USAFA Discovery

#1999-03 (Jul-Sept 99)

USAFA Discovery is published quarterly by the faculty of the US Air Force Academy (USAFA). It contains reports on USAFA cadet and faculty research, a complete list of current USAFA research points of contact, and a summary of recent awards and publications. All written material contained within reflects the opinions of the authors and editors and does not necessarily reflect current US Air Force or USAFA policy.

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The 1999 Mises University at the Ludwig von Mises Institute (Auburn University, AL)

C1C Lindsey Adami, an Economics Major, spent some time this past summer at the Mises Institute, a two-week seminar for advanced undergraduates on Austrian Economics. What follows is her own account.

As I headed toward the shuttle that would bring me to the weeklong economics conference sponsored by the Ludwig von Mises Institute, the one phrase that ran through my mind was, "Let the nerd-fest begin." When I had received the letter of acceptance for the conference, I was ecstatic. Captain Barrows' Austrian Economics class had sparked a curiosity that had me book-marking economic websites for future reading. But still, I wasn't sure what type of person would sacrifice a week of summer break for a series of daylong lectures and discussions. Naturally, I was a little apprehensive.

The Mises University summer conference is a program designed to increase one's understanding of an economic school of thought known as *Austrian economics*. Students around the world flock to Auburn University to attend this annual conference. The Austrian school is centered on the one basic fact that *humans act*. From there it takes logical steps to describe the workability of a free market, where human choice is the driving force. The Austrian school contends that this human choice is a unique and constantly varying act that cannot be measured as data for mathematical modeling.

Our mornings and afternoons were filled with a variety of lectures, and in the evening, we attended a two-hour seminar, where we discussed issues such as public finance, the business cycle, and free-market policy issues. Some of the lectures I attended covered such topics as monopolies and competition, Keynesianism, entrepreneurship, econometrics, the Great Depression, world markets, Abraham Lincoln, the Federal Reserve, and my favorite, the need (or lack thereof!) for state-provided defense and security. These lectures provided differing perspectives, which often resulted in a heated debate between the students and the lecturers.

One of the lectures that I found to be very interesting was entitled, "The Rise, Fall, and Persistence of Keynesianism." It explored the actual man, John Maynard Keynes, and his philosophy. We learned about his vision of the economic, political, and spiritual world and how that eventually shaped what is known today as the Keynesian school of thought. This lecture, along with several of the others, gave me more insight into how and why economic issues developed the way they did.

The two-hour seminars allowed us an opportunity to discuss some of the lecture topics we had heard that day or any other issues that students wanted to bring up. One topic that most individuals agreed upon was the issue of privatizing the school system. In essence, the Austrian view is that a freely competing market can provide a better education than the government. Since I am the product of both a K-12 public education and a government-sponsored *military* undergraduate program, I was definitely the black sheep of the crowd.

After the lectures and discussions were over for the day, the group would meet at Mr. Gatti's for a social hour, where we continued our debates over pizza and beer. Sometimes a group of us would head into town for hamburgers and ice cream, while discussing the differences between Marshall's and Keynes' philosophies. By the end of the week, I realized that I had, in fact, become a contributing member of the nerd-fest. But I think William Kettemer, another Mises University participant, put it best when he said, "Yeah, we're nerds, but rock on! It's what we do."

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Department Research News

Department of Astronautics

FalconSat-1 Ready for Launch

USAFA's first free-flying satellite, FalconSat-1, is ready for launch from Vandenberg AFB, CA. The spacecraft was tested over the summer and delivered to Weber State University in Ogden, UT, for integration with the other payloads on the mission. FalconSat-1 will share a launch with experiments from the Air Force Research Lab, NASA Marshall Space Flight Center, Stanford University, Arizona State University and Weber State University.

The entire payload stack with all six experiments was delivered to the launch facility at Vandenberg AFB on 28 Sept 99. All systems are go, and we're awaiting the availability of the launch vehicle. Launch is currently projected for early January 2000.

Meanwhile, preparations for mission operations at the ground station located in CETF have begun in earnest. The cadet and faculty team is busy preparing operations procedures, contingency plans, training materials, and conducting software tests to ensure mission success.

