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Optimizing Water Use Efficiency using “SMART” Sensors and Controllers

According to the California Water Plan Update 2005, Californians used about 2.9 million acre feet of water to irrigate landscape, parks and golf courses. The potential for water conservation in the landscape ranges from 400,000 to 600,000 acre feet per year through improved hardware design and management. One approach of achieving this goal is to use “SMART” controllers and sensors as part of a Feedback loop irrigation system to deliver water on “DEMAND” based on plant water requirements.

In collaboration with the Irrigation Association (IA) and water purveyors, the Center for Irrigation Technology (CIT) been conducting research aimed at improving residential irrigation water use efficiency. First, we review research on developing standards and protocols to evaluate the accuracy, reliability and repeatability of commercially available soil moisture sensors under various salinity, soil types and temperature conditions. Then, we discuss potential opportunities for applied research which make these data available in real time on the web, so that monitoring and control can be done remotely via PDA's/Laptop or cell phones. The accuracy and reliability of soil moisture sensors evaluated to date appear to be dependent on soil textural classes.

For example, a Time Domain Transmissivity (TDT) based sensor had high correlation ($r^2 = 0.89$ to 0.99), between measured and predicted moisture water contents measured for various temperatures and salinity levels in medium and coarse textured soils. Also, the use of soil moisture sensors or Evapotranspiration (ET) based controllers with feedback loop has the potential to give the end users better control over irrigation management as water was applied only when needed. For example, a system has been designed to prevent freeze damage in citrus crops by incorporating the micro- sprinklers within the crop canopy using a Supervisory Control and Data Acquisition (SCADA) system.

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Quantification of Volatile Fatty Acid Emissions from California Dairy Facilities

Dairies are a major source of volatile organic compounds (VOCs) in California's San Joaquin valley; a region that experiences high ozone levels during summer. Short-chain carboxylic acids, or volatile fatty acids (VFAs), are believed to make up a large fraction of VOC emissions from these facilities. Emissions from dairy facilities can be divided into two categories: enteric sources and non-enteric sources. Non-enteric sources were the focus and these include all sources that are not generated by microbial fermentation within the digestive system that are eructed or exhaled by the animals themselves.

In this work, non-enteric sources were sampled from four different sites common in a typical dairy. The sites included the silage piles, total mixed rations (TMR), the open lot, and the flushing lanes. The animal feed and animal waste are located at these sites. In this work, a method using a flux chamber coupled to solid phase microextraction (SPME) fibers followed by analysis using gas chromatography-mass spectrometry was developed to quantify emissions of six VFAs (acetic acid, propanoic acid, butanoic acid, pentanoic acid, hexanoic acid and 3-methyl butanoic acid) from non-enteric sources.

The peak area obtained from the field sample analysis was determined from linear calibration curves. Acetic acid is the dominant VFA measured, with emissions that are 1-2 orders of magnitude higher than the other monitored VFAs from all four sources. The highest fluxes were observed from silage with lower emissions from TMR. While a direct comparison between fluxes measured in different studies is complicated by differences in climate and facility management, some tentative conclusions can be drawn. The total flux of non-enteric VFA emissions calculated for Dairy C (18 pounds.cow-1.year-1) is about 2.5 times higher than the 7.3 pounds.cow-1.year-1 estimated by the San Joaquin Valley Air Pollution Control District. Part of the reason for this is that the SJVAPCD estimate only considers emissions from animal waste and does not include emissions from feed.

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**People's Self-Reference Label during Inner Speech:
Another Outlook for Psycholinguistics**

Humans think to themselves using inner speech a covert subvocalization in the mind. Young children use private speech to aid themselves in different tasks. Most people use a specific self-reference label (srl) (e.g. you, I, or a first name) within their inner speech. This research was conducted to determine what individuals use for their srl. The participants in the study consisted of three female and five male undergraduate students, three full-time employed males, two full-time employed females, and a homemaker, all between 19 and 35 years old (n=14). The apparatus used were a sports water bottle, two plastic cups, and three poem templates. The templates were short poems, one each of first, second, and third person perspectives. The experimenter used random assignment to assign one template to each participant. Each participant read one short poem, poured a drink of water and drank it, and was interviewed using the author's questionnaire about their inner speech. The results revealed that 64% of the participant used a first-person srl, .07% used third-person srl, 0% used second-person srl, and 28% used a later discovered fourth-person srl (i.e. something other than a 1st, 2nd, or 3rd-person srl).

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A new approach to facilitating System Integration (SI): Case study through the development of a food processing and packaging automation laboratory

A new approach to facilitating System Integration (SI) was studied through a case study. SI is the process of designing and developing a new system from a range of basic elements, entities and tools conforming to different standards. System integrators face challenges because a wrong selection-decision at the planning stage of a project can result additional investments during the design and development phase. The situation is complex while developing industrial automation systems because the integrability indices amongst the automation entities are apparently low. A simple semiconductor based analog to digital converter as well as a complex robotic platform including the software and logics must be integrated synergistically in order to produce a complete system that would be able to perform the global task. The complexity increases even further when the requirement changes while the system is in operation. So, the study of SI was important.

The approach is based on a Distributed Control Strategy that constitutes an Interfacing Layer (IL) between the available entities and the global requirements. We took food processing and packaging automation system as an exemplar target application. Bearing in mind that such a system is complex because it consists of multiple drives, actuators, sensors, switches, robotic systems, inspection system, quality control platform, traceability infrastructure, data logging and interfacing, we started analyzing the system closely and concluded to introduce a middle layer that can facilitate the design, development, and implementation more efficiently. We used LonWorks, a fieldbus to validate our thought.

Note that almost all central valley food industries use traditional PLC based centralized scheme. The proposed interfacing layer that facilitates integrability can be best realized by using the fieldbus type systems. We are still investigating whether or not a dedicated fieldbus layer could be designed for the food plant operation and management.

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Role of Demographic Factors in Determining Acculturation Strategies among Asian-Indian Immigrants in the United States

Introduction

This present paper is an attempt to understand the issues of acculturation and its effects on psychosocial functioning among Asian Indian immigrants in the United States. This study will specifically look at first generation Asian Indian immigrants living in the Bay Area and Central Valley regions of California. The main goals of the study are to explore ways in which this community deals with cultural adaptation or acculturation, the acculturation strategy that is most used by members of the community and how it might affect a person's psychosocial adjustment. The relationship between certain demographic variables such as lengths of residence, age and gender to the acculturation process are also assessed.

Methodology

The present study uses three self reported scales to measure the levels of acculturation, psychological and social functioning among first generation Asian Indian immigrants in the Central Valley and Bay Area regions in California, U.S. The unit of analysis is the individual. About 100 surveys were sent out. Out of the 100 sent, 46 people responded. Both convenience and snowball sampling methods were used to arrive at the group of people to whom these surveys were distributed. Surveys were sent out by regular mail as well as electronically. People were also recruited through the Asian Indian clubs and organizations in Fresno and San Jose. The research design is non experimental and uses quantitative methods to analyze the data collected.

Results

The findings provide us with significant information on the acculturation strategies used by Asian Indians depending on certain demographic factors and how it impacts their psychosocial functioning. It was also found that consistent with other studies, the majority of participants (76%) in this study preferred the bicultural (integration) mode of acculturation. Age was found to be positively correlated with improved psychological functioning. A significant negative correlation was found between integration and that of levels of depression, anxiety and stress. A statistically significant negative correlation was found between integration and the levels of difficulty in social functioning.

Conclusion

The findings of this study provide support for a number of studies that have been done in the past with Asian Indians. It was seen that the majority of respondents in this study preferred to use the integration acculturation strategy which is consistent with previous findings. Secondly, it was seen that lengths of residence were important in the selection of acculturation strategies. It was found that longer lengths of residence were related to the use of integrated styles of socialization and also to better psychological and social functioning. .

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Non-operative treatment of medial epicondyle fractures in adolescents

Introduction: The treatment of medial epicondyle fractures of the elbow is controversial. The purpose of this paper is to report the outcomes of patients treated non-operatively with a cast or splint.

Methods: The charts and radiographs of 24 patients treated with a cast or splint for a medial epicondyle fracture were reviewed. Six patients were lost to follow up or had less than 6 months follow up and were excluded from the study.

Results: 18 patients were included in the study. The average age was 11 years (range 5-17). 13 were male and 5 were female. 10 right elbows and 8 left elbows were injured. Nine patients (50%) had an elbow dislocation in addition to the medial epicondyle fracture. After the elbow was relocated, the average number of days immobilized in a cast or splint was 15. The average displacement of the medial epicondyle fragment was 7 mm (range 4-25 mm). No fracture healed by x-ray. All cases resulted in a fibrous non-union. 3 patients (16%) had a re-injury and demonstrated medial elbow instability. One patient had two additional episodes of instability. The average range of motion at final follow up was 20 to 126 degrees. Six patients (33%) lost more than 20 degrees of extension. Only 3 patients regained equal motion compared to the opposite elbow.

Conclusions: Non-operative treatment of medial epicondyle fractures in adolescents resulted in stiffness in one-third of patients and instability in 16%. No fracture treated with a cast or splint healed by x-ray. Fibrous non-unions occurred in all cases.

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Indonesian-English Mixing and Hybridization in Media Discourse: A Study of Indonesian Adolescent's Magazines across Time

Since the introduction of English to primary school students in Indonesia began formally in 1994, English has been more and more employed in Indonesian media especially those for adolescents. However, this issue has never been researched extensively. Thus, this study describes changes in the way English was used in “Aneka” magazine, one of the top ten magazines in Indonesia which is designed for boys and girls between 12 to 24 years of age. Three issues from three different years (1996, 2003, and 2007) were quantitatively and qualitatively analyzed to see changes in the way English loanwords, English words/phrases/sentences and hybrid forms were used.

First of all, the total number of words and articles in each magazine were counted. Magazine 3 (2007) has the largest number of articles (N=34) and Magazine 1 (1996) has the largest number of words (N=21488). Then, the percentage of English loanwords and English words were compared based on the total number of words in the articles. The results show that the use of English has been shifting from English loanwords to the use of English words. There was also a clear pattern of the increasing use of English phrases and sentences across time. Since the copywriter relied more on English phrases and sentences to convey the meanings, the use of hybrid forms was decreasing over time.

Quantitatively, the English words, phrases and sentences used in Magazine 3 (2007) also had higher level of linguistic complexity, compared to the previous two magazines. The copywriter started to use low frequency words, idioms and slang as the magazines were becoming more recent. As for hybrid forms, there was also a change of trend from mixing Indonesian + English in lexical level to a more complicated type: creating new local English expressions.

The increasing use of English can be interpreted in two ways. First, Indonesian-English bilinguals have grown rapidly in both number and proficiency recently. Second, the use of English expressions is related to the fact that English has expanded as a sign of modern identity among the Indonesian bilingual adolescents. In addition, the hybrid forms appear in the data reflected the gradient use of English and Indonesian. For that reason, rather than assuming the two languages as two distinct dichotomy codes, the hybridization must be perceived as a dynamic continuum.

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Comparison between Urban and Rural Tardigrade Communities

In researching urban tardigrades, it has been postulated that there may be a difference in tardigrade diversity and density in comparing urban and rural populations. If this is found to be true, different factors in the environments such as air pollution, development, etc., may influence this. With this, researching these different environments is important in understanding tardigrades and their distribution. In accordance with the National Science Foundation Tardigrade Research Grant, this study will also help supplement ongoing research.

Research has been conducted in different rural and urban sites in Fresno County, California, in order to measure this hypothesis. Multiple sites that are essentially urban have been collected from as well as a control rural site in order to measure the differences. Following collection, the samples are processed, tardigrades are collected, and they are made into slides. Keying them to species is essential in measuring the diversity of the two different environments, as this is what determines the results.

Once all the information has been presented, statistical data from the different sites will be compared through separate species area curves. The analysis of these curves will be presented. In doing this, we can measure if there is a difference in diversity. We can also measure if different environmental factors really do have an affect on the diversity of tardigrades.

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Impact of Amendments on Physical and Chemical Properties of Soils Irrigated with Saline-Sodic Drainage Water

Re-use of saline-sodic drainage water (DW) for the irrigation of salt tolerant forages and row crops is an important tool for salinity and drainage management on the Westside San Joaquin Valley of California. Proper irrigation management and on-going soil reclamation are needed to ensure the sustainability of these DW re-use systems now called Integrated On-Farm Drainage Management (IFDM). The IFDM system at Red Rock Ranch uses good quality canal water (electrical conductivity (EC_w) = 0.3ds/m) to irrigate high value crops in Stage-1, collects the Stage-1 DW and re-applies it successively to Stage-2, Stage-3 and Stage-4 with progressive increases in salinity levels of the DW reaching an average EC_w of 12.9ds/m when applied to Stage 4. The sodic nature of this DW can cause clay dispersion and reduce infiltration and hydraulic conductivity (K) of soils. The objective of the current research was to assess the impact of three amendments (sulfur, gypsum and poultry manure) on the physical and chemical properties of these salt-affected soils. The amendments were applied twice a year starting in Fall 2006. Unsaturated hydraulic conductivity (K) rates were compared for tensions of 0.5, 2 and 6 cm obtained using mini-disk infiltrometers. Soil samples were analyzed for pH, saturated paste electrical conductivity (EC_e) and sodium adsorption ratio (SAR).

Results from the three amendment applications completed to date indicate general increases in K for the soils in Stages 3 & 4, although these values were not statistically significant. There has been no significant change in pH with values ranging from 7.95 to 8.4. Soil salinity ranged from 15-30ds/m EC_e in Stages 3&4. The SAR values dropped significantly (P = 0.1) in amended plots in both Stages 3&4 which would be indicative of a positive effect of the amendments. A final round of infiltration measurements in April 08 should better reflect the overall effect of these amendments in saline-sodic soils.

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Investigation of Field Performances of Advanced Fiber Composite Fabrics in Infrastructure Application

The use of high-strength fiber reinforced polymer (FRP) composites in infrastructures is now a commercial reality. In this paper, the performance of an advanced fiber composite fabric is investigated after almost eight years of use (i.e., since fall of 2001) in a bridge rehabilitation project.

In 2001, the KY3297 Bridge over Little Sandy River in Carter County, KY, was repaired using advanced fiber reinforced polymer (FRP) composites. The bridge was deteriorating at an alarming rate due to a lack of carrying capacity in shear in the several of the main supporting bridge girders. To repair and partially restore the bridge, which at that time had only being in service for less than 10 years, an advanced FRP composite was selected over more traditional repair materials. The repair cost \$105,000, compared to the estimated replacement cost of \$600,000.

To assess the field performances such as its effectiveness and durability of the installed system, crack gauges were installed and visual inspections of the system were carried out. The crack gauges allow direct measurement of crack movement or propagation. Visual inspections allow monitoring of system defects such as de-lamination of FRP composites from concrete surface, formation of undesirable air pockets or bubbles between layers, and localized damage and/or rupture of the FRP system.

The rehabilitation of the bridge was completed in October 2001. Since then constant inspections are being carried out. Based on the latest round of inspection, no crack movement or propagation has been observed. In addition, none of the aforementioned defects or imperfections had occurred as the system remains intact. This implicates that the performed retrofit was a success and the selected system of retrofit is a viable one. The bridge, which initially had an estimated remaining life expectancy of less than three years, is now expected to last at least twenty years or longer.

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Reduplicative Pig Latin

This study examines a novel variety of the English ludling (or language game or secret language) known as Pig Latin. In Pig Latin (PL), words such as 'be' /bi/ and 'on' /an/ are transformed into the alternate forms 'e-bay' /i.be/ and 'on-yay' /an.je/ respectively. The original rime is trailed by a PL specific morpheme having a CV form, with V being a fixed vowel /e/ and C being variable depending on the initial onset of the target.

Most of the phonological literature report dialects of PL where the PL morpheme is applied exclusively to lexical targets ('ambush'->'ambush-yay'). The consultant in this study spoke a variation where the minimal prosodic word as the target of the ludling resulting in multiple copies of the PL morpheme in words with more than one prosodic foot ('ambush'->'am-yay ush-bay'). All data was collected from a single consultant using a variety of elicitation methods; our sample consists of single words and phrases produced both in isolation and extracted from sentences.

We argue for a reduplicative account of PL where the target of the morpheme is copied and truncated while collaboration between the necessity of having an onset for the PL morpheme and a strong prohibition against alliteration between the PL morpheme and the target force the deletion of word-initial consonants. The account is composed within a framework of parallel Correspondence Theory (McCarthy and Prince 1995) As in Optimality Theory (McCarthy and Prince 1993); violable constraints are ranked hierarchically in order to determine the best possible output from an infinite list of candidate outputs. Care was taken to select only constraints that are attested. The constraints were then ranked in the order that we feel best explains the largest number of tokens and would require a minimum of rearrangement to capture all outputs observed for words with variable output forms.

The constraint hierarchy we champion crucially involves Onset(PG), a constraint requiring the PL morpheme to have an onset, and a version of *Echo, a constraint that prohibits identical copies, ranked above Max-IO, a constraint that prohibits deletion in the output. A series of constraints then control the selection of the target for the PL morpheme; the manipulation of which can produce other attested varieties of PL.

Although the constraint hierarchy used captures the majority of the data, there are a number of outputs that are inconsistent with the proposed constraint ranking. Most of the problems seem to be the result of highly mobile constraints that result in the appearance of alternate outputs for a particular word that make construction of a definitive ranking scheme difficult. However, there are outputs for some words that seem to be unreachable by the incarnation of Correspondence Theory used here and present theoretical problems for our account.

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Higher-Mode Effects in Lead-Core-Ruber Base Isolated Multi-Story Steel Buildings Subjected to Near-Field Excitations

In this paper, a performance of nonlinear lead-core-rubber base isolators (LCR) to control highly-nonlinear vibrations in steel buildings is evaluated. Bouc and Wen equations are used to model the behavior of the lead-core part of the isolator. The members of buildings whose inter-story displacements have yielded are analyzed using a highly-nonlinear material model. The stiffness in the members degrades smoothly following the constitutive rule that was developed to assess the behavior of kinematically strain-hardened materials under cyclic conditions. The control ability of LCR is demonstrated numerically using an algorithm developed and called BISON (Base ISolation in nONlinear time-history analysis). A two story isolated building is excited by an El Centro ground motion and by a non-stationary ground signal used as a near-field excitation. Hysteretic and time-history of an eight-story isolated building that responds at higher-modes of vibration (HME) are analyzed. Two parameters of the isolator which are the total yield force of the isolator and the pre-yield to post-yield stiffness ratio of the lead -core component are varied in order to study the influence of these two parameters to the higher-modes of vibrations of the building. It is found that the inter-story vibrations in the two-story building under El-Centro excitation are very adequately controlled. However, the displacement and velocity demands under near-field conditions are not significantly reduced.

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Glucose Alters Plasma Ghrelin Levels and Its Receptor in the Brain in the Tilapia, *Oreochromis Mossambicus*

Ghrelin (GRLN), a novel stomach peptide, is the endogenous ligand for ghrelin receptor (GHS-R1a and GHS-R1b). We have shown that GRLN has a stimulatory effect on growth hormone (GH) release from the pituitary in addition to stimulating feeding in the tilapia, *Oreochromis mossambicus*. Reports in mammals have shown that GRLN plays a role in glucose metabolism and conversely, glucose regulates plasma GRLN levels. We have preliminary evidence that GRLN stimulates the release of glucose from cultured liver cells. The current study was conducted to investigate the effect of a single injection of glucose (2 mg/g body weight) on GRLN plasma levels and on the growth hormone/insulin-like growth factor-I (IGF-I) axis in the tilapia. Six h post-injection, plasma was collected for the measurement of GRLN, GH, and IGF-I levels as well as liver for mRNA expression levels of GH-R and IGF-I, stomach for ghrelin mRNA expression, pituitary for GHS-R1a mRNA expression, and brain for GHS-R1b, GHS-R1b, and NPY mRNA expression. Glucose treatment significantly increased plasma GRLN levels but did not alter stomach GRLN mRNA levels. GHS-R1a mRNA levels in the pituitary and brain were significantly elevated while GHS-R1b was not; NPY was not altered significantly in the brain as well. Despite an increase in the levels of GRLN in the plasma and GHS-R1a in the pituitary and brain, plasma GH levels were not altered after glucose treatment.

However, glucose significantly reduced plasma IGF-I levels, but did not alter liver mRNA levels of GH-R and IGF-I. These data suggest that an elevation in blood glucose, which occurs naturally during fasting, is one of the metabolic signals that lower blood IGF-I levels and inhibits growth while at the same time signaling the animal to feed.

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Original Picturebooks and Houghton Mifflin Anthologies: A Comparative Analysis

Houghton Mifflin’s reading program—A Legacy in Learning—provides student anthologies for each grade level beginning with first grade. In the first- through fourth-grade anthologies, picturebooks comprise the majority of story selections. Houghton Mifflin refers to these picturebook selections as “authentic literature” because they are written in the author’s original language and can be found in a library in their original format. In spite of the publisher’s claim, the layout of the original picturebooks differs significantly from the story selections in the Houghton Mifflin anthologies. As this study demonstrates, there are several instances where two or more pages of original text are compressed onto one page, and many essential illustrations are deleted.

In order to determine the extent of the alterations to the original picturebooks, the content of each selected picturebook has been analyzed and contrasted with the corresponding story in the respective anthology. The analysis involves four areas: textual layout, font, illustrations, and peritextual features. As this study demonstrates, the alterations to the original picturebook selections in the Houghton Mifflin anthologies are significant. These alterations have not only changed the author’s and illustrator’s original intent thereby reducing the authenticity of the selections, they may have also negatively affected the reading experience—especially for beginning readers, struggling readers and English language learners—by removing the visual support that can be used to make predictions and inferences, analyze characters and settings, and aid in comprehension.

In 2002, Houghton Mifflin received 80% of the market share for California’s textbook adoption; therefore, a significant number of children are reading these abridged picturebooks instead of having access to genuine “authentic literature.” Even though the students in California are being exposed to a variety of literature through this reading program, the richness of the literary experience has been compromised.

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An Educational Program for Older Adults: Medication Management/Preventing Falls

Falls are prevalent in the older adult population. In fact, 33-50% of people over age 65 are thought to suffer a fall each year (Reddy, 2006) and according to The National Center for Injury Prevention and Control, it is estimated in 2002 over 12,800 elders > age 65 died due to falls (CDC, 2006). A medication regimen that consists of multiple medications can cause an increase in side effects (Prince, Goetz, Rihn, & Olsky, 1992). Adverse drug reactions of medications are a contributing factor to falls (Miller, 2002). Therefore, "The likelihood of [adverse drug reactions] rises with an increase in the number of medications taken." For example, if an older adult is taking eight medications, this increases his/her risk of having an adverse drug reaction to 100% (Curry, Walker, Hogstel, & Burns, 2005).

Assessment of a medication regimen will reveal the possibility of some risks of falls among the older adult population such as: adverse drug reactions if the older adult is on many medications, and a knowledge deficit of their own medications (i.e. not knowing why they are taking a particular medication). One way to address the issue of falls related to medications is through education regarding medication management.

The issue of sufficient medication management will be addressed amongst a group of older adults (>65yrs of age) who are participants of the current Fall proof program, a program designed to reduce falls in seniors. A series of classes comprised of information concerning: common medications used by participants related to falls (i.e. heart medications), their purpose and side effects, biological and physiological changes occurring in the elderly, and ultimately a tool that will serve the purpose of easier medication management.

Older adults need to be informed of the side effects of their medications, biological and physiological changes occurring in the elderly, and management of medications. These topics are of great interest since they all can keep the older adult informed (Curry, Walker, Hogstel, & Burns, 2005). The goal is to inform and ensure that older adults understand their own medication regimen (including understanding why they are taking a particular medication, side effects) so that ultimately falls amongst the older adult population will significantly decrease.

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The Identification of Brachyuran Megalopae of the San Francisco Bay Estuary

In 1992, the Chinese mitten crab, *Eriocheir sinensis*, was discovered in the San Francisco/Delta system. Since its invasion, the Chinese mitten crab has become a nuisance species. If population explosions can be predicted, preparations can be made for the negative effects caused by the down stream migration of mitten crab juveniles. Year-class strength of juveniles may be predicted by megalopae abundance, in correlation with temperature, salinity and tidal currents. Megalopae abundance can be determined with light traps and plankton tows. There was no mechanism to identify the megalopae species in the San Francisco Bay/Delta system. The objective of this study was to create a dichotomous key of the brachyuran megalopae species of the San Francisco Bay system, thus allowing us to identify and quantify *E. sinensis* megalopae.

Using characteristics obtained from published literature, a key was generated to identify 13 brachyuran species. Illustrations of each megalopae species was obtained from published literature. Larval light trap samples were obtained from the Smithsonian Environmental Research Center. The light trap samples were taken from areas in the San Francisco Bay Estuary (N 37°45', W 122°26') including Point San Pablo, McNear's Beach, and Point Pinole Regional Shoreline during March 2007-June 2007. Plankton tow samples taken during January 2006-December 2006, were acquired from the U.S. Fish and Wildlife Service from areas between San Pablo Bay and Suisun Bay. Ten species of Brachyuran zoeae and three species of megalopae were collected from light trap and plankton tow samples and keyed to species to determine abundances. Point San Pablo possessed the highest number of *E. sinensis* megalopae. Four *Eriocheir sinensis* megalopae were found in light trap samples taken during April 2007-May 2007. Light trap sampling will be continued in 2008.

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The Reliability of a Computerized Measurement Tool (Dartfish) to Document Three Resting Calcaneal Stance Positions in a Sample of Adolescent Females

PURPOSE: The incidence of injury to the anterior cruciate ligament (ACL) in the female athlete has increased exponentially over the past 20 years. One contributing factor to injury may be the presence of increased rearfoot valgus in the female athlete. Before this clinical question can be addressed, a standardized procedure to document rearfoot valgus angles must be established. This study's purpose was to determine the test-retest reliability of measuring resting rearfoot positions, across three calcaneal stance positions: double limb support (DLS), single limb support (SLS) and single limb support squat (SLSS) in a sample of adolescent females.

SUBJECTS: Thirty-three healthy, female volunteers between the ages of 10-18 years participated in this descriptive study.

METHODS AND MATERIALS: Digital images were taken of each participant's left and right rearfoot in three positions (double limb stance, single limb stance, single-limb stance with squat). Rearfoot position was operationally defined as the angle formed between the bisection of the calcaneus and a line perpendicular to the floor. The images were imported into a computer, and manually measured using the computer program (Dartfish) to determine rearfoot position. The images were re-measured one week later by the same investigator.

ANALYSES: Intra-rater reliability was established using Intraclass Coefficient analysis (ICC) of the two measurements of rearfoot position, across the three calcaneal stance positions

RESULTS: All measurements of rearfoot position had good to excellent test-re-test reliability. ICC's calculated ranged from .81 to .94. (DLS right .94; DLS left .94; SLS right .89; SLS left .81; SLSS right .91 and SLSS left .89)

CONCLUSION: Rearfoot position measurements using digital images manually measured using the computer program (Dartfish) had good to excellent test-re-test reliability over a one-week time span. 282/300.

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Empiric Treatment for Cocci Could Decrease Mortality in HIV Patient

BACKGROUND: AIDS patients hospitalized with pneumonia are treated empirically for common opportunistic infections pending a definitive diagnosis. In the central valley region, however, coccidioidomycosis is a common infectious cause of pneumonia and empiric treatment for this is not recommended in AIDS treatment guidelines. Our goal was to determine if adding empiric treatment for coccidioidomycosis at the time of presentation with pneumonia would improve outcomes for AIDS patients.

METHODS:

HIV infected patients who were admitted with pulmonary infection who died within 30 days post-hospitalization were identified by review of discharge diagnosis of all patients hospitalized at UMC, CRMC or Clovis between 2000 –2007. A total of 591 HIV infected patients were identified, and chart review extracted data on empiric antibiotic use, antifungal use, steroid use and final diagnosis and outcome.

RESULTS

Out the five hundred ninety one patients, 98 patients (32%) died within one month post-hospitalization of which 13 Patients (13%) died from severe worsening pulmonary coccidiomycosis. None of these 13 patients were treated for coccidioidomycosis empirically on admission; therapy was only begun after a definitive diagnosis had been made.

CONCLUSION.

In the San Joaquin Valley area, we found that 13% of deaths from pneumonia in HIV infected patients over a seven year period were due to coccidioidomycosis. In many patients the time to diagnosis and treatment of coccidioidomycosis is delayed 4-7 days pending the results of diagnostic testing. Our results suggest that addition of antifungal therapy to the initial empiric treatment of pneumonia in HIV infected patients could significantly impact mortality in these patients.

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Prevalence of Hepatitis B Virus (HBV) Infection among Hmongs in the San Joaquin Valley

Introduction: Chronic hepatitis B infections cause 80% of all primary liver cancer worldwide. The prevalence of HBV infections among most Asian American groups have been well documented, however, little is known about the prevalence of HBV infection among Hmong immigrants in the United States. The Central California has the largest Hmong population (about 85,000) in the United States; the majority (about 65,000) being settled in the Fresno County. The aim of this study was to determine the prevalence of HBV infections among Hmongs in the San Joaquin Valley. This is the first HBV screening study among Hmong immigrants in the United States.

Methods: 534 Hmongs aging \geq 18 years were randomly recruited at various popular Hmong locations throughout Fresno County. Blood samples were collected, centrifuged on-site, and serums tested at the local laboratory for hepatitis B surface antigen (HBsAg) by enzyme-immunoassays.

Results: 289 females and 245 males Hmongs (mean age, 43.93) were screened. Among these, 89 (41 males and 48 females) were tested positive for HBsAg, which accounts for a prevalence of 16.7% (95% C.I. 13.5-19.9). The majorities of HBsAg + were \geq 40 years (64.2%), married (66.7%), born in Laos (87.3%), and had lived in the United States \geq 20 years (62.5%). Only 37.5% of the participants reported having primary care physicians.

Conclusions: Approximately one out of six Hmongs in the San Joaquin Valley is currently infected with HBV, thus representing a very significant reservoir of infection in this community. The majority of these patients have no primary physicians to provide further treatment, screening for liver cancer, or offer vaccination to their families. Development of a national program for the prevention, control and medical management of hepatitis B is desperately needed at present.

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Effects of Diesel Exhaust Chemicals on Aggressive Behavior in a Mouse Model

Phenanthraquinone (PQ) is a highly reactive oxidized 3-ring polyaromatic hydrocarbon formed during diesel combustion. PQ has been measured at exceptionally high levels in ambient Fresno air during the fall and winter when air quality is poor. Studies of PQ reactivity have revealed that it undergoes redox cycling and is capable of generating significant levels of free radical species like H₂O₂.

Diesel exhaust chemicals have been linked to the exacerbation of many health conditions, including heart and respiratory diseases. Our lab previously reported the presence of PQ in cerebral spinal fluid of animals exposed to high doses of PQ, demonstrating that PQ is capable of penetrating the blood brain barrier and may display neurological effects. This study was designed to determine whether PQ would alter the social behavior of chronically exposed mice in a controlled environment.

Normal lepr^{+/-} mice were exposed to high levels of PQ (150 mg/kg/d oral) in utero and throughout their lifetime. Mice were grouped by gender at 5 weeks (pre-puberty) and assessed at 12 weeks. Behavioral analyses included indicators of aggressive behavior (missing whiskers or fur, bite marks) within grouped communities and during monitored neutral territory encounters between non-grouped, same-sex animals (biting, attacking). Blood samples were collected from the tail vein under mild anesthesia and serum testosterone analyzed. While no significant differences in testosterone levels were found between PQ exposed and non-exposed mice, aggressive behavior within community groups (missing whiskers) and during monitored non-grouped encounters (biting) was significantly increased in PQ exposed animals.

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Rate of Metabolism of Methylfarnesoate by MF Esterase Enzyme in Tadpole Shrimp (*Triops longicaudatus*)

Methyl farnesoate (MF) is an unepoxiated form of juvenile hormone (JHIII), which controls reproduction in crustaceans, (Laufer et.al. 1992). The physiological roles of MF in crustaceans are not completely understood, but its functions may be parallel to the functions of JHIII in insects (Borst et al, 2001). This study helps to investigate the factors regulating MF titer in the hemolymph of crustaceans, since the hormonal titer (JHIII) is maintained by altering the rate of biosynthesis and metabolism (Hammock et al, 1985). In crustaceans as in insects, MF is hydrolyzed by carboxylesterases into farnesoic acid in peripheral tissues. The aim of the experiment is to find the rate of metabolism of MF by assaying for methyl farnesoate esterase (MFE) by radiochemical partition assay in the tadpole shrimps *Triops Longicaudatus* (Tadpole shrimp). Our study helps to determine change in the activity of MFE enzyme in tadpole shrimps when that are fed with diet containing MF. If MFE activity increases to metabolize excess MF then there may up-regulation of MFE which may indicate development of resistance against MF. To find rate of metabolism of MF by MF esterase in *Triops*, their mandibular glands are used in the MFE experiments using established procedures (Homola & Chang, 1997). Our preliminary data on *Sycyonia ingentis* suggests an increase in MFE rate in hepatopancreas by feeding different concentration of MF pellets and mean control ~ 1.174 ng MF/ μ g protein/min, 0.0001% MF ~ 1.338 and 0.001% MF 1.375. We investigated that mandibular gland of *Triops* have lower MFE rate compared to MFE rate in hepatopancreas of *Sycyonia*. In *Triops* means MFE rates of control ~ 0.00357 ng MF/ μ g protein/min, 0.0001% MF ~ 0.00525 and 0.001% MF ~ 0.01041 .

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The Effects of Lawful Multi-Sensory Concordance on Visuo-Spatial Adaptation

Organisms perceptually adapt to the changing environment in order to effectively perform functions critical to survival. There has been over 100 years of research into the neuropathological, perceptual and general cognitive implications of perceptual adaptation. This process often involves multiple perceptual systems and can be described as the process by which one system adjusts the way it interprets stimuli so that it can come into agreement with other perceptual systems. This process seems to require that the multi-modal stimuli be lawfully concordant, meaning that they all describe the same event, yet the importance of a high degree of concordance has not yet been found. The current study is examining how different degrees of concordant multi-sensory stimuli affect perceptual adaptation. We recruited 130 participants from CSU, Fresno undergraduate Introduction to Psychology courses. To reliably produce adaptation we used a variation of the basic PAT (Prism Adaptation Table) apparatus used by Paulsen, Butters, Salmon, Heindel and Swenson (1993). Participants experienced one of four levels of laterally displaced sound and light stimuli. We expect that the participants who were exposed to highly concordant stimuli will experience the greatest magnitude of adaptation. Upon analyzing the data we have collected we will be able to determine how much lawful sensory concordance is required in order to produce perceptual adaptation. These findings will have implications for the developmental, biomedical and perceptual applications of this phenomenon.

Reference:

Paulsen, J.S., Butters, N., Salmon, D.P., Heindel, W.C. & Swenson, M.R. (1993). Prism adaptation in Alzheimer's and Huntington's disease. *Neuropsychology*, 7, 73-81.

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The Sound and its Aesthetic Counterpart, or Your Whiteness

The Sound and its Aesthetic Counterpart, or Your Whiteness is a sculptural, installation art piece. In creating this installation piece, it was my intention to immerse the viewer in a blanket of stimulation, creating complex feelings that add to the visual experience. This 30-piece installation takes over the gallery space it inhabits by way of white noise sound and texture. The purpose of this piece was to comment on how the stimulation of modern technology has been integrated into the lives of many people.

The Sound and its Aesthetic Counterpart, or Your Whiteness, deflects over stimulation by surrounding the audience with a white noise sound effect. This sculptural installation consisted of thirty, one-foot cubes made of white plexiglass. Each box was mounted to a white, steel, stand, and filled the entire gallery space with a white noise sound effect. The sound was soothing for some and disconcerting for others as it was felt as well as heard as it vibrated from within each box. Strobe lights also projected from each box, which pulsated to the rhythm of the sound. The boxes appeared to be spraying the aesthetic representation of the white noise sound onto various surfaces. A plaster texture spray was used to highlight the focused areas of the sound on the walls and ceiling.

While this installation was canceling out most sounds in the gallery space, it added stimulation in the form of light and texture. This art piece took on a more physical form by flashing a strobe light and projecting its own aesthetic onto various surfaces throughout the gallery space. Ironically, the white noise machines created more stimulation than they deflected as the audience was completely surrounded with both visual and audio stimulation.

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"I'm Just Your Typical Anti-Stereotype Female": An Exploration of Females Living on the Streets of San Francisco

I argue that the standpoint which sees homeless female youth as passive victims is one-dimensional and does not grant these women any agency at all. Rather, these are stereotypical views of the dominant culture which associates females with domesticity and assumes that they are submissive victims of circumstance. I suggest that female street youth who are a part of a punk-influenced subculture reject the social norms of gender and home to breakdown sexist stereotypes about women, and as a way to cope with homelessness.

The purpose of this study is twofold: to understand the lifestyle of homeless females living in a punk-influenced lifestyle, and to explore the changing constructions of gender within different social settings. The importance of this study is to both understand the experience of female homeless youth who freely live their lifestyle, and to suggest that these females are not merely victims of circumstance, but youths who use their lifestyle as a form of resistance to victimization. More importantly this information can help shape and create social programs that will utilize the strengths that these females have acquired while on the streets; and used as a catalyst for possibly exiting street life.

Through this research three important themes emerged: Firstly, that these youth exercise an immense amount of agency in their lives; secondly, the importance of social networks and coping skills for survival; and thirdly, the reconstructed meaning of gender for the empowerment of females living on the streets. These themes are important because they are contrary to previous studies on female street youth, which portrays these youth as helpless and lacking agency.

Although these females reject conforming to conventional society's norms, they end up take on a new set of social norms of the street culture that can be more constricting due to the possibility of dangerous outcomes if not adhered to.

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The Effects of Type a Pattern Behavior on Aggressive Driving Behavior

The tendency of becoming aggressive behind the wheel is an old issue that recently has become a bigger phenomenon in our society. Evidence indicates that incidents of aggressive driving and related concepts are increasing in frequency and severity. In the United States from the period of 1990 to 1995 cases of road rage rose 7% each year (Deffenbacher et al., 2003). Past research has identified some causes of aggressive driving behavior, however these causes do not account for all the occurrences of aggressive driving behavior. This current project will continue to investigate the possible causes of aggressive driving behaviors.

The purpose of this study is to investigate the influence of Type A pattern behavior and a situational prompt of time urgency on aggressive driving responses. Subjects will take the Jenkins Activity Survey (JAS) to measure Type A and will be placed randomly into one of two conditions. In the first condition subjects receive a prompt of time urgency and in the second condition subjects will not receive a prompt of time urgency. Subjects will view a videotaped scene of a driving situation that was designed to provoke angry and/or aggressive reactions. The validity of this driving situation has been demonstrated by past research (Nesbit, 2006).

Subjects high in Type A are expected to report increased angry and aggressive responses to the driving situations, when compared to those low in Type A. Subjects in the time urgency condition are expected to report increased angry and aggressive responses to the driving situations, when compared to those in the second no time urgency condition. Implications of this study will be discussed, which include increased knowledge concerning the causes of driver aggression. Subjects will receive one experimental credit for each hour of involvement in this study.

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Overgrowth after Femoral Shaft Fractures in Infants Treated with a Pavlik Harness

Introduction: Fractures of the femur in children age 2 to 12 years heal with an expected overgrowth response. However, in infants, age < 1, the overgrowth response is variable and some authors have suggested that overgrowth does not occur. The purpose of this paper is to determine if overgrowth occurs when treating femur fractures in infants using a Pavlik harness.

Methods: The charts and radiographs of 30 patients age less than 1 year old treated with a Pavlik harness for a femoral shaft fracture were reviewed. 7 patients were lost to follow up or had less than 18 months follow up and were excluded from the study. For the remaining 23 patients, a teleoroentgenogram—one film with a single exposure for the entire lower limbs to measure limb lengths--was performed 18 or more months after the injury. In addition each patient was examined for range of motion, rotation, gait, and thigh circumference.

Results: 15 boys and 8 girls were studied. 14 right femurs and 9 left femurs were fractured. The average age at injury was 5 months (range 1d-11 months). The average time in the Pavlik was 26 days (range 14 to 44 days). 12 of 23 patients underwent a NAT evaluation. The average radiographic shortening at injury was 7 mm (range 1-18mm). 10 fractures were transverse and 13 were oblique. The average final radiographic femoral length was 2 mm longer on the injured leg (range 5 mm short to 5 mm long). 14 of 23 fractures demonstrated overgrowth averaging 5 mm (range 1 to 18 mm). Range of knee and hip motion was equal in all patients. Gait was symmetrical for age in all patients. Minor---less than 10 degree—changes in hip rotation were noted in 2 patients and quad circumference differences of less than 5mm were noted in 3 patients.

Conclusions: Overgrowth following femur fractures in infants occurred in the majority of cases. Pavlik harness treatment of femur fractures in 23 infants did not result in significant leg length inequality, gait change, rotational change or quadriceps atrophy.

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Effects of Facial Prominence on Predicted Job Performance

Are predictions of job performance influenced by facial prominence? Does the “type” of job that is paired with a picture matter? Higher facial prominence has been linked to higher ratings on the following traits: intelligence, ambition, attractiveness, dominance, and assertiveness. Some research suggests that facial prominence is less important than gender and occupation when trait judgments are concerned, while archival studies of print media suggest that gender, facial prominence, and perceived occupation status are consistently related.

In the current study, 358 UC Merced undergraduates completed a judgment task designed to test the influence of facial prominence and job type on attitudes about job performance. Results suggest that an incongruence between occupation and facial prominence leads to higher predicted levels of negative work-related behaviors, but not positive work-related behaviors.

When career information (e.g. a résumé) is paired with a picture of a job candidate, facial framing influences predicted work-related behavior. Future research will explore if these effects hold across candidate gender, and to what degree raters’ judgment of occupation “physicality” influence these types of behavior predictions.

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**Effects of Diesel Exhaust Chemicals on Diabetic Wound Healing
and Cellular Proliferation**

The management of diabetic wounds is a major clinical challenge. Current research therapies include the use of vasodilators and pro-angiogenic compounds to improve blood flow, as well as antioxidants to reduce ischemia-related tissue damage. While high levels of free radicals (H₂O₂) generated by neutrophils and macrophage at wound sites have been shown to contribute to lipid peroxidation and cell death, recent studies suggest that low levels of H₂O₂ stimulate angiogenesis, enhancing wound healing.

Air quality in Fresno is an important issue for many residents. Of particular concern are diesel emissions, which contribute to both particulate matter (PM) and ozone pollution. Diesel-associated PM has been linked to the exacerbation of many health conditions, including heart and respiratory diseases. Specific chemicals associated with diesel exhaust have been found in higher concentrations in ambient air in Fresno than in any other part of the country. Previous studies in cell-free assays revealed that some of these chemicals undergo redox cycling and are capable of generating significant levels of free radicals (H₂O₂) indefinitely.

This project examined the effects of a diesel exhaust chemical, phenanthraquinone (PQ), on wound healing in a diabetic mouse model. Diabetic (db) mice were acutely (14 days) or chronically (lifetime) exposed to PQ (150 mg/kg/d oral) prior to wounding. Healing rates (wound re-epithelialization) were evaluated 10 days post-wounding. Wound biopsies were taken and immunohistochemistry performed on frozen sections to assess microvascular and granulation tissue formation. Significant differences were demonstrated between exposed and non-exposed mice. In addition, in vitro experiments were performed to examine the effects of PQ on intracellular H₂O₂ concentrations and cellular proliferation. While high doses of PQ generated considerable intracellular H₂O₂, which often resulted in cell death, very low doses of PQ were demonstrated to produce detectable increases in H₂O₂ and appeared to stimulate cellular proliferation.

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Air Quality Analysis for Select Cities in United States

The primary objective of this study is to analyze air quality data obtained from some select cities in United States and determine a possible correlation between the presence of anthropogenic air pollutants and noticeable changes in local weather conditions. Eight U.S. cities, located in different parts of the country, were selected as monitoring sites. The cities include Anchorage (AK), Austin (TX), Chicago (IL), Fresno (CA), Miami (FL), New York (NY), Philadelphia (PA), and Seattle (WA). The primary data used for the analysis are air quality index (AQI) data and the levels of four of the six pollutants regulated by the United States Environmental Protection Agency (EPA), i.e., ground-level ozone (O₃), particulate matter (PM_{2.5} and PM₁₀), carbon monoxide (CO), nitrogen dioxide (NO₂), and sulfur dioxide (SO₂), for period spanning 1997 to 2006. In review of the AQI summaries for the eight cities, ozone persisted as a main pollutant for a substantial number of days each year in seven out of the eight cities in this comparison; Anchorage being the exception, which can more than likely be attributed to Alaska's low population and consequently less urbanization. Besides ozone, PM_{2.5} exists at high levels in all eight areas though Anchorage is again the exception;

Anchorage has much higher levels of PM₁₀, though the larger particle pollution is giving way to seemingly increasing levels of PM_{2.5}. The excessive concentrations of greenhouse gasses: ground-level ozone (O₃), carbon monoxide (CO), and sulfur dioxide (SO₂), are undoubtedly modifying the natural environment.

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Designing and Building the Ultimate World-Class Packaging Automation Laboratory

Manufacturers in the United States continue to see increased pressure from overseas operations that have abundant technology and inexpensive labor rates. In order to remain globally competitive, domestic manufacturers need a workforce trained in automation and industrial control systems architecture. In response to this need, a group of CSU, Fresno students formed a workgroup to design and build a laboratory for the study of these disciplines. Three main objectives immediately surfaced: 1. Define the arena of manufacturing automation to develop. 2. Define and develop the control system architecture. 3. Build the system.

Packaging technology arose as the most likely arena to study, since processing and finished materials handling are dependent on local variables like market conditions and raw materials availability. To define packaging needs, the workgroup turned to ISO 9000 quality systems requirements and the Open Modular Architecture Control (OMAC) Packaging Workgroup's "Guidelines for Packaging Machinery"(2006). The basic functions of packaging were identified as: sealing, inspection, tracking (traceability), cartoning, palletizing, and inventory control measures.

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Facts from the Fallout: Making a Documentary about the Human Health Research in the Wake of the Chernobyl Disaster

Why should you care about Chernobyl? Given our country's need for energy, and especially clean energy, understanding the details of the worst nuclear accident might be helpful in considering nuclear power. Knowing that the levels of radiation that the Chernobyl disaster produced are very similar to those projected in the case of an attack on an urban area with a dirty bomb is also strong motivation.

The objective of the study was to make a documentary revealing what the health effects of the disaster were and to discover the research methods which the scientists used to determine the effects. Additionally, the author wanted to show what effect the disaster had through the eyes of the public and through the eyes of the researchers. This was to be a collaborative effort via video postings on a blog (chernobylresearch.blogspot.com).

The author contacted the Research Center for Radiation Medicine in Kiev, Ukraine and set up a two month internship and an agreement to allow to author to make a documentary there. Interviews were conducted with various people and an inside look was given to various research processes at the Center.

Many different methods were employed to estimate radiation dose received by people such as information about the person's whereabouts at the time of the disaster, Electron Paramagnetic Resonance Spectroscopy (similar to MRI) of tooth enamel, Whole Body Counter measuring internal radioactivity. Continued epidemiological studies are seeking to differentiate the radiation-induced health effects from the stress-induced health effects. Many victims suffered solely from stress induced health effects similar to post-traumatic stress disorder. There are economic and governmental obstacles in obtaining further results.

The Chernobyl Disaster is not understood by most. Understanding how it happened and what the effects are is vital to many decisions we need to make. The health effects at this point seem to be primarily stress induced with the exception being those individuals who put out the fire in the reactor and built the sarcophagus. Less than 50 deaths have been proven to be radiation related deaths. This is important to consider in a debate about nuclear power. It is also indicative that if the public is better educated about the effects of radiation on the body, there would be a significantly lower impact on human health in the event of a dirty bomb. The documentary is still in the editing phase and likely will be for approximately the next several months. Selected video clips are available for viewing at chernobylresearch.blogspot.com

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The Last Right: Access to Land as a Human Right

This research questions whether there is a universally attainable human right to property vis-à-vis land as customarily interpreted. Three southern hemisphere democracies' indigenous populations are reviewed: the Aborigine of Australia, the Maori of New Zealand, and Black South Africans.

Historical contexts in each political venue are introduced and evolving land law with regard to each is analyzed in order to assess the feasibility of this asserted human right being universally applicable. Issues related to different relationships with land and whether land is considered to be held in common or individually are explored with respect to indigenous peoples versus settlers, and their descendants.

A comparison of similarities and distinctions in these cases indicate consistent findings. Because of competing claims among settlers with several generations of interest in land and variations in how land is viewed either as a commodity or an extension of the individual, not all may be able to have this human right to land provided for.

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Pre and Postprandial Effects on the Ghrelin Receptors in the Mozambique Tilapia (*Oreochromis mossambicus*)

Ghrelin (GRLN), a gut hormone produced by stomach cells acts as an endogenous ligand for the growth hormone secretagogue receptor (GHSR) in tilapia. The GHSR gene codes two separate transcripts (GHS-R1a and GHS-R1b) which appear to be differentially regulated in response to short-term feeding in tilapia. Expectation of feeding, a psychological factor, and metabolic status stimulates the release of GRLN from the stomach. A unique fatty acid modification (acylation) on the third amino acid residue allows GRLN to cross the blood-brain barrier and bind to the GHSR on neuropeptideY (NPY) neurons. NPY is then produced and acts as an orexigenic signal inducing a feeding behavior. The objectives of this study were to measure the preprandial and postprandial GHS-R1a, GHS-R1b and NPY mRNA levels in the brain and plasma ghrelin levels. Blood and brain samples were collected pre- and postprandially and at the time of feeding from a group of fish acclimated to a scheduled time feeding. Plasma GRLN and mRNA levels of GHS-R1a, GHS-R1b and NPY levels were measured quantitatively. GHS-R1a and NPY mRNA levels in the brain were significantly higher ($P < 0.05$) at 1 h and 3 h preprandially and decreased postprandially in fed fish. In fasted fish, no change was observed in the brain GHS-R1a and NPY mRNA levels at 1 h and 3 h postprandial. No consistent increase or decrease was observed pre- and postprandially in the levels of GHS-R1b mRNA and plasma GRLN. These data confirm a role of GHS-R1a and NPY as orexigenic factors in appetite behavior of tilapia. Furthermore, these data provide evidence that GRLN does not play a role in day-to-day feeding, but may have a role in postprandial metabolism.

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P-Colorability of the Knot/Link $(12)^n$ and $(12')^n$

The respective ends of a braid may be joined together to form knots or links. A property called p -colorability, where p is a prime number, can then be used to distinguish knot/link-types. In the special case of a particular repetitive braid of three strands, $(12)^n$ and $(12')^n$, we completely determine p -colorability. The techniques include the use of modular arithmetic, combinatorial knot theory and matrix algebra. The surprising result is the unexpected appearance of the Fibonacci and Lucas numbers.

Specific results are:

1. $(12)^n$ is p -colorable if, and only if n is even and $p = 3$.
2. $(12')^n$ is p -colorable if, and only if
 - (i) n is even and $p = 5$ or p is an odd prime that divides the n th Fibonacci number or
 - (ii) n is odd and p is an odd prime that divides the n th Lucas number.

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Control Algorithm for Civil Structures Subjected to Earthquake Loading

A control algorithm for structures subjected to earthquake loading is investigated. The general control algorithm composes the dynamic characteristics of the incoming signal and the application of the pole placement algorithm for the calculation of the required action. The way in which the structure is controlled, is based on the dynamic characteristics of the building and the frequency content of the applied dynamic signal.

In order to use the pole placement algorithm a procedure of selection of poles of the controlled structure is proposed. The right selection of the location of the poles is critical for the success of the algorithm. This selection is an on line procedure based on non resonance theory. On-line FFT of the incoming part of the signal is performed and the main frequencies are recognized. Based on those frequencies, cycles with radii equal to the frequencies are drawn in the complex plane. A region inside and outside of these cycles is specified as an unsafe zone, where the placement of poles of the controlled system should be avoided. The poles of the uncontrolled structure are also located in the complex plane. Based on the relation between the unsafe zone and the poles of the uncontrolled system, the new locations of the poles of the integrated controlled system are chosen. The incoming signal is divided into small parts, and the above procedure is performed dynamically for every part of the incoming signal. Thus, the location of poles of the controlled system can be changed continuously within the duration of the earthquake.

Parametric simulations for earthquake excitations are performed, for a variety of systems. The analysis results show that the dynamic change of the location of poles of the controlled system can lead to better results, in terms of the response and the required control forces, compared to the case where they are predefined and do not change during the application of the signal on the structure.

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Orif of Displaced Lateral Condyle Fractures of the Humerous via the Posterior Approach

Introduction: The posterior approach to the distal humerus provides superb visualization for anatomic reduction of lateral condyle fractures. However, the approach has been criticized by some authors due to the potential complication of AVN stemming from injury to the posterior blood supply to the fracture fragment. The purpose of this paper is to report the results of ORIF of displaced lateral condyle fractures of the humerus via a posterior approach.

Methods: 9 consecutive cases of displaced lateral condyle fractures were reviewed. A sterile tourniquet and the posterior approach were utilized. No additional dissection of the fracture fragment was performed other than that resulting from the traumatic injury. Fixation was performed with multiple smooth K wires.

Results: 8 boys and 1 girl were studied. The average patient age was 7 years old. 5 left and 4 right elbows were injured. All 9 were Milch type 2 injuries. 5 were Jacob stage 3 and 4 were Jacob stage 2 injuries. The tourniquet time averaged 22 minutes (range 17 – 32 minutes). 2 mm smooth pins were used. In 3 cases 2 pins were used and in 6 cases 3 pins were used. Pins and cast were removed at an average of 5 weeks (range 4-7 wks). The average follow up was 12 months (range 6 mo to 2 yrs). 4 patients lost extension compared to the other elbow by 5 degrees (range 0 to 10 degrees). 5 patients had normal extension. The carrying angle was within 3 degrees of the other elbow in all cases. Radiographs demonstrated union with no case of AVN in all cases. 5 cases demonstrated a small posterior spur. The average scar length was 6 cm and cosmetically acceptable to all parents due to the posterior location.

Conclusions: ORIF of 9 cases of displaced lateral condyle fractures via the posterior approach resulted in excellent visibility of the fracture, minimal postoperative loss of motion, no angular deformity, a cosmetic scar, and no AVN.

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Evaluation of Four Rates of Feather Meal Organic Fertilizer on Yield of Vegetables Subjected to AirJection® Irrigation

Organic farming is one of the fastest growing sectors of agriculture. Rising interests in organic farming in the U.S. especially in California is reflected in 68.3% of the total U.S. organic vegetable production. With increasing population growth and associated increased use of water for domestic and industrial purposes result in reduced water availability for agricultural needs, there is a need for organic farmers to optimize water and nutrient use efficiency.

Evaluating the impact of air via subsurface drip irrigation (SDI) system through the incorporation of high efficiency venturi injectors, referred to as AirJection® Irrigation, has been the focus of our research over the past five years. For conventional cropping systems, we have found that AirJection® Irrigation can increase root zone aeration and add value to grower investments in SDI. In this phase of the research, we evaluated the impact of four nitrogen (N) rates on the yield and quality of organic bell peppers and broccoli when subjected to AirJection® irrigation.

The study was conducted in an organic plot at CSU-Fresno Agricultural Laboratory (UAL) on beds that are 5ft wide and 50ft long. The experiment was a split plot design comprising of eight beds representing four replications of air-injected and no-air treatments (control) as the main treatment, and N rates as subplot treatment. Four rates of nitrogen ranging from 30, 60, 90 and 120 lbs/acre were applied as commercially available organic fertilizer (12-0-0) derived from feather meal.

AirJection® Irrigation resulted in optimum yield increases of bell pepper and broccoli at N rate of 60lbs/acre. For the plants fertilized with 60lbs N/acre, AirJection® Irrigation also increased photosynthetic and soil respiration rates, stomatal conductance, leaf scale water use efficiency, plant tissue nitrate concentrations and shoot and root biomass.

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Latina Middle School Students and Self Efficacy: Opening the Gateway for Change

The purpose of this study is to bring light to the personal stories of unheard Latina middle school students who find themselves at odds with educational institutions. Specifically through a feminist ethnographic approach, this study hopes to uncover how Latina middle schools students view their academic experiences in context to lower educational standards for themselves.

There are four main objectives for this project:(1) Identify significant education experiences influencing higher and lower academic expectations, (2) Define possible reasons for obtaining educational goals (internalized reality), (3) Identify what Latinas know about their local campus community to assist in building positive academic self-efficacy, and (4) Define how educational institutions can better assist Latinas needs as defined by Latinas.

This study is in the process of finalizing data results from interviews. Thus far, a limited number of data collected indicate a need for effective conflict resolution, more academic support and encouragement outside of the classroom, and more exposure to future academic and career projection. The literature review findings are similar to this data; however, few conclusions can be made at this point.

In documenting the personal experiences of these Latina students, it is hoped that a better understanding of how public educational institutions have influenced the acquisition of low self-efficacy is gained and how institutions can address Latina's academic needs effectively.

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Bacterial and Fungal Communities Composition in Aerated Soil

One of the many factors affecting the composition of microbial communities is irrigation. Traditional flood irrigation has a tendency to decrease the availability of nutrients at the root zone of the plants. Irrigation that aerates the root zone of the plants, by the addition of small bubbles of air with the water, increases the oxygen availability for the plants and enhances crop production. The purpose of this study is to determine the microbial diversity in the soil and to examine the composition of this beneficial bacterial population. The benefits of this study include finding methods to enhance good microbial communities that may lead to healthier agricultural products whose production requires less pesticides use.

Agricultural soil was collected at six sites from a vineyard treated with an aerating irrigational system. Six control sites were also collected from the same field treated with conventional irrigation. The soil samples were sieved to remove large particles and stored at 4° C. The DNA of the control and experimental samples was extracted, six different extractions from each site. The DNA concentration was determined spectrophotometrically. PCR was used to amplify the DNA for bacteria and fungus using universal primers fluorescently labeled coding for 16S and 18S ribosomal RNA respectively. The amplification products were digested with two different enzymes: RsaI and HhaI. The terminally labeled amplification products were analyzed on sequencing column to obtain the electropherogram with fragment quantity and size (TRFLP).

The increase in oxygen availability in aerated soils increases root respiration and microbial activity. The results show increase in biomass in the aerated soils with a higher DNA concentration than the control samples. Analysis of the TRFLP data show changes in the community composition, dependant on the irrigation system used. Further analysis of the data indicates a more diverse community, both bacterial and fungal, in the aerated soils. Aeration of agricultural soils enhances microbial numbers and bacterial diversity and this increased microbial biomass is compatible with enhanced crop productivity.

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Prediction of Uncertainty and Confidence Intervals in Thermal Radiative Modeling using the Monte Carlo Ray-Trace Method

The possibility of anthropogenic modification of the Earth's climate has led to an increased interest in understanding the climatological role of the Earth's radiative energy budget. A series of major Earth radiation budget (ERB) studies has been commissioned in an attempt to accumulate the long-term database required to correlate observed trends with human activity and natural phenomena. These programs have led to the development of new instruments and technologies to measure various characteristics of the Earth's ocean-atmosphere system. High-level modeling and analysis of these instruments are essential to defining the accuracy of the data they produce.

This presentation is intended to contribute to the understanding of the results obtained from numerical models of instruments typically used in this effort. Specifically, a rigorous statistical protocol is defined and demonstrated for establishing bounds for the values of the uncertainty and related confidence interval in results obtained from Monte Carlo ray-trace models of radiant exchange.

Numerical models of the thermal radiant exchange in a typical instrument were created using the Monte Carlo ray trace method. Numerical simulations incorporating these models were used to validate the derived equations. The results indicate that the equations successfully predict an upper bound of the uncertainty associated with a Monte Carlo ray-trace mode, based only on the number of interacting surfaces and the number of rays used in the simulation. This is important in that it provides a guideline for the minimum number of rays required in the simulation to keep the results within a certain threshold of uncertainty for a desired spatial discretization.

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Effect of Hematocrit Concentrations on Forensic Blood Alcohol Analysis

Forensic blood alcohol measurements play a critical role in the investigation and prosecution of drunk driving. The validity of these results has been challenged recently based on the argument that an individual's blood hematocrit may affect the measured blood alcohol level. Hematocrit is a measure of the relative amount of red blood cells in a blood sample with a typical range of 35-50% by volume. Drinking alcohol, or ethanol, is distributed through the plasma portion of the blood, but not into the red blood cells. As a result the effective alcohol concentration in the plasma fraction increases as the hematocrit increases. Our laboratory is interested in determining whether the forensic blood alcohol analysis protocol is sensitive to the hematocrit level in a sample.

Experimental work began by using bovine blood as a model system. Samples with a range of hematocrit values were simulated by mixing the red blood cell and plasma fractions of bovine blood to give approximate hematocrit levels of 0 to 90%. Ethanol standard solution was added to give a blood alcohol concentration of 0.08% and then the blood samples were analyzed using the blood alcohol analysis protocol. No statistically significant correlation between measured blood alcohol and hematocrit was observed.

Experimental work has recently extended to human blood. Seven sets of human blood QA samples were obtained from the Department of Justice crime laboratory. These samples were partitioned to form three hematocrit concentrations: plasma (0%), normal (44-52%), and red blood cells (73-85%). Ethanol was added to give a blood alcohol concentration of 0.08% and the samples were analyzed. No statistically significant correlation between measured blood alcohol and hematocrit was observed. A one-way ANOVA showed no statistically significant difference between the measured blood alcohol levels for the different groups.

These results indicate that a suspect's blood hematocrit will not affect the measured blood alcohol level. Future experiments will confirm the bovine blood experiment, address the effect of hemolysis on measurements, and explore why the blood alcohol analysis protocol is not sensitive to a subject's hematocrit level.

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The Use of Mood Induction to Reduce Depression's Negative Effects on Working Memory

Depression is the most common mood disorder among adults in the United States, and the prevalence rates of depression are increasing each year (Kessler, 2002). Depression affects an individual in a number of ways and in this study the focus is on depression's negative affect on working memory. Depression has been negatively correlated with working memory performance due to a depressed individual's tendency to focus on negative material, their shorter attention spans, encoding and retrieval discrepancies and other cognitive factors (Morrow & Nolen-Hoeksema, 1990).

Research to minimize the effects of depression on working memory suggests that the individual's depressive emotions need to be counteracted in some way (Bower, 1981). Specifically, mood induction may be used to elevate the individual's depressed mood and reduce the negative cognition pattern typical of depressed individuals. This study will use musical mood induction to influence the participant's mood; the participants will be in one of three groups: positive mood induction, neutral mood induction, or a silent condition. It is hypothesized that depression and working memory are negatively correlated as supported by the literature, that the mood induction will increase working memory performance, and that the negative correlation of depression and working memory will be altered to reflect better working memory scores despite the presentation of depressive symptomology. Participants' level of depression will be measured using the Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) and analyzed as a continuous variable. Participants' mood will be measured using the Positive and Negative Affective Schedule (Watson, Clark, & Tellegen, 1988). Participants working memory will be assessed using a digit span task (WAIS-III; D. Wechsler, 1997).

Analysis will consist of evaluating the impact depressive symptomology has on working memory. Analysis will also consist of examining the correlation that exists between an individual's BDI score and PANAS score across all three conditions, positive, neutral, and silent. Finally analysis will examine the effect of positive mood induction on the post digit span task to determine if positive mood induction is an effective technique to reduce depression's negative effects on working memory. The implications of this study may include an effective technique to reduce working memory limitations in depressed individuals.

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Eyewitness Evidence and Cognitive Reconfiguration

Recent published research from our laboratory has addressed specific influences on the accuracy of eyewitness identification in standardized, systematically-varied contexts. As in our previous work, the contexts employed depicted armed or unarmed assailants who were shown confronting victims, in scenes which controlled for visual complexity, under systematically-varied conditions of exposure time, weapon type and presence, and perpetrator characteristics. The scenes were well illuminated, and were based on scenarios used in special weapons and tactics (SWAT) training by police departments in California. Data were collected by means modeled on police interviews, and developed with police assistance.

Consistent with the theoretical considerations guiding the research, the results of this work to date have revealed high levels of eyewitness error. The present study continued this research in a classification of physical errors (e.g., clothing and appearance), extrapolative errors (attribution of psychological states, future actions, and “backstory”), and other error types. A statistical analysis of identification protocols from 460 respondents was conducted.

Physical errors related to personal appearance, especially of the perpetrator, were most common. Consistent with the theoretical considerations driving this research, errors concerning surrounding physical structures were less common but highly prevalent, as were errors concerning the presence, absence, and types of weapons observed in different conditions. Extrapolative errors were rarest, consistent with current theory and with older observations of memory reconfiguration; however, such errors were present in sufficient numbers to render this class of error important in real-world investigations and court proceedings. These results contribute to the integration of the dynamics governing eyewitness memory and identification into the larger corpus of current cognitive theory, and also provide potentially important information for modern criminal justice contexts.

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Consumption of News among Various Age Groups: Traditional Media versus New Media

The Internet has changed the way we consume news. This thesis investigates the consumption of news among various audiences and age groups to understand why a particular medium is chosen, and to explore whether younger viewers are turning away from traditional media such as television and newspapers in favor of the nontraditional media such as the Internet.

The method of inquiry for this study was a survey of a representative sample of students, faculty and staff during the Spring 2008 semester at a large public university in the western United States. A paper survey was used in addition to a web-based questionnaire. The survey asked general demographic questions and questions pertaining to the frequency participants consumed different types of news media through traditional and nontraditional sources. Questions were similar to those used in television viewing motives studies. The uses and gratifications theory was incorporated to investigate and explore why and in what manner audiences consume media.

Results from this study indicate participants who previously relied on traditional media such as television and newspaper, now include Internet sources for their news. In addition, younger participants were found to rely more on the Internet than any traditional sources for their news, while older participants still use traditional sources such as the newspaper, but are adapting to other technologies such as the Internet and digital video recorders in an effort to gain more selectivity.

This study found young people are interested in the news, they simply go about selecting their news in nontraditional ways. Research also found that predominantly, people are not watching television to get their news. National and local television news ratings have plummeted over the last decade. Whether the decline can be directly attributed to the Internet, remains to be seen.

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Branching Ratios for the Reaction of Hydroperoxy Radicals with Propionyl Peroxy and Butionyl Peroxy Radicals

The photochemical oxidation of organic pollutants in the atmosphere occurs in a complex sequence of reactions involving oxides of nitrogen ($\text{NO}_x = \text{NO} + \text{NO}_2$), ozone, hydroxyl radicals and peroxy radicals. The reaction between organic peroxy radicals (RO_2) and hydroperoxy radicals (HO_2) is important in this process, especially when levels of NO_x are low. The "main" product channel has traditionally been viewed as a chain terminating step, leading to the formation of a hydroperoxide. Since hydroperoxides are fairly unreactive, this reaction helps to limit the concentrations of radicals in the atmosphere, preventing the build up of photochemical pollutants. The purpose of this study was to measure other product channels that are believed to occur. The other product channels are important since their products may cause different effects on the atmosphere. For example, one product, a carboxylic acid, plays an important role in the properties of aerosol particles, including their ability to act as seeds for the formation of cloud droplets. This is important because clouds reflect solar radiation back into space, thus reducing the effects of global warming.

Experiments were carried out using a 142 L Teflon-lined, evacuable reaction cell. Six 40 W blacklight lamps are internally mounted within the chamber which generates light in the near ultraviolet region of the electromagnetic spectrum. The cell is also aligned with a Fourier Transform Infra-Red (FTIR) Spectrometer, which is used to measure the chemical composition of the compounds inside the cell as they change with exposure to the light. Chemical compounds known as aldehydes were used to produce the different organic hydroperoxy radicals.

The results show that as the organic carbon chain gets larger, the yields of the other previously unstudied channels become significant. When the 3 carbon aldehyde was used to make the organic peroxy radical, the 3 channels reported made only 30% of the chain terminating peroxide (which previously was thought to be much larger), and 20% of the carboxylic acid. The product results for the 4 carbon organic peroxy radicals are still in their preliminary stages, yet they seem to show that all the channels are still significant. The previously unstudied high yielding product channels made by these larger organic radicals have never been fitted into any atmospheric model; therefore these results are important in making more accurate models for the reactions that occur in the upper atmosphere.

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Rwanda: Trouble within the Gacaca Courts

The people of the Central African Republic of Rwanda have been subject to torture and fear for more than half a decade. Rwanda experienced a massive campaign of politically inspired and ethnically charged killings from April to July of 1994. This 100 day killing spree by the Hutu majority claimed the lives of an estimated 800,000 Tutsis and Hutu moderates. Today, reconciliation has been attempted by both international players and the local Rwandan system. The transformation by the local gacaca courts into judicial arenas was an effort to try the perpetrators and participants of the 1994 genocide. More specifically the local gacaca system continues to contribute to instability within Rwanda and its potential to lead to recurring violence is examined.

The idea of gacaca comes from the close proximity that Rwandans often lived to one another and where traditionally the system was used as a means of settling small civil affairs (i.e. property disputes and bar brawls). The decision to include the gacaca system as a form of judicial rule, for Rwanda, came from the emphasis on the affordable nature and participatory environment offered by the system. Numerous goals were set by the government included changes necessary for a successful establishment of a more formal system. Within this establishment, many obstructing factors presented themselves, proving just reconciliation and retribution were challenging objectives.

The gacaca courts are a true experiment born of political and financial necessity and a proclaimed desire to deal with the genocide through restorative justice. The harmful violence, division of ethnic groups, deficiency in participation, and corruption plague the gacaca system containing to be a hindrance on the country and people of Rwanda.

Through case studies, the backyard judicial hearings prove to be contributing factors to an increased cycle of violence. The inability of the gacaca system to bring forth justice continues to create questions as to whether the courts will ever be able to legitimately produce truth as an impartial third party.

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North American Tardigrade Project

The North American Tardigrade Project is a collaborative project between Baker University, Brigham Young University and Fresno City College to gather and study tardigrades, a phylum of which little is known about. We have been given a grant of \$600,000 that will span four years by the National Science Foundation. Our goal is to collect specimens from LTER locations, code DNA and develop a database that will be home to all of the information about tardigrades in the world.

For the last year, members of the North American Tardigrade project have been collecting samples of moss and lichen, where tardigrades generally make their homes, from all over the globe. In the laboratory at Fresno City College, we are able to process these samples. We make slides for identifying each individual specimen, molecular tubes for DNA sequencing and we also prepare specimens for the scanning electron microscope.

As of this month, we have collected and identified over 4,000 specimens and have created a database specifically for our findings. We will demonstrate the electronic database system and discuss DNA results.

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The Effects of Recreational Dancing on Quality of Life in Older Adults

How do we measure the quality of life? As adults age, the decline of physical health can have a detrimental effect on a person's mental state. Conversely, the mental state of an individual can have a similar effect on a person's physical state. This psychosomatic consequence can have monumental impact on how persons value themselves, how they perceive that others value them, and the value society places on them. These values can affect whether a person feels a sense of worth and value in other peoples' lives as well as in society as a whole. This study examines how older adults use recreational dancing as a method for coping with depression and improving their quality of life. The key research question examined is: What is the perception of how dancing has affected the quality of life in older adults who dance?

Eight individuals were selected from a group called, The New Wrinkles. The eight participants were asked open-ended questions on how dancing has affected their life and to what degree. A latent content analysis was conducted which looked for clusters of words which conveyed similar meanings. From the responses given, themes were developed expressing the different areas in which dancing has influenced their lives.

Four major themes were developed as they pertained to the quality of life defined in the literature review of this thesis. All the participants addressed how dancing had enhanced the physical, psychological, social and environmental aspects of their lives. The participants also suggested that the challenges of dancing and of the socialization involved in this cooperative activity helped them combat the onset of depression.

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Hmong Healthcare Practices in Fresno County: A Pilot Study

Purpose: The objective of this study was to pilot test an instrument designed to investigate Hmong healthcare practices and awareness in Fresno County, California.

Method: Data for this pilot study were collected using a 27 item instrument modified from a previous study developed by the Orange County Health Department. The instrument was written in English, translated to Hmong, and back translated to English. The researchers randomly selected participants attending the Hmong New Year celebration in Fresno to participate in this study.

Results: Data were collected from 51 participants aged 18 and over during the Hmong New Year Celebration in Fresno County. Results from this pilot study indicates a high percentage of the Hmong in Fresno County continuing to use traditional healing practices including shaman and herbal medicines before consulting allopathic providers. The results divulge that over half of the participants are not aware of low and/or free medical services that were available to them in Fresno County.

Conclusions: Understanding the health care practices of diverse cultural groups is the first step in decreasing health care disparities. This finding indicates the need to increase outreach services designed to educate the Hmong population about low cost medical options that are available to them. In addition, the lack of trained personnel to facilitate communication with health care providers also indicates an increased demand of services in the Hmong community.

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Propargyl Bromide as an Alternate Fumigant

To enhance crop production, growers may fumigant fields before planting to kill most of the life in the soil, including, bacteria, fungus, insects, and plants. Propargyl bromide shows promise as a fumigant because it is an effective killing agent, its application is relatively simple, and propargyl bromide does not enter the stratosphere, unlike methyl bromide. The presence of methyl bromide in the stratosphere depletes the ozone layer. Because of ozone depletion, the use of methyl bromide has been restricted. We have isolated ten naturally occurring strains of soil bacteria that degrade propargyl bromide in liquid media.

Fresh cultures were incubated in soil supplemented with minimal media broth containing 100 ppm of propargyl bromide in sealed bottles. Samples were taken every half hour for twelve hours. Gas chromatography was used to assess propargyl bromide concentration in sterilized soil and in soil that had not been sterilized that had been inoculated with each of the ten strains of bacteria. Testing was done at least three times in duplicate. Colony hybridization was used with probes designed from genes identified as necessary for methyl bromide and methyl iodine degradation.

The abiotic soil control averaged a reduction of propargyl bromide of 7% over 8 hours and 2% over 4 hours. Bacterial degradation for the ten strains in sterilized soil averaged a 52% reduction over 8 hours and 42% over 4 hours.

Degradation by the bacteria in soil that was not sterile averaged 50% over 8 hours and 41% over 4 hours. The probe used for Southern hybridization did not hybridize with the bacterial DNA from the ten strains, suggesting the pathway for propargyl bromide degradation may be different from what has been described for methyl iodine or methyl bromide degradation. Bacteria enhance the degradation of propargyl bromide in sterilized soil and in soil that has not been sterilized.

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**Potential Impacts of Selenium on California Red-Legged
Frog (*Rana draytonii*)**

Amphibian stress response to selenium through the hypothalamus-pituitary-interrenal axis, reflected in corticosterone levels, and its effects on development and growth is unknown. In our current study, *Rana pipiens* embryos were exposed to selenium treatments (0 µg/L, 1 µg/L, 5 µg/L, and 13 µg/L) and reared in a laboratory until metamorphosis completed at Gosner stage 46. We also examined *Lithobates catesbeiana* from a selenium contaminated pond and a reference site. We then analyzed the selenium accumulation, corticosterone levels, development and growth in both amphibian species. *Lithobates catesbeiana* from the contaminated site accumulated higher levels of selenium but had lower corticosterone levels compared to *L. catesbeiana* from the reference site, which had a significantly higher corticosterone response. Selenium accumulation in *R. pipiens* tadpoles was 1000 times the selenium exposure, corticosterone response was at control levels and there was no affect on both development and growth. Our study demonstrates that selenium exposure does not elicit a stress response.

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**An Investigation of the Relationship between
Air Pollutants and Lung Function**

Epidemiological studies have correlated air pollution with an increase in adverse health effects. Previous studies have shown that the San Joaquin Valley has high levels of particulate matter (PM) which may exacerbate health problems such as asthma and cardiovascular disease. Quinones are organic chemical species found within PM that are suspected of initiating chemical reactions that may lead to asthma attacks. It is hypothesized that following a viral infection, an individual's immune system may be weakened to the point where exposure to quinones may trigger an asthma attack. To investigate the possible link between air pollution, viral infection, and asthma exacerbation and the exposure of an individual in which the pollutant must be known. One approach to obtain this information is to monitor the levels of the pollutants or their metabolites in the urine of the subject. This provides a convenient and relatively inexpensive method to monitor exposure if the levels of these biomarkers are correlated with the amount of pollutant inhaled.

Experiments were carried out by evaluating urinary quinones as biomarkers for exposure to air pollution and PM. Urine samples were collected from a cohort of 16 patients (8 asthmatic and 8 non-asthmatic). 10 ml of urine of each patient was extracted for quinones. Filter samples were also collected to determine the daily PM mass loadings. Quinones were extracted by sonication using dichloromethane (DCM) as an organic solvent. Urine and filter quinone extracts were derivatized and analyzed by gas chromatography/ mass spectrometry. In separate work conducted by another group, the presence of markers of viral infection is also being evaluated. Spirometer tests and daily symptom diaries are used to simultaneously track the lung function and asthma symptoms of the patients.

Preliminary data indicate that urinary quinone levels correlate with PM mass loadings in some individuals. Several subjects showed an inverse correlation between PM levels and lung function. At this point, there is insufficient data to evaluate whether exposure to quinones alone is associated with a decrease in lung function and/or an exacerbation of asthma symptoms.

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Linking Affective Learning Theory to Resident Competence

Objective

To examine the link between educational interventions and affective learning by measuring resident comfort level before and after an objective structured clinical examination (OSCE) combined with an educational intervention in family planning methods.

Methods

Our obstetrics and gynecology residency program incorporates OSCE plus educational interventions (OEI) in order to teach and assess skills in family planning. Three months after the OEI, the residents were polled via a series of Likert-scaled questions on their comfort level before and after the OEI experience. Comfort was ranked on a 1 to 5 scale. Similarly, residents reported their level of experience prior to the OEI on a Likert scale with higher values representing higher levels of experience. Pre- and post-OEI comfort scores from all procedures were aggregated into a composite comfort score for each resident. In addition, scores were averaged for each procedure to determine which procedures contributed the most to the changes in resident-specific comfort score improvement. Correlations were made between level of resident experience and resident year and the pre-, post-, and change in resident comfort. Two-tailed paired t-test, Wilcoxon Signed Rank Test, and Pearson's correlation were used to infer statistical significance as appropriate.

Results

OSCE experience increased aggregate resident comfort level from 3.63 ± 0.21 to 4.47 ± 0.13 , an average of 0.84 ± 0.16 (mean \pm SEM) ($p < .001$). Prior to the OSCE, comfort level positively correlated with self-reported level of resident experience, and the OSCE-related improvement in comfort level was inversely related to the degree of experience. The improvement in comfort level related to the OSCE was not uniform across all procedures.

Procedures in which residents reported a relatively high level of comfort prior to the OSCE did not show much improvement in comfort score, such that statistically significant improvements in comfort were observed only in diaphragm fitting and vaginal ring, the two procedures with the lowest level of pre-OSCE comfort. Resident year was also related to initial comfort level as well as improvement in comfort secondary to OSCE experience: First year residents had relatively low levels of comfort and the OSCE brought them up into the same range as the following three years.

Conclusion

This study has resulted in two new findings: 1) there is a relationship between comfort level of the trainee and the OSCE educational intervention and 2) the degree of increase in comfort level is related to level of experience prior to the OSCE educational intervention.

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Intermodal Trucker Labor Protest in Central Valley Stockton

On April 26, 2004 Sikh Indian truckers working in rail yards outside of Stockton initiated a successful week and a half long strike in protest of escalating diesel prices which they pay out of pocket, along with demands around improved pay and working conditions. Hauling Intermodal containers that can be moved across the world and interchanged between container ships, rail lines and a truck chassis, these truckers work as independent contractors without the traditional labor rights of employees

The effort of the Sikhs, who make up 80% of the 3-400 Stockton Intermodal workforce, would play a key role in the ensuing Intermodal trucker strike that swept west coast ports within the next week and even southern and eastern ports by June. By striking first and playing a role in initiating the Oakland port truckers strike several days later, the Stockton Sikh truckers played a leadership role in the ensuing west coast strike. In August of the same year many of the these truckers joined the Industrial Workers of the World labor union and went on to initiate several successful workplace actions and strikes up through December 2004.

This manuscript is a social history of these events including the period of the wildcat strike and union involvement up to the point where the leadership of the drivers ended their union involvement in early 2005. The author bases his research partly on his experience as a union organizer in the events. This work further places the drivers and their struggle in several contexts to better grasp a more nuanced understanding behind the events beginning with an overview of the Intermodal trucking industry, a look at the political economy of California's Central Valley, and a discussion of the radical tradition of the Sikh diaspora to which the Stockton truckers are linked.

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Effects of Evaporation and Sampling in the Forensic Analysis of Fire Debris Evidence

The forensic analysis of debris from suspicious fires aids in determining whether it is a case of arson. An indication of arson is the presence of an accelerant, often an ignitable liquid such as gasoline, in the fire debris. The most common method of chemical analysis involves GC/MS analysis of the vapor headspace over properly packaged and stored fire debris.

During a gasoline fire, the vapors combust but the liquid does not burn. Instead, the liquid gasoline evaporates generating the combustible vapors. Therefore, understanding the evaporation of gasoline and its change in content in the laboratory can help us understand how the content of gasoline residues change in a fire. We used three different temperature mineral oil baths to evaporate liquid accelerants, primarily gasoline and kerosene. Less than one mL was extracted from the evaporating beakers at regular intervals and diluted in pentane. The diluted samples were then run on the GC/MS and analyzed using the same method to ensure consistency. The method was written to standard Department of Justice protocol. The shapes of chromatograms were evaluated using a series of reference peaks. Initially, the n-alkane series was selected because of their stable retention times and relatively large intensity in kerosene.

The alkane analysis of kerosene samples provided predictable variations through out the evaporations, showing that the lighter alkanes would leave the solution first. The larger and heavier alkanes appeared to become more concentrated through the evaporation progress. However, their amounts stayed consistent as the apparent concentration increased and total volume of gasoline decreased. A new series of reference compounds are being developed to better describe the gasoline evaporations, as their alkane profile does not have as predominant of an n-alkane series.

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Internal Erosion Mechanisms of Heterogeneous Soils

The devastating impact of Hurricane Katrina on New Orleans's levee system galvanized public awareness of the fragility of California's 13,700-mile levee system. Earthen levees, some of which are more than 100 years old and were built with inadequate materials and poor techniques in late 1800s, provide most of the state's flood control. Frequent floods, land subsidence, and earthquakes have made these levees highly vulnerable to erosions. Soils at the landside levee toe, if not properly protected, are first washed out by concentrated leakage in the tiny cracks (i.e., sand boil). Piping is a form of internal erosion that occurs when internal soils in the levee or its foundation are washed away by concentrated seepage causing the channel to advance from downstream to upstream. Piping can eventually cause excessive seepage and levee collapse. Internal erosion and the resulting excessive seepage was one of the major causes of the levee breach in New Orleans in 2005.

The purpose of this research is to study erosion mechanisms of heterogeneous soils through laboratory experiments. Three phases are planned. In the first phase, the standard small-scale pin-hole tests (soil column dimension: length=2in, diameter=1in) are conducted to study the various erosion resistance of homogeneous soils (sand, silt, clay, and organic soils). In the second phase, larger scale erosion tests (soil column dimension: length=20in, diameter=10in) are conducted to study the erosion mechanisms of the same homogeneous soils to reveal any scaling effect; stratified soils are then used in the column to study the erosion of heterogeneous soils. In the third phase, tri-axial apparatus is used to study the effect of stresses (pore water pressure and effective stress) on erosion; stratified soils are also used to study the coupling effect of heterogeneity and stresses on erosion. Hydrometer and turbidimeter will be used to characterize the eroded soils in the effluent.

This presentation reports the ongoing erosion tests in the first phase. Preliminary results revealed poor erosion resistance of silty soils. Research plans and methodologies on phase 2 and 3 are also presented.

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Hmong Students in Higher Education and Academic Support Programs

Current secondary education Hmong students are often first generation college students. Obtaining higher education has been a challenge for many of the Hmong students. The goal of this study is to examine obstacles to participation in and the effect of academic support services (ASPs) on Hmong college students. Effectiveness of ASPs were examined among 55 Hmong college students at a large, public western university. The Effectiveness of Academic Support Program Survey (EASPS) A and B were developed to obtain student perception of how effective ASPs are in meeting educational needs of Hmong students. Furthermore, motivation of students was also examined to determine if there is a link between motivation and participation in academic support programs. Findings conclude that obstacles in higher education for the Hmong students were lack of study time, poor study habits, lack of money, lack of motivation, lack of direction and career goals, and poor time management. Results also indicate that half of the study participants have participated in ASPs. Those who have participated found ASPs to be moderately supportive with an average rating of 7.39 out of 10 (10 being most supportive). Financial assistance, peer advising, and academic advising were among the most helpful academic support services. Those who did not participate in any ASPs reported that they were not aware of ASPs. Lastly, motivation was not found to be a factor in influencing participating in ASPs.

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Effects on the Parasitic Nematode *Meloidogyne Incognita* of Transgenic Tobacco Plants Expressing an Antisense Construct of the Cell Death Protection *Ced-9* gene

The damage of nematodes in agricultural products is a serious problem in the US. Methyl bromide is an effective pesticide for controlling plant parasitic nematodes, but it leads to great environmental hazards. Instead of pesticides, the development of transgenic with introduced programmed cell death genes may prove efficient and safe for agriculture production in the US. Depending on the *ced-9* sequence orientation present in transgenic plants, two predictions can be made. First, plants containing a forward (sense) *ced-9* gene will protect against nematode infection by enhancing the “immune” response of the plant. In fact, previous work showed that over-expression of *ced-9* leads to the protection against other plant pathogens by this mechanism for example TMV infection. Second, plants containing a reverse (antisense) *ced-9* gene would enhance the programmed cell death pathway in the nematodes, and act just as a *ced-9* (lf) mutation. The second hypothesis assumes that there is a *ced-9*-like sequence in *Meloidogyne incognita* (Root-Knot Nematode-RKN), which is the target of the *ced-9* antisense gene. We have preliminary data suggesting this is the case.

We generated homozygous transgenic tobacco plants expressing either *ced-9-F* (*ced-9* gene clones in the sense orientation) or *ced-9-R* (*ced-9* gene cloned in the antisense orientation). The expression levels of the *ced-9-F* and *ced-9-R* genes in transgenic plant were determined by competitive RT-PCR. Selected *ced-9-R* and *ced-9-F* transgenic tobacco lines, both expressing high levels of the transgene and having no other phenotypic effect, were tested for resistance to *M. incognita* by measuring gall formation (invasion ability), gall size, and J2 hatching (reproduction ability).

The means of number of gall formation did not exhibit any statistical difference between transgenic and wild-type tobacco plants. Gall size was smaller, however, in transgenic *ced-9-R* or *ced-9-F* than in control plants. Furthermore, hatching ratios were low in *ced-9-R* transgenic plant lines, by approximately 50%, when compared to *ced-9-F* or control plants. Results from these experiments suggest that expression of either *ced-9-R* or *ced-9-F* genes in tobacco plants induced prevention of *M. incognita* proliferation. However, *ced-9-F* expressing plants prevent the proliferation by limiting the size of galls formed, while *ced-9-R* expressing plants do so by both limiting the size of galls formed and by preventing embryo hatching. We speculate that the hatching prevention in the *ced-9-R* expressing plants is due to the action on a *ced-9* like sequence during embryogenesis of *M. incognita* taking place in the transgenic plant.