers for discussion of reading and writing approaches and resolution of students challenges during the Common Planning Time meeting discussions and the realities of the use of time during these meetings. The discussions focused on planned activities, developing and integrating curriculum, technology integration, student assignments, specific student achievement problems, professional development activities, and other topics; however, there was a lack of attention to literacy development and an absence of the reading specialists who work at this school. A discussion topic is that the surface view for Common Planning Time is one of clear organization and informative discussions of grade level curriculum, school-wide projects, and student concerns. However, the deeper view is one in which professional development for strategy interventions (most of which are literacy-based) and problem-solving for underperforming students (many of which are also literacy based) may remain unattended or unresolved by the interdisciplinary group. The implications hopefully will open teachers' and administrators' minds to the opportunities that might be afforded by increasing the role of literacy in middle grades' common planning time meetings.

Growing Inquiry: Professional Development for Secondary School Teachers to Improve Student Learning

Principal Investigator: Dr. Christine D. Clayton
Co-Investigator(s): Dr. Mary Rose McCarthy, Dr. Jim Kilbane

Department: School of Education West
School: School of Education
Campus: PLV

The project, continuously funded by New York State for four years, has received almost $900,000 to support School of Education faculty to work directly with over 100 secondary school teachers from a diversity of subject areas, experience levels, and school contexts to promote teacher and student inquiry learning throughout the metropolitan region. Collaborative teacher inquiry is a well-established professional development practice (Bray, Lee, Smith & Yorks, 2000; Cochran-Smyth & Lytle, 2001, 2009) that promotes ongoing, sustained, and deep learning to improve individual teacher practices focused on student learning; it is guided by questioning, evidence gathering, and reflecting (Hawley & Valli, 1999; Weinbaum, et. al, 2004). Student inquiry is characterized by authentic disciplinary tasks (activities that mirror what those who study the discipline actually do with such content knowledge) and authentic learning tasks that are evidenced by greater student autonomy (McDonald & Songer, 2008). Together, these ideas shape this project's focus on three key elements of inquiry: compelling questions, analyzing data to build arguments, and elaborated communication. These elements frame our thinking about inquiry whether it involves teachers or students. Specifically, the grant has supported the development of collaborative inquiry groups in 6 high schools and middle schools in New York City and Westchester county to support cohorts of teachers in conceptualizing and implementing the inquiry process for students. In addition to these school-based sessions, the grant provides funds for university-based sessions, consulting sessions with content area experts from Pace's Arts and Sciences faculty, and funds for the purchase of classroom materials to implement inquiry learning experiences for students. The development of this program and the research that grows out of this work rests on a simple hypothesis: supporting the teacher inquiry process provides teachers with the conceptual and practical tools to improve their ability to enact inquiry experiences with their students that would enhance learning outcomes. With that hypothesis in mind, there are two research threads we are pursuing: 1) Overall analysis of the development of teacher conceptions of inquiry learning across the years of the project to look for constancies and differences in development trajectories (Clayton & Kilbane, 2012; Kilbane & Clayton, 2013), and 2) Focused Case Studies of Exemplar Teacher Leaders in the Project (Clayton, Kilbane, & McCarthy, 2013). Initial findings suggest a relationship between appropriation, implementation, and conceptualization of the teacher and student inquiry processes while noting that there were a range of levels of appropriation across the diverse sample of teachers. The closer examination afforded through the cases revealed that three factors affected teachers' ability to adopt an inquiry stance: trust, experience, and the context in which they worked. These findings reveal important insight about planning and the conditions for promoting professional learning in this area. Finally, there are three areas that we anticipate future research and development. First, the emergence of teacher leadership for inquiry was an unanticipated outgrowth of this sustained work in schools and will likely be explored further through case study research. Second, impacts on student learning have been anecdotally noted. We are interested in working with particular schools and willing teachers to document more closely these impacts with a particular interest in those impacts on key populations such as English Language Learners. Finally, the curriculum developed as a part of the program has received repeated praise from participants; to that end, documenting and disseminating that "curriculum" would be desirable to professional developers, teacher educators, and secondary educators.

Why, When, and How to Address Professional Dispositions for Teacher Candidates of English Language Learners Across the Curriculum in P-12 Education

Principal Investigator: Dr. Soonhyang Kim
Co-Investigator(s): Yurimi Grigsby

Department: School of Education West
School: School of Education
Campus: PLV

Professional dispositions are an essential part of teacher preparation, yet many ESOL teacher educators grapple with why, when, and how to assess professional dispositions for teachers of English Language Learners (ELLs). As more states require ESOL training for teachers, no matter their disciplines, we predict more dispositional issues for teachers who demonstrate resistance toward teaching the culturally and linguistically diverse student because of the additional responsibilities of differentiating instruction. A teacher has the responsibility of teaching every student in the classroom, and teacher educators are charged with fostering the disposition in their teacher candidates that all students can learn. Because dispositions are intrinsically guided by the beliefs and attitudes held by the teacher, assessing it is a complex feat. As teacher educators are charged with addressing dispositions of teachers of ELLs, the question is how professional dispositions can be addressed through TESOL training. The presenters offer suggestions and specific activities that could be used by teacher educators to incorporate disposition assessments, and raise compelling arguments for their use in teacher preparation programs based on their experiences as program directors. Key Words: English Language Learners (ELLs); teachers of ELLs; teacher education; professional disposition; disposition assessment; critical reflection

Reading Challenges in Middle School: Literacy's Place in Common Planning Time

Principal Investigator: Dr. Francine Falk-Ross

Department: School of Education West
School: School of Education
Campus: PLV

This qualitative case study investigated the extent to which teachers discuss strategic literacy practices as they explored topics of literacy challenges and literacy process while gathered together for common planning time meetings, adding a literacy lens to observations of common planning time discussions with a focus on how teachers address literacy development and literacy challenges during their common planning time, one inquiry question focused the study: What is the nature of teachers' talk on topics of literacy development and achievement during common planning time? The study was a part of a national study of the nature of middle-grade teachers' discussions during common planning time, teachers from 17 schools in 12 states were observed and later interviewed using protocols developed by the Middle Level Educational Research Special Interest Group's National Middle Grades Research Project (Roney, Mertens, Anfara, & Caskey, 2009). The underlying theoretical framework was that reading and writing abilities have been considered as the mediators of learning in educational tasks (Lemke, 1989). Therefore, it is important to identify the opportunities afforded by interdisciplinary team meetings (or common planning time for reading support in middle school practice. The participants were observed and their conversations were recorded and transcribed during one of their semester-long once-weekly 45-minute common planning time meeting and later for individual interviews. In order to validate the coding process, the data analysis followed the model provided by Corbin & Strauss (2007). Findings gleaned from the coding of transcripts and interviews revealed inconsistencies in the plans of teachers for discussion of reading and writing approaches and resolution of students challenges during the Common Planning Time meeting discussions and the realities of the use of time during these meetings. The discussions focused on planned activities, developing and integrating curriculum, technology integration, student assignments, specific student achievement problems, professional development activities, and other topics; however, there was a lack of attention to literacy development and an absence of the reading specialists who work at this school. A discussion topic is that the surface view for Common Planning Time is one of clear organization and informative discussions of grade level curriculum, school-wide projects, and student concerns. However, the deeper view is one in which professional development for strategy interventions (most of which are literacy-based) and problem-solving for underperforming students (many of which are also literacy based) may remain unattended or unresolved by the interdisciplinary group. The implications hopefully will open teachers' and administrators' minds to the opportunities that might be afforded by increasing the role of literacy in middle grades' common planning time meetings.

IMPLEMENTATION OF INCLUSION POLICIES IN PUBLIC HIGH SCHOOLS: Implications for Teacher Preparation

Principal Investigator: Dr. Leslie C. Soodak
Co-Investigator(s): Roberta Wiener, Mary Rose McCarthy

Department: School of Education West
School: School of Education
Campus: PLV

The 325T OSEP grant (STARS) is a multi-year grant to prepare high school teachers to educate students with and without disabilities in inclusive classrooms. This 1.5 million dollar grant awarded by the U.S. Department of Education, Office of Special Education Programs (OSEP) provides resources needed to transform teacher preparation so as to improve outcomes for all high students. The STARS grant was developed in response to our study of the implementation of inclusion policies in secondary schools that provided data underscoring the need for sustained reform in both public high schools and in universities that prepare its teachers (McCarthy, Wiener & Soodak, 2012). This study examined how various high schools have responded to several government policy initiatives in general and special education, including IDEA and NCLB. We situated our analysis within a perspective that views the inclusion movement as a civil rights struggle for integration. Courts identified "vestiges" of racial segregation as including inequity in curriculum, extracurricular activities, resources, expectations, resources, teacher assignment, qualification, and experience as well as the racial identifiability of certain schools or classes (McMullen & McMullen, 1993; Tacorda, 2003). We theorized that, just as vestiges of racial segregation remained even after court-ordered integration; vestiges of segregation by "ability" would also remain after legislation mandating that students with disabilities be educated in the least restrictive environment. Analysis of the data indicated that remnants of past thinking and practice persist; and that these vestiges weaken the prospect of sustained change. Making inclusive education an effective and sustainable reform requires that teachers, administrators, policymakers and teacher educators—independent of court decisions or legislative mandates—uncover and challenge the policies and practices that were reinforced by the prior system of separation. Our data suggested several changes in policies and practices that are warranted. For example, separate certifications for "general" and "special" educators should be eliminated. All initially certified teachers must have the competencies and content knowledge to teach in classrooms in which classified and non-classified students are served. Structural changes are also needed. Most notably, the tenure and seniority system for teachers should be aligned with the unitary certification system. In sum, the practices that reinforce differences should be revealed and eliminated, regardless of how vested administrators, educators, and teacher educators are in their continuation. Toward this end, we have developed a fully merged teacher education (STARS) program to prepare dually certified high schools teachers to work with all students. This program was targeted at the secondary level where the need for reform is the most compelling. Our goal is to affect change in the environments in which segregation appears seems to have its strongest hold. Our future research will determine the effectiveness of the STARS graduates in implementing and sustain reform through effective teaching in inclusive settings.

Because Wisdom Can't Be Told: Using Comparison of Simulated Parent–Teacher Conferences to Assess Teacher Candidates' Readiness for Family–School Partnership

Principal Investigator: Professor Joan M. T. Walker
Co-Investigator(s): Benjamin H. Dotger

Department: School of Education West
School: School of Education
Campus: PLV

This study used text-related, video-based case materials to assess teacher candidates' readiness to communicate with families. Participants (N = 141) rated their efficacy for home–school communication and then responded to a description of a classroom-based challenge regarding one student's behavioral and academic performance. Next, they evaluated two videos, each capturing how a teacher addressed the challenge in a parent–teacher conference. Cases offered contrasting models of communication effectiveness along two dimensions: structuring and responsiveness. Finally, candidates chose which model did the better job and justified their choice. Findings revealed that candidates had high self-efficacy for communicating with families but generated a small number and range of strategies for dealing with the situation; could discriminate between the models' effectiveness; and their reasons for choosing one model as best centered on their valuing of structuring or responsiveness and their conceptions of partnership. Content validity and reliability assessments of the research materials are described.

Let's get (virtually) real: Learning about classroom management through simulation

Principal Investigator: Professor Joan M. T. Walker

Department: School of Education West
School: School of Education
Campus: PLV

Introducing an innovative technology for learning about classroom management, the TeachLive Lab, this paper shares results of a "first day of school" management task conducted with 71 teacher candidates. Grounded in research on the development of expertise, it explored candidates' ability to enact a written classroom management plan during a 10-minute microteaching experience in a virtual environment. Consistent with developmental differences noted in the literature, secondary candidates adopted a content-driven approach relative to elementary candidates. Moreover, the interactive technology elicited dispositions and behaviors that otherwise would have remained invisible to the instructor. Candidates rated the lab as an effective learning tool but had mixed opinions about its realism. Candidates' reflections on and emotional responses to the task are also described.

Effects of hand gestures on the syllable-recognition and decoding skills of children with reading difficulties

Principal Investigator: Dr. Xiao-lei Wang
Co-Investigator(s): Sr. St. John Delaney

Department: School of Education West
School: School of Education
Campus: PLV

Past research has shown that hand gestures can help children with different developmental abilities process information successfully in various learning tasks. This study examines whether hand gestures can also assist children with reading difficulties (RD) in recognizing syllables and improving decoding ability. Two instructional experiments are conducted: one with only verbal instructions and the other by adding the use of deictic gestures. Preliminary results suggest that children with RD tend to improve syllable recognition and decoding skills with the scaffolding of adult deictic gestures. Moreover, children with RD learn to recast deictic gestures into decoding tasks.

Gestures Can Help Improve The Narrative Quality Of Children With Learning Disabilities

Principal Investigator: Dr. Xiao-lei Wang

Department: School of Education West
School: School of Education
Campus: PLV

The purpose of this study is twofold: First, it examines the effects of adult hand gestures on the narration of children with learning disabilities. Second, it explores whether children model adult gestures in their story narration, and if so, what the long-term effect of adult gesture input is on children's narrative production. Forty 7-year-old children who have learning disabilities participated in the study. They were asked to retell a story after listening to it under two different reading conditions: without and with hand gestures. The results suggest that all children showed an immediate improvement in their narrative production when the story was read with hand gestures, as evidenced in their increase in idea units (both in speech and gesture), words (including types of words), gestures (including types of gestures), and the recalling story details. However, only those children who modeled the adult's gestures, recast them into their narratives, and produced more speech-gesture mismatches retained the benefits of the adult gesture input 4 weeks after. In addition, boys benefited more from adult gesture input than girls. In light of this study, several teaching strategies are recommended.

Gaining New Insights into guan jiao (管教) in Chinese Moral Socialization

Principal Investigator: Dr. Xiao-lei Wang

Department: School of Education West
School: School of Education
Campus: PLV

Cross-cultural research has identified guan jiao (管教) as a key method in Chinese childrearing. Guan jiao has been defined as governing and caring through education. This study explores how guan jiao is practiced in moral education in Chinese families. Forty Chinese mother-child dyads participated in the study. The result suggests that Chinese mothers practiced guan jiao in several ways. They were highly active in instilling moral values into their young children by frequently initiating interactions related to moral values and by spending time discussing them. They also vigilantly monitored their children by immediately stopping their moral transgressions. Moreover, the mothers provided explicit guidance to the children by using both positive and negative examples. This study suggests that guan jiao entails many cultural nuances in Chinese moral socialization.

Lying may be a form of social intelligent: Socialization of situational-appropriate deceptive skills in the Chinese working families

Principal Investigator: Dr. Xiao-lei Wang

Department: School of Education West
School: School of Education
Campus: PLV

While honesty is noticeably emphasized in Chinese childrearing practices, deception for the sake of collective good and maintenance of interpersonal relationship is widely endorsed by the Chinese culture. This study examines how Chinese mothers negotiate between teaching honesty and helping their young children develop situational-appropriate deceptive skills in the everyday context. Forty 4-year olds and their mothers from Chinese working-class families were observed in their daily routines. The results suggest that on the one hand, Chinese mothers actively taught the value of honesty in the daily interactions with their young children by frequently initiating interactions related to it, spending longer time talking about it, and responding to their children's transgressions immediately as well as using positive and negative examples to show the consequences of being honest and telling lies. On the other hand, the mothers used their own interactions with others to model how to use situational-appropriate deception to maintain harmonious inter-personal relationships and avoid conflicts. The mothers' beliefs about teaching honesty and using situational-appropriate deception were further examined through their responses to the video vignettes of other people's violation of honesty. This study highlights the multifaceted nature of parental moral socialization.

Gender-Role Development of Hutterite Children

Principal Investigator: Dr. Xiao-lei Wang

Department: School of Education West
School: School of Education
Campus: PLV

This study examines children's early gender-role development in three Hutterite communities by using a middle-voiced theoretical approach. The results indicate that gender-role related interactions between adults and children in the everyday context are a complex and intertwined process. Even though the Hutterite adults were very intense in gender-role socialization (as evidenced in their initiating more gender-role related interactions than other types of interactions, their frequently responding to children's gender-role initiations, their taking more turns in gender–role related interactions, and their frequently elaborating on children's gender-role initiations), they could not completely control the direction of gender-role interactions. In fact, most of the gender-role related interactions between the adults and the children departed from their original themes and were carried on by the circumstance of the interaction process. This study suggests that when examining gender-role development, we need to focus on the process rather than on either the adults or children.

The Impact of Multilingualism on Family Wellbeing

Principal Investigator: Dr. Xiao-lei Wang

Department: School of Education West
School: School of Education
Campus: PLV

There are undoubtedly many benefits and excitements associated with raising multilingual children, and there are also many challenges related to it. Multilingual families typically reside in a place other than the parents' country/community of origin. They must construct their own unique identities and make their own unique family childrearing and language decisions in addition to coping with many other intricacies associated with raising children with more than one language and culture. The complex family characteristics will inevitably add more stress to everyday family life. Currently, little research exists on how multilingual childrearing affects family wellbeing, and many important issues regarding multilingual families have not yet been thoroughly explored (Wang, 2013). This study has identified the following major issues that affect multilingual and multicultural family cohesion and wellbeing: Differences in parental childrearing beliefs and practices, Quality of family communication, Parental communication involvement, Parent-child direct communication, Limit in conversation turns when different languages are used, Communication accountability, Allocation of time for leisure and heritage-language learning, Parental expectations, Parental stress.

Seidenberg School of Computer Science and Information Systems

RBG: A Testbed for Realistic Network Behavior Generation

Principal Investigator: Dr. D. Paul Benjamin
Co-Investigator(s): Hamid Sheikhghanbari & Maryam Ansari

Department: Computer Science
School: Seidenberg School of Computer Science and Information Systems
Campus: NYC

New cyber attacks are constantly being created, and new methods of cyber defense are proposed to combat them. We need to evaluate the effectiveness of defensive methods in a realistic setting. Network simulators developed to evaluate routing protocols do not provide a framework within which actual attacks can be launched and defended. Datasets of intrusions are useful, but static and limited. Advances in hardware and software now permit us to build an affordable testbed for security research that generates completely realistic behaviors. We describe the architecture of the Realistic Behavior Generator and illustrate its use.We have developed a testbed for cybersecurity research that replicates real networks in detail, with virtual machines and simulated users that run real software and generate real traffic. Our RBG testbed is a real network, just without the physical boxes for the machines and the physical bodies of the users. RBG generates realistic traffic and supports and measures the effects of real attacks. This provides the advantages of a real network without the associated costs, and can provide datasets from a variety of networks. RBG's principal design goals are 1) to evaluate a defensive strategy on a particular network, and 2) to evaluate the stability and reliability of data mining methods in intrusion detection. The goal of the RBG system is to produce realistic network behavior for a wide range of networks. This requires us to provide support for a number of different hardware and software platforms, including mobile devices, and to model interaction with the internet. This section describes our virtual network and how it supports a range of platforms. RBG's virtual nodes include user nodes, IDS nodes, webserver nodes, database server nodes and chat server nodes. Each client virtual machine in our testbed contains an application that we have designed to simulate the actions of a typical client user, using a probability distribution to select from client applications to run. These applications include sending email, querying a database, accessing a web server, and chatting with another client, all using the actual application software. For example, a Windows 7 virtual machine client would actually use Internet Explorer to download a webpage from a webserver. The client application itself is controlled by the testbed controller via a dedicated port on each virtual machine. Different classes of users are implemented by different versions of this application, so that they run different applications and in varying percentages. The server virtual machines in our testbed are actual servers, configured with databases and webpages to serve. In this way, realistic scenarios of user behavior are created and controlled, and actual network traffic generated for analysis. In each experimental run, one or more machines are selected to serve as attackers. The testbed controller loads each attacking machine with the exploit software for the experiment and activates it at a selected time. During each experiment, network traffic data is captured using standard forensic tools, e.g. Snort, and stored for analysis by data mining software.

A Cognitive Approach to Vision for a Mobile Robot

Principal Investigator: Dr. D. Paul Benjamin
Co-Investigator(s): C. Funk

Department: Computer Science
School: Seidenberg School of Computer Science and Information Systems
Campus: NYC

We are building a cognitive vision system for a mobile robot. This system works in a manner similar to the human vision system, using saccadic, vergence and pursuit movements to extract information from visual input. At each fixation, the system builds a 3D model of a small region, combining information about distance, shape, texture and motion. These 3D models are embedded within an overall 3D model of the robot's environment. The goal is to construct a physically realistic model of the entire environment. At each step, the vision system selects a point in the visual input to focus on. The distance, shape, texture and motion information are computed in a small region and used to build a mesh in a 3D virtual world. Background knowledge is used to extend this structure as appropriate, e.g. if a patch of wall is seen, it is hypothesized to be part of a large wall and the entire wall is created in the virtual world, or if part of an object is recognized, the whole object's mesh is retrieved from the library of objects and placed into the virtual world. The difference between the input from the real camera and from the virtual camera is compared using local Gaussians, creating an error mask that indicates the main differences between them. This is used to select the next points to focus on. The left and right camera inputs are at the top of the picture at left, showing a ball rolling. The rendered virtual world is below. This approach permits us to use very expensive algorithms on small localities, thus generating very accurate models. It also is task-oriented, permitting the robot to use its knowledge about its task and goals to decide which parts of the environment need to be examined. The software components of this architecture include PhysX for the 3D virtual world, OpenCV and the Point Cloud Library for visual processing, and the Soar cognitive architecture which controls the perceptual processing and robot planning. The hardware is a custom-built pan-tilt stereo color camera. This research builds on work performed in the Pace Robotics Lab over the past ten years. Videos are available at http://csis.pace.edu/robotlab/videos.html

Second-Person Perspective on Leadership and Management

Principal Investigator: Professor Don M. Booker

Department: InformationTechnology
School: Seidenberg School of Computer Science and Information Systems
Campus: NYC

This presentation will consider some of the implications of a second-person perspective on aspects of managerial leadership. The impact of this perspective on team building approaches; the applications and implementation of information technology in organizations; project management; and the interface between personal, professional and organizational ethics. The interpenetration of ethical issues and impacts on all areas of management will be emphasized and the possible contribution of a second-person perspective to a renewal of managerial ethics considered.

Research in Mobile Forensics

Principal Investigator: Dr. Darren Hayes

Department: InformationTechnology
School: Seidenberg School of Computer Science and Information Systems
Campus: NYC

There are an estimated one billion smartphones worldwide and the importance of cellphone forensics is extremely important to every type of investigation. Law enforcement is overwhelmed by the number of cellphones being seized and are grappling to find mobile forensics experts. The Seidenberg School of CSIS at Pace University has supported the efforts of law enforcement in computer forensics for many years and includes the New York Police Department, United States Secret Service, Federal Bureau of Investigations, New York County District Attorney and New York State Police. Pace University has become renowned for its expertise in mobile forensics research. Gaining this expertise would not have been possible without the assistance of a Department of Defense grant entitled Expanding the Outreach: Mobile Device Forensics. In fact, the computer forensics laboratory at the Seidenberg School and the contribution to the burgeoning field of mobile forensics was recently highlighted in a full-color spread by the New York Post. This presentation on Pace-Wide Research Day will outline the parameters of the grant, the mobile forensics workshops developed for community colleges across the region, student-faculty research initiatives and the successful findings of our research. The research is quite remarkable and could be viewed as rather unnerving to many smartphone users given the amount of data that is being continually recorded about our movements and lifestyle and being unwittingly reported to organizations across the globe. This presentation will not only guide you through the intricacies of cellphone forensics but will provide you with practical tips on how to protect you and your loved ones using these everyday devices. Our special thanks to the Office of Associate Provost for Sponsored Research and Economic Development at Pace University for their continued guidance and support of student-faculty research grant initiatives.

Seidenberg Creative Labs

Principal Investigator: Dr. Jonathan H. Hill
Co-Investigator(s): Seidenberg Creative Labs Ms. Julie Gauthier, Mr. Prachaya Sinsuwan, Prof. Will Pappenheimer

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Department: Administration
School: Seidenberg School of Computer Science and Information Systems
Campus: NYC

Seidenberg Creative Labs was founded in 2010 in response to the call for greater student/faculty research opportunities as well as to meet the needs of industry and the New York technology start-up community. Seidenberg Creative Labs provides development and testing of prototypes in key areas of computing including Software Development, Data Visualization, Responsive Web Design, Mobile Application Development, Augmented Reality, CyberSecurity and related fields. Following a fee for service model, Seidenberg Creative Labs generates revenue for student stipends, travel experiences for students, staff and faculty and has created meaningful on-campus employment for students from all of Pace's constituent schools. As a 'collaboratory', Seidenberg Creative Labs mixes Pace and visiting faculty, undergraduate and graduate students, industry experts, specially selected 'Tech mentors in residence' Recent clients have included projects for the Lower Manhattan Marketing Association, New York Water Taxi, The Rockland County Alliance for Health, Datavis, PeerToPolicy, New York Skal, OpenPatent, New York Law School, Exerblast, and The LAMP among other partners. Community Engagement - Seidenberg Creative Labs fulfills Pace University's commitment to service and community involvement by playing an active role with government and industry organizations. Work has been done on behalf of the New York City Economic Development Corporation (NYC EDC), The New York City Department of Education (NYC DOE), The Union Square Alliance, DUMBO NYC, and the Lower Manhattan Marketing Association. Dr. Hill is also an active member of City Council Speaker Christine Quinn's Committee on Technology. Sourcing dynamic teams - The 'collaboratory' model allows clients to become partners in a highly motivated, interdisciplinary team of students, faculty and visiting experts to imagine and build products in the digital space. Our process includes conceptualization and development of new products or services, re-engineering of existing products or Websites or the development of an integrated digital marketing plan unifying a companies' divergent online properties. Powerful R & D - Pace Creative Labs also provides a Research and Development service for small and medium sized organizations that don't have access to an R & D resource. We are also an immediate solution for larger firms that cannot schedule an R & D effort fast enough to develop a promising concept in 'Internet time'. A Learning Model that delivers - Integrating talented, enthusiastic college students – both undergraduate and graduate – provides real-time interaction with one of the key user demographics for many of the products developed at Seidenberg Creative Labs: 18 – 24 year old 'digital natives'. Innovation, experimentation, creative expression and the application of theory to practice are at the heart of the learning experience that Seidenberg Creative Labs provides for our students. The result is processes and products with the fresh, energetic new thinking and creativity that today's savvy end users demand from their digital products.

Influence of Entrepreneurial Aptitude on Technology Entrepreneurship Course Performance

Principal Investigator: Dr. Anthony Joseph & Dr. James Lawler

Department: Computer Science
School: Seidenberg School of Computer Science and Information Systems
Campus: NYC

In order for engineers and computing professionals to become effective leaders in industry and government, they need to acquire the skills of well-rounded individuals who are not only versed in disciplinary knowledge, but who are also proficient in such "soft" skills as interpersonal, teamwork, and critical thinking skills. To ensure that engineers and computing professionals acquire both "hard" and "soft" skills, these skills must be given emphasis during their education and training. For example, engineering and computing students should be taught and trained in teamwork and innovative thinking skills as well as business skills through technology entrepreneurship experiences. In teamwork exercises, they should know and experience the value of complementary skills (technical and functional, problem solving and decision-making, and interpersonal) in accomplishing a challenging task as well as the importance of good working relationship among team members in getting the task successfully completed. Entrepreneurial companies are the current backbone of the American economy. They tend to create more jobs than other companies. A small subset of entrepreneurial companies creates most of the jobs in the American economy. Moreover, they are the engine of innovation; they produce more technological innovations per research and development dollar and more innovation per employee than large companies. Within large corporations, entrepreneurial individuals tend to be relatively more productive than other employees, thereby providing added and critical values to their organizations. In a computing technology entrepreneurship course offered in fall 2011, students were separated into teams of three and four students and taught the concepts and skills of teamwork, innovation, and entrepreneurship. They applied these concepts and skills through an open-ended product development project in financial or healthcare information technology within the context of a company for which each team (or company) developed a business plan. Each team was advised by a mentor who helped the team scale its ideas of a financial or healthcare product as well as provided guidance on its business plan design and development. Additionally, guest lecturers from industry provided instruction on business plan design and development, innovation, marketing and selling, and technology entrepreneurship. The objective of this study is to evaluate students and student teams/companies relative increase in entrepreneurial aptitude through the use of an entrepreneur pre-test and post-test as well as to determine the quality of the business plans produced by the teams as compared to project reports developed in spring 2011 data mining course, when students were not given direct instruction on teamwork and innovation. It is expected that the quality of the team projects in the technology entrepreneurship course will show relative improvement over those in the data mining course.

Applications for Quadrotor UAVs

Principal Investigator: Dr. Richard Kline
Co-Investigator(s): Keith McPherson

Department: Computer Science
School: Seidenberg School of Computer Science and Information Systems
Campus: NYC

Recent technological advances have made it possible for hobbyists to create home-built robotic quadrotor vehicles, also known as quadcopters or known more generally as "drones." In our work we have built a quadcopter using parts available from online hobby stores along with building plans and control software available online at no cost. We then built new software to allow remote control of the quadcopter over an ordinary "wi-fi" wireless connection to a laptop, taking input from handheld game controllers and rendering a virtual cockpit instrument display real-time on the screen. In the final development phase we are incorporating a second low-cost lightweight computer into the quadcopter to enable on-board processing and transmitting of advanced sensor inputs such as that from a video camera. In this work we also explore potential future capabilities of remote aerial vehicles as well as the recent controversial attention on drones in the public eye and the news media.

Challenges & Opportunities in Addressing Cyberbullying: Perspectives from a Major Metropolitan University

Principal Investigator: Dr. John C. Molluzzo
Co-Investigator(s): June F. Chisholm, James P. Lawler

Department: Information Technology
School: Seidenberg School of Computer Science and Information Systems
Campus: NYC

Concern about cyberbullying as well as the harmful effects on victims have been discussed in the literature and researched within child/adolescent populations for more than a decade. Within the past few years digital harassment incidents have occurred among older adolescents and college students. The authors present information on what has been reported in the literature and discuss the findings of a survey on the perceptions of students on cyberbullying at a major metropolitan university. From the findings of a survey distributed to all students, the authors learn of high levels of perceptions on incidents as an issue, but low levels of perceptions on institutional methods of response and sensitivity, at the university. This study will be beneficial to readers, as cyberbullying had been considered an issue more frequent in high schools than in colleges and universities.

Vertical Disintegration, R&D, and Firm Performance in the Semiconductor Industry

Principal Investigator: Dr. Namchul Shin
Co-Investigator(s): Kenneth Kraemer, Jason Dedrick

Department: Information Technology
School: Seidenberg School of Computer Science and Information Systems
Campus: NYC

The decoupling of integrated circuit design from the manufacturing process has created markets for design modules and stimulated the emergence of fabless firms. While the semiconductor industry is still dominated by large vertically integrated firms, fabless firms are gaining market share. Fabless firms are considered to be better able to innovate as they have greater focus in R&D than integrated firms and can benefit from R&D investments by their partners. However, there is little empirical understanding of the performance benefits of this new business entity. This research empirically examines the relationship between R&D and the performance of fabless and vertically integrated firms in the semiconductor industry by using the Electronic Business 300 data set and the Hoovers database for the eleven years from 2000 to 2010. Our results show that fabless firms earn higher gross profits and intangible value as measured by Tobin's q as a result of their R&D spending, compared to vertically integrated firms. However, the results are opposite for net margin and ROA: the impact of R&D on these two profitability measures is negative, and the negative impact is greater for fabless firms than integrated firms. These findings suggest that the impact of R&D on performance of fabless and integrated firms is mixed. By focusing R&D activity on chip design, fabless firms create higher intangible value and capture higher profits from their R&D spending, compared to integrated firms. However, such benefits may be negated by the relative size of R&D spending (the ratio of R&D to sales), so the returns to R&D as measured by net profits and ROA (bottom-line financial performance) are lower for fabless firms than for integrated firms.

Service-Learning Research

Principal Investigator: Professor Andrea S. Taylor
Co-Investigator(s): Jean F. Coppola, Catharina (Kitty) Daniels, Susan Feather-Gannon, Nancy Lynch Hale, Pauline Mosley, Andrea Taylor, Fey Obasa

Department: Information Technology
School: Seidenberg School of Computer Science and Information Systems
Campus: NYC

The IT faculty of Seidenberg School on both the Pleasantville and New York City campuses has a consistent and ongoing record of publishing and presenting at conferences throughout the United States on the School's highly successful service-learning courses. Faculty and a Seidenberg graduate assistant have joined forces to uncover what impact the service-learning curriculum has had from the students' perspectives, especially their attitudes toward volunteerism and technology. Results of pre- and post-study surveys taken by students in several service-learning courses within the Seidenberg School will be shared with fellow Pace colleagues.

CYBERSECURITY SCHOLARSHIP PROGRAM

Principal Investigator: Narayan Murthy
Co-Investigator(s): Li-Chiou Chen, Professor Andreea Cotoranu, Chienting Lin and Picheng Li

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Department: Office of the Dean
School: Seidenberg School of Computer Science and Information Systems
Campus: PLV

The program provides full scholarships for graduate and undergraduate students interested in studying cybersecurity. The project is funded by the National Science Foundation Scholarship for Service, and by the Department of Defense Information Assurance Scholarship Program. Scholarship recipients are required to enter the federal, state or local government workforce upon graduation. To increase diversity, the program is recruiting potential scholarship candidates from students currently enrolled in all disciplines at Pace, including computing, business, mathematics and criminal justice. In addition, the program is recruiting externally from Pace's academic partners. The program has four unique features. First, the program focuses on interdisciplinary training. Students in the program are advised to take courses in computing and in a second discipline, such as accounting or criminal justice. Such interdisciplinary training will allow students to apply their knowledge from the other discipline in conducting tasks related to cybersecurity. Second, the program focuses on hands-on training with a theoretical foundation. All of our cybsersecurity courses include hands-on laboratory exercises that allow students to obtain practical experience in addition to theoretical knowledge. Third, the program provides students with a faculty mentor for academic and career advising, in particular placement with the government. Last, the program enhances students' learning experience through extra-curricular activities including student competitions, research projects, and collaboration with industry. This scholarship program has increased the visibility of Pace University's cybersecurity programs nationally. The overall impact of this program is to extend cybersecurity education to students with broader backgrounds and to produce cybersecurity professionals for the government.

PACE CYBERSECURITY ACADEMIC PARTNERSHIP

Principal Investigator: Li-Chiou Chen
Co-Investigator(s): Faculty Participants, Andreea Cotoranu, Darren Hayes, Charles Tappert and Xiangdong Li

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Department: Office of the Dean
School: Seidenberg School of Computer Science and Information Systems
Campus: PLV

The Pace Cybersecurity Academic Partnership (PCAP) aims to establish a pipeline of candidates for Pace's cybersecurity program through collaboration with two-year colleges, and to contribute Pace's cybersecurity education and research experiences to student activities and faculty development in partner colleges. PCAP is funded by the National Science Foundation Scholarship for Service and the Department of Defense Information Assurance Scholarship Program, and supported by the Seidenberg School of Computer Science and Information Systems at Pace University. This project is conducted by Pace University (Pace) on both its campuses in New York City and in Westchester County, New York. The project includes six partner colleges: State University of New York (SUNY) - Rockland Community College (RCC), SUNY - Westchester Community College (WCC), City University of New York (CUNY) – New York City College of Technology (City Tech), CUNY - Borough of Manhattan Community College (BMCC), CUNY - Bronx Community College (BCC), and Passaic County Community College (PCCC), of which the latter four are minority institutions. This project includes a set of academic activities for both students and faculty from Pace and its six partner colleges. The proposed activities foster collaboration among the participating institutions, attract students to study cybersecurity, and provide faculty with development opportunities in the cybersecurity area. These activities include student workshops, collaborative research teams, faculty development workshops and a faculty collaborative working group.

FINANCIAL TRADING SIMULATIONS WITH COMPUTER SECURITY RELATED RISKS

Principal Investigator: Li-Chiou Chen
Co-Investigator(s): Professor Andreea Cotoranu Lixin Tao and Padma Kadiyala

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Department: Office of the Dean
School: Seidenberg School of Computer Science and Information Systems
Campus: PLV

The project investigates the impact of computer security related risks on the outcomes of financial trading, one of the most important financial services in the nation. Financial services have been an integral part of the national cybersecurity strategy. In December 2010, the Obama Administration released a Memorandum of Understanding (MOU) signed by the National Institute of Standards and Technology (NIST) of the Department of Commerce, the Science and Technology Directorate of the Department of Homeland Security (DHS/S&T), and the Financial Services Sector Coordinating Council (FSSCC). The goal of the MOU is to leverage their joint cybersecurity efforts in order to secure critical financial services. The May 6, 2010 Flash Crash in the financial markets underscores the importance of the integrity of the computer systems that facilitate electronic trading. Until the advent of electronic trading, the New York Stock Exchange and the NASDAQ Stock Market relied on market makers and dealers to ensure the smooth functioning of markets. However, the role of these intermediaries is increasingly being replaced by automated systems designed for algorithmic trading. The integrity of the algorithms and of the computer systems involved in the process of trading are paramount in ensuring that capital markets function smoothly. Therefore, the risks involved in the financial trading include not only financial risks but also technological risks. This project aims at investigating the impact of the technological risk on financial trading and on trader behavior. It does so through financial trading simulations conducted on an experimental platform called Web Application for Financial Trading Simulation (WAFTS). This project has three goals: 1) to develop a Web Application for Financial Trading Simulation (WAFTS) to support experiments, 2) to train students in computer security classes to secure a web based financial application using WAFTS as a platform for computer security testing exercises, 3) to use WAFTS in financial trading classes and investigate how traders behave during the financial trading simulation exercises in the event computer security risks occur.

Open-Source IT Support for Effective Social Entrepreneurship

Principal Investigator: Professor Lixin Tao

Department: Computer Science West
School: Seidenberg School of Computer Science and Information Systems
Campus: PLV

To better support its mission, a non-profit organization needs to effectively reach out to the public, collect information and opinions form the public, support effective brainstorming and discussions, implement effective business processes for non-profit operations, and support effective governance of the organization. The latest information technologies have provided better alternative for non-profits to run smoother and more effectively.

In this paper we conduct a critical study of two popular open-source contents management systems, Drupal and WordPress, introduce Drupal to social entrepreneurs, and explain how it can support most of the tasks outlined above. Specific guidance is provided for setting up an organization's public website that supports smooth communications and effective governance. This paper also outlines a PHP and Ajaz based real-time information sharing system which can be adapted to support various forms of fast data sharing and brainstorming for organization members through the Internet.

Integrated Syntax and Semantic Validation for Services Computing

Principal Investigator: Professor Lixin Tao
Co-Investigator(s): Steven Golikov

Department: Computer Science West
School: Seidenberg School of Computer Science and Information Systems
Campus: PLV

Valid XML documents are critically important to services computing. The service requests are often in form of XML documents. Web services, the basic communication technology for service access and new service integration based on the existing distributed and heterogeneous services, are based on XML dialects SOAP and WSDL [2]. The service consumer and provider must use the same XML dialect so they could understand each other. An XML dialect specifies the syntax of a class of XML (instance) documents including the supported tag names, element nesting, the supported attributes, and the basic element and attribute data types. DTD and XML Schema (XSD) [2] are the standard schema languages to define XML dialects. XML validating parsers, based on either the SAX or DOM framework, can be used to validate whether an XML instance document satisfies the syntax constraints specified in a DTD or XML Schema document. But in services computing, there are many semantic constraints or co-constraints among the components of an XML instance document that cannot be specified by DTD or XML Schema. For example the value range of an element in an electronic medical record may depend on whether the record is for a male or female patient, and the sales tax rate in an e-commerce transaction depends on the state value for the transaction. Schematron **Error! Reference source not found.** is a popular rule-based XML dialect that allows us to specify such co-constraints for a class of XML documents and then use a standard Schematron validator to validate the co-constraints without coding. Over the past decade, the standard implementation [5] of the Schematron validator is to use a standard XSLT style sheet to transform a Schematron document into a new validator XSLT style sheet, and then use the latter to validate the XML instance documents. Separate Syntax and Semantic Validations May Not Be Valid One important observation of the above XSLT-based implementation of Schematron validation is that it completely separates semantic validation from syntax validation. Now we use a simple counter example to prove that such separate validations may lead to invalid semantic validation results because the information in an XML instance document also includes those defined in the DTD or XML Schema syntax specifications. In this research we integrate the syntax and semantic validations through a DOM tree **Error! Reference source not found.** which is the output of the DOM-based syntax validation and the input of the XPath-based Schematron validation, as shown in Figure 1.The DOM validating parser is first used to validate the XML document against its syntax specification in the DTD or XML Schema document, and all information in the XML and DTD/XSD documents is represented in the resulting DOM tree to the left. The same DOM validating parser is also used to validate the Schematron document against the Schematron's XML Schema specification to ensure that the former is a valid semantic constraint specification, and the resulting DOM tree to the right represents the Schematron document. Both of the two DOM trees are fed to our new XPath-based Schematron validator for semantic constraint validation. In addition to potentially invalid validation results, the XSLT-based Schematron implementation also has several additional drawbacks: (1) the validator result is for people to read thus the validator cannot be easily integrated with other system components; and (2) its functions are limited by the XSLT's limitations and the latter was not designed for supporting semantic constraint validation. Our integrated validator is designed as a reusable software component based on DOM Level 3 XPath **Error! Reference source not found.**. It supports all key features of Schematron ISO **Error! Reference source not found.** including abstract rules and abstract patterns, network integration through web services, and event-driven loose-coupling. Most importantly, this research provides an open-source framework which serves as a test-bed for new co-constraint types and their efficient validation.

QKD Simulator

Principal Investigator: Dr. Ronald Frank
Co-Investigator(s): Sam Aybar, Richard Harrison, Inti Sairitupa, Jay Thomas

Department: Information Technology
School: Seidenberg School of Computer Science and Information Systems
Campus: PLV

We demonstrate a Quantum Key Distribution (QKD) Simulator.

The simulator is aimed at classroom or individual use as a learning aid. It is used to experiment with the Quantum Key Distribution algorithm and process which generates a symmetric one-time-pad (OTP) key in an asymptotically secure way. A OTP is the only known unbreakable cypher. The OTP weakness like all other methods is the security of the distribution of the keys. QKD finds an eavesdropper with a probability that increases exponentially with bit length.

The process uses quantum phenomena, here just simulated. It employs an algorithm and a GUI which we implement in Java. They enable large scale experiments with ease. The experimental regime allows experimenting with or without an "Eve" (a man-in-the-middle eavesdropper). This enables the user to verify the asymptotic approach to security which characterizes QKD.

The original command-line oriented code was developed by Dr. Ron Frank for his annual DPS QKD lecture. The code was updated with a GUI and a results archive by the students listed below as their project in IT 691 (Dr. Tappert). Dr. Frank was their "customer".

Verifying the Identity of Online Test Takers

Principal Investigator: Dr. Charles C. Tappert
Co-Investigator(s): Andreea Cotoranu, Bernice Houle, and Vinnie Monaco

Department: Computer Science West
School: Seidenberg School of Computer Science and Information Systems
Campus: PLV

Verifying (authenticating) the identity of students taking online tests is an application that is becoming more important with the student enrollment of online classes increasing, and instructors and administrations becoming concerned about evaluation security and academic integrity. The 2008 federal Higher Education Opportunity Act (HEOA) requires institutions of higher learning to make greater access control efforts for the purposes of assuring that students of record are those actually accessing the systems and taking online exams by adopting identification technologies as they become more ubiquitous. The Coursera online course provider is currently using keystroke dynamics to authenticate online test takers. Over the last eight years the Seidenberg School of CSIS has developed a robust biometric authentication system that operates on keyboard and mouse input. The system is based on the students' keystroke dynamics, mouse movements, and linguistic style. The system captures the keystroke timing information (key press durations, key-to-key transition times, etc.), mouse activity information (mouse clicks, mouse trajectory curvature, velocity, acceleration, etc.), and linguistic style (word usage, syntax, punctuation, etc.). These characteristics are considered unique to an individual and difficult to duplicate. A preliminary test of the system was successfully performed on 30 students taking a sequence of four tests in a course at Lake Erie College as part of a Seidenberg "Doctor of Professional Studies in Computing" dissertation study. For a class of 30-40 online student test-takers keying in 50 or more words in an essay or in a set of short-answer questions, the system has the capability of authentication students with an accuracy of over 99%. For system enrollment each student is required to enter a sample of text used for training the system. This would typically be done at the beginning of the semester where, for example, the student could be requested to answer questions like: Why are you taking this course?, What do you hope to learn from this course?, etc.We are interested in finding Pace faculty interested in piloting the system to authenticate students in their online courses. So that the biometric information can be captured, we are also interested in determining the preferred method for launching the online test – link in Blackboard, etc.

Administration

SECURITY AND SUPERVISION OF THE CITY IN 5 YEARS

Principal Investigator: Dr. Victor Goldsmith

Department: Office of the Provost
School: Administraion
Campus: NYC

The recent use of new technology and methodology in fighting crime, especially in New York City (NYC), and to a lesser extent in other portions of the United States (U.S.), has resulted in dramatic crime reductions and decreases in prison populations in these areas. For the future, there are already new technological methods and strategies that will build upon the data gathered in the last 10 years or so, that will only enhance the analyses of these trends. In NYC, and elsewhere the technological tools that are in current use are: more advanced computer mapping, CCTV cameras, data base development and statistical analyses as to place and time. The detailed results of these efforts are displayed in this talk, such as the use of crime ‘‘hot spot’’ identifications and targeting. This, despite concomitant reductions in the NY Police Force, and in the funding needed to fight crime. In the next 5 years, NYPD will be enhancing the various mapping and data base computer tools, making them compatible with each other, and in this way, develop the new ‘‘Domain Awareness System,’’ a partnership between NYPD and Microsoft, from which both sides hope to profit by applying the working system to other areas. This new system mines data from the Police Departments’ arrest records, 911 (emergency calls), more than 3,000 city wide security cameras, license plate readers, and rapidly assembles it into an easy to use form.

Counseling Center - NYC

Principal Investigator: Dr. Richard Shadick
Co-Investigator(s): Brian Petersen, PsyD, Heather Dawson, PhD, and Jessica Thomas

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Department: Counseling
School: Administration
Campus: NYC

The Counseling Center in NYC has examined Pace University first year student rates of suicidal ideation and attempts using the CORE Survey. Demographic variables were used to identify which groups of students have the highest rates of suicidal ideation. Initial analyses over the 4 year period of study indicated that LGB students have higher rates of suicidal ideation but not suicide attempts compared to their heterosexual students. This parallels national data. No other differences on demographics were found. Results suggest that LGB students have greater levels of stress or limited coping skills perhaps due to the coming out process or levels of support for them in the transition to college. This data supports the need for an on-campus LGBT Center and resources

Undergraduate Student-Faculty Research Program

Principal Investigator: Dr. Susan L. Maxam

Department: Center for Academic Excellence
School: Administration
Campus: PLV

During the 2011-2012 year, the Division for Student Success created a pilot program which paired undergraduate students with a faculty mentor in their chosen discipline to carry out a research project. This program, conceived by then Interim Provost Feldman and fully supported/funded by President Friedman, was designed to enrich students' academic experiences and challenge them to strengthen their critical, analytic, research, and writing skills. At the same time, it dovetailed with Pace's Strategic Plan, which calls for increased opportunities for undergraduates to undertake research and scholarship with faculty as a means of promoting academic excellence in all disciplines across the institution. Provost Sukhatme expanded the program for the 2012-2013 academic year and a university-wide team of faculty members (from every school/college within Pace) vetted 130 applications for 27 paired-slots. (The same team reviewed 60 applications for 15 paired slots last year). Students and faculty from Dyson, Lubin, Seidenberg, School of Education, and the College of Health Professions and have all been represented both years, with some teams being cross-disciplinary. This initiative has proven transformative to both students and their faculty mentors. This poster session will highlight the various aspects of the program as well as answer questions about the application process and plans for the upcoming year.

Creating an Inclusive Collegiate Learning Environment for Students on the Autism Spectrum: A Participatory Action Research Study

Principal Investigator: Dr. Susan L. Maxam

Department: Center for Academic Excellence
School: Administration
Campus: PLV

Despite the growing number of students on the autism spectrum in postsecondary institutions around the nation, there is a paucity of literature dealing with issues and interventions related to creating inclusive, collegiate learning environments from the perspectives of both faculty and these students. Therefore, this study sought to gain a deeper understanding of the unique needs and challenges of students on the autism spectrum at Pace University as well as those of the faculty teaching them so that together, they would propose a comprehensive set of recommendations aimed at creating a more inclusive learning environment. To answer these questions, a participatory action research (PAR) study was conducted which primarily involved group dialogue and participant observation. Purposive sampling strategies were employed and included full-time and adjunct faculty teaching at the institution as well as students on the spectrum attending the institution. The two faculty and student groups met separately throughout the semester with information from each group being shared with the other, allowing them to build off of each others' ideas. This allowed for a variety of perspectives and ideas to be explored and with minimal (if any) discomfort on the parts of the student or faculty participants. At the end of the study, the participants prepared a summary of their joint needs, challenges and recommendations.