Orbit Visualization Tool

The Astronautics department has been updating their DOS based-visualization software known as Orbit.exe to run in a windowed environment under Microsoft Windows 98 and NT. The new version, created by Capt. Erik Bowman, allows students to enter orbital elements or state vectors in a dialog box, display the resultant orbit in a 3-D graphical view, and manipulate that view via keyboard and mouse inputs in real time. Users may simultaneously view the satellite ground trace in a separate window, and can also load canned scenarios via text files created with an ordinary text editor. Orbit.exe also contains some new features that the original version did not possess. Students can change the time scale, and view the effects of J2 perturbations on an orbit. Hyperbolic and parabolic orbits may now be viewed as well as elliptical and circular ones. Lastly, it allows maneuvering. A tangential burn may be performed anywhere on the orbit by entering a delta V. Also, transfers are calculated and displayed between any two circular orbits, with any desired orientation.

The new Orbit.exe is still a work in progress. The two major tasks that remain are to allow the display of intercepts and co-orbital rendezvous. The most ambitious task that Orbit.exe will eventually perform is to display an interplanetary transfer between any two planets in the solar system.

Department of Behavioral Sciences

New Research Laboratory for Behavioral Sciences and Leadership Now Open For Business

On September 1, DFBL took delivery of the first phase of a new laboratory facility. The $1.1 million facility was designed by DFBL faculty members and will meet the research needs of the cadets and faculty well into the next century. The 14,057 square ft facility includes a state-of-the-art vivarium for housing the DFBL rat colony, a wet lab for psychophysiological research, a sensation/perception laboratory and an animal learning laboratory. There is ample room for conducting a wide variety of experimental research in human factors and other areas of human experimental research. All areas of the lab will be used for both research and teaching

Publications and Presentations

34th Education Group

Publications:

KAROLICK, D. M. and A. T. Chamillard. "Using Learning Style Data in an Introductory Computer Science Course." Proceedings of the Thirteenth SIGCSE Technical Symposium on Computer Science Education, 24-28 March 1999.

Presentations:

CHUN, C. K. S. "The Educational Strategy to Teach Military Strategy at USAFA." The Fifth International Seminar for Military Strategy, Japan National Defense Academy, Yokosuka, Japan, 15-24 July 1999.

Department of Aeronautics

Publications:

BAUGHN, J., J. Mayhew, R. Butler, and A. Byerley. "Turbine Blade Flow Separation and Reattachment at Low Reynolds Number." *ASME Journal of Heat Transfer Picture Gallery*, Volume 121, Number 3, August 1999.

FALK, E., E. Jumper, and B. Haven. "Upstream-Propagating Potential Waves Elicited from the Stator Row Downstream of a Fan." 35th Joint Propulsion Conference and Exhibit, AIAA 99-2805, July 1999.

MORTON, S., Y. Guy, J. Morrow, and D. Blake. "Numerical Simulation of Periodic Suction and Blowing Control of Vortex Breakdown on a Delta Wing." AIAA 99-3195, July 1999.

SIMON, T., K. Van Treuren, and A. Byerley. "Flowfield and Turbulence Measurements." *Department of Aeronautics Technical Report*, 99-08, August 1999.

YECHOUT, T. and J. Dowty. "A Wind Tunnel Investigation of Drag Reduction Approaches Developed for the AC-130H Gunship and Evaluation of DIRCM Incremental Drag." DFAN TR 99-04, June 1999.

YECHOUT, T. and W. McClelland. "Development and Optimization of Drag Reduction Approaches for the APR-46 Antennas and Fuel Tank Pylon on the AC-130 Gunship." DFAN TR 99-05, June 1999.

YECHOUT, T. and J. Dowty. "Improving AC-130H Gunship Performance Through Drag Reduction." 1999 SAE/AIAA World Aviation Congress, October 1999.

YECHOUT, T., J. Dowty, C. Hammond, and D. Timpson. "The AC-130U Drag Reduction Program." 1998 SAE Transactions, *Aerospace Journal*, September 99.

Department of Astronautics

Publications:

CHESLEY, Bruce C. "Chapter 9 - Space Payload Design and Sizing." *Space Mission Analysis and Design*, Microcosm Press, 1999.

HATFIELD, Michael C. "Characterization and Optimization of the Magnetron Directional Amplifier." Ph.D. Dissertation, University of Alaska - Fairbanks, August 1999.

Presentations:

CHARI, Raja. "Pre-Flight Characteristics of the U.S. Air Force Academy's FalconSat-1." 1999 AIAA Region V Student Paper Conference, Minneapolis, MN, April 28-30, 1999.

CHESLEY, Bruce C. and Michael J. Caylor. ***"Developing an Integrated Curriculum for Small Satellite Engineering."*** ASEE Annual Conference. Raleigh, NC, June 1999.

GENTILE, Chris. "Impact Modeling of an Antarctic Asteroid Strike." 1999 AIAA Region V Student Paper Conference, Minneapolis, MN, April 28-30, 1999.

HATCH, Shawn. "A Comparison of Current and Planned Technologies for the Mitigation of Space Debris." 1999 AIAA Region V Student Paper Conference, Minneapolis, MN, April 28-30, 1999.

HENDRICKS, Justin. "The Communications Architecture of a Student-Built Small Satellite." 1999 AIAA Region V Student Paper Conference, Minneapolis, MN, April 28-30, 1999.

LATTSCH, Jonathan. "X-34 Landing Trajectory Optimization Program." 1999 AIAA Region V Student Paper Conference, Minneapolis, MN, April 28-30, 1999.

NEW, Karian. "Asteroid 1997 XF11." 1999 AIAA Region V Student Paper Conference, Minneapolis, MN, April 28-30, 1999.

TRUEMAN, Ryan. "High Temperature Composite Materials for Rocket Nozzles." 1999 AIAA Region V Student Paper Conference, Minneapolis, MN, April 28-30, 1999.

Department of Computer Science

Publications:

GIBSON, D. S. "Two Approaches to Teaching Software Components in Ada." Proceedings of the Thirteenth Annual Advanced Software Engineering Education and Training (ASEET) Symposium, July 1999.

Presentations:

CARLISLE, M.C. "Developing Ada 95 Code with a Graphical User Interface (GUI) Builder." Thirteenth Annual Advanced Software Engineering Education and Training (ASEET) Symposium, July 1999.

GIBSON, D. S. "Two Approaches to Teaching Software Components in Ada." Thirteenth Annual Advanced Software Engineering Education and Training (ASEET) Symposium, July 1999.

Directorate of Education

Presentations:

ENGER, Rolf. "A 21st Century Multimedia Learning Environment: Blending Tradition with Innovation." Invited presentation at the American Association of Physics Teachers Summer Meeting, San Antonio, TX, 6 August 1999.

HALLORAN, Peg, and Stan Supinski. "Air Force Language Link: A Global Web-based Cooperative Learning Approach to Foreign Language Instruction." Teaching with Technology '99, July 99.

Publications:

REVAK, Marie. "Focus on Assessment...How's My Teaching." Colorado Mathematics Teacher, Volume 32, Number 4, August 99.

REVAK, Marie. "Assessment: 'Marvelous'." USAFA Educator, Volume 7, Issue 4, August 99.

Department of Engineering Mechanics

Presentations:

SLAWSON, T. R., D.R. Coltharp, S.T. Dennis, and R. Mosher. "Evaluation of Anchored Fabric Retrofits for Reducing Masonry Wall Debris Hazard." Proceedings of 9th International Symposium on Interaction of the Effects of Munitions with Structures. Berlin, Federal Republic of Germany, May 1999.

Publications:

BORCHERT , R., D. Jensen, D. Yates. "Hands-on and Visualization Modules for Enhancement of Learning in Mechanics: Development and Assessment in the Context of Myers Briggs Types and VARK Learning Styles." Proceedings of ASEE Annual Conference, Charlotte, NC, June, 1999.

DENNIS, S. T., and J. T. Baylot, "Explicit Analysis of Masonry Wall Response to Blast." Proceedings of Fifth US National Congress on Computational Mechanics, Boulder CO, Aug 1999.

JENSEN, D., M. Bowe. "Hands-on Experiences to Enhance Learning of Design: Effectiveness in a Reverse Engineering / Redesign Context When Correlated with MBTI and VARK Types." Proceedings of ASEE Annual Conference, Charlotte, NC, June 1999.

MURPHY, M., D. Jensen. "Integrating CAD into an Already Packed Curriculum: Is Another Class Necessary?" Proceedings of ASEE Annual Conference, Charlotte, NC, June 1999.

SHAKERIN, S., D. Jensen. "Photoelasticity and its Synergism with the Finite Element Method: A report on NSF ILI Grant DUE 9751315." Proceedings of ASEE Annual Conference, Charlotte, NC, June 1999.

Department of Foreign Languages

Presentations:

SUTHERLAND, Richard L. "Creating and Presenting on the Web." Technology in Education Conference, Snowmass, CO, 25-29 June 1999.

Publications:

SUPINSKI, Stanley P. "An Experimental Comparison of Strategies Using Cooperative Learning and Interactive Video: Lessons for the Interactive Classroom." *Journal of Interactive Learning Research*, Vol. 10 (2), July 1999.

Workshops:

VERANO, MIGUEL, Lt Col Richard Sutherland, Major Stanley Supinski, Capt Denio Alvarado, Capt Renaldo Canton: "The Web: Bringing Students and Teachers Together." Workshop in the Networked Classroom Laboratory given by USAFA personnel for the American Association of Teachers of Spanish, Cooperative Learning and Technology, USAFA, August 1999.

Department of History

Presentations

"The China-Burma-India Theater's Impact on World War II." 14th Air Force (CBI) Dedication Ceremony, Colorado Springs, CO, 8 October 1999.

FARQUHAR, J. T., "The Unsung Heroes: Military Chaplains During World War II." Saipan All Units Reunion, Colorado Springs, CO, 11 September 1999.

HEIDLER, J.T., "Building Bridges Between American History and World History." Organization of American Historians, Toronto, Canada, 24 April 99.

MOYD, M.M., "Bearing the White Man's Burden: Colonial Troops Fighting European Wars." World History Association Conference, Victoria, British Columbia, Canada, 24-27 June 1999.

Publications:

HEIDLER, J.T., "Randolph B. March and the Army of the Potomac." in Notable Chiefs of Staff. Westview Press.

HEIDLER, J.T., "David M. Potter and Southern History." *Whistlin' Dixie: Essays on the South's Most Notable Historians*. University of Alabama Press.

NEIBERG, M.S., "Making Citizen-Soldiers: ROTC and the Ideology of American Military Service." Harvard University Press.

TERRY, M., "Historical Dictionary of the United States Air Force and its Antecedents." Scarecrow Press.

Department of Management

Publications:

BARKER, J. and K. Domenici. "Praticas de Mediacao para Equipes Baseadas em Conhecimento." *Novo Paraedigmas em Mediacao*, August 1999.

BARKER, J. "The Discipline of Teamwork." *The Discipline of Teamwork*, July 1999.

HEPPARD, K. and S. Green. "Air Force Outsourcing Study." Rand Institute/Secretary of the Air Force for Acquisition, July 1999.

HEPPARD, K. "Committee Member: Doctoral Comprehensive Exam." Heidi Neck: University of Colorado, October 1999.

Presentations:

GREEN, S. "Act Strategically by Thinking Globally." Institute of Professional Employer Organizations, Colorado Springs, CO, August 1999.

GREEN, S. "Technology Mediated Distance Learning." 1999 Academy of Management Annual Meeting, Chicago, Ill, USA, August 1999.

HEPPARD, K. and C. Koberg. "Adaptive Adjustments: An Interorganizational Extension of the Principle of Minimum Intervention." 1999 Academy of Management Annual Meeting, Chicago, IL, August 1999.

HEPPARD, K. and S. Green. "Doctoral Education and Technology Mediated Distance Learning." 1999 Academy of Management Annual Meeting, Chicago, IL, August 1999.

HEPPARD, K. and S. Green. "StarBooster Business Plan." For Aldrin/Davis Business Plan, Tulsa, OK, Tulsa, OK, October 1999.

KING, D., W. Jennings, and S. Fraser. "Impact of Social Security on Asset Allocation." AFIT presentation, Dayton, OH, USA, September 1999.

THORNTON, J. "Arguments Advocating Lower Stages of Moral Development in the Public Accounting Profession." American Accounting Association's Ethics Sym 99 Aug, San Diego, CA, August 1999.

Department of Mathematical Sciences

Publications:

HAGHIGHAT, A., H. Ait Abderrahim, and G. E. Sjoden. "Accuracy and Parallel Performance of PENTRAN Using the VENUS-3 Benchmark Experiment." ASTM Standards Review, 10th International Symposium Rx Dosimetry, September 1999.

HADFIELD, S. "USAFA Research Tracking Ver 1.08." USAFA Software, August 1999.

SJODEN, G. and A. Haghighat. "Advanced 3-D Parallel Discrete Ordinates Methods for Criticality Safety Calculations." 1999 Proceedings of International Conference on Math, Comp, RP&Env, Madrid, September 1999.

SJODEN, G., R. Gilchrist, and D. Hall. "Modeling a Diagnostic X-ray Imaging Facility with 3-D Discrete Ordinates." Proceedings of the 2000 International Topical Meeting, September 1999.

SJODEN, G. and H. Ait Abderrahim. "Parallel Performance of 3-D Sn Calculations in Real-life Shielding and Criticality Problems." Proceedings of the 2000 International Topical Meeting, September 1999.

SJODEN, G. and A. Haghighat. "Significance of Adaptive Differencing, Variable Grid Density, and TPMC for Sn Methods." 1999 Proceedings of International Conference on Math, Comp, RP&Env, Madrid, September 1999.

Department of Physics

Publications:

ANDERSEN, G., J.K. Brasseur, R. Knize, and P. Haris, "Absolute Daytime Holographic Raman Lidar System." *Applied Optics*, Fall 1999.

BRUESKE, K., "AMSU Tropical Cyclone Homepage." University of Wisconsin-Madison, Institute for Meteorological Satellite Studies Web, 10 Sept 1999.

CHUN, F. K., and C. T. Russell, "Statistical Characteristics of Field-aligned Currents in the Earth's Inner Magnetosphere." Accepted for publication in *Magnetospheric Current Systems*, edited by Ohtani et al., July 1999.

CHUN, F. K., M. G. McHarg, D. J. Knipp, S. Billings, G. Lu, B. A. Emery, and A. D. Richmond, "Comparison of AMIE patterns to Weimer Potentials and Hardy Conductance." 1999 Spring AGU meeting, Boston, MA, abstract published in *EOS Trans.,80* (17), May 1999.

COOK, R. "Gravitational-electromagnetic Analogy and the Vacuum-energy Puzzle." *Physical Review D.*, July 1999.

ENLO, C.L., W.A. Pakula, G.A. Finney, and R.K. Haaland, "Teleoperation in the

Undergraduate Physics Laboratory---Teaching an Old Dog New Tricks." *IEEE Transactions on Education,* Volume 42, No. 3, August, 1999.

EVERITT, L, and E. T. Patterson. "Electromagnetism in the Movies." *The Physics Teacher*, Nov 1999.

KNIPP, D., "Joule Heating and Electric Potential Map." University of Michigan Space Weather Month Web, 20 Sept 99.

MAJCEN, S. and C.J. Wetterer. "CCD Photometry of Asteroid 347 Pariana at the US Air Force Academy Observatory." *Minor Planet Bulletin 26 (4)*, p. 29, Oct-Dec 1999.

RUSSELL, C. T., P. J. Chi, V. Angelopoulos, W. Goedecke, F. K. Chun, G. Le, M. B. Moldwin, and E. G. Reeves. "Comparison of Three Techniques of Determining the Resonant Frequency of Geomagnetic Pulsations." Submitted to *Geophys. Res. Lett.*, 1999.

WETTERER, C.J., Saffo, C.R., Majcen, S. & Tompkins, J., "CCD Photometry of Asteroids at the US Air Force Academy Observatory during 1998." *Minor Planet Bulletin 26 (4)*, p. 30, Oct-Dec 1999.

Presentations:

GRUNER, H. "Tutorials in Introductory Physics at the U.S. Air Force Academy." American Association of Physics Teachers Summer Meeting, Aug 5, 1999.

NOVAK, G.M., E.T. Patterson, and A. Gavrin. "Just-in-Time Teaching." (Full Day) workshop for AAPT Summer 1999 National Meeting (San Antonio, TX), August 1999.

PATTERSON, E.T. and G.M. Novak. "Just-in-Time Teaching." Invited workshop for National Science Foundation funded Introductory Physics Conference 4 Workshop, Joliet Junior College, Joliet, IL, 9-12 June 1999.

Department of Political Science

Publications:

BOLT, P.J. and G.T. Yu. "Northeast Asian Economic Cooperation: The Role of the US." *Mongolia and Northeast Asia*, eds. Peter Schran and George T. Yu (Champaign: Center for East Asian and Pacific Studies, University of Illinois at Urbana-Champaign, 99).

MORRISON, J.H. "John Witherspoon and 'The Public Interest of Religion'." *Journal of Church and State*, 41 (Summer 1999).

PILCH, F.T. "Sexual Violence and the Crisis in Kosovo." *Refuge: Canada's Periodical on Refugees,* August 1999.

Presentations:

BOLT, P.J. and H. Hughes. "Asia's Ethnic Chinese and China's Post-1978 Economic Development." Western Conference for the Association of Asian Studies Annual Meeting, September 1999.

CARRESE, P.O. "Montesquieu's Moderate Constitutionalism: Separation of Powers, the Mixed Regime, and Liberal Security." American Political Science Association Annual Meeting, September 1999.

KNOTT, S.F. "Alexander Hamilton in the American Mind." American Political Science Association Annual Meeting, September 1999.

MORRISON, J.H. "John Witherspoon, Alexander Hamilton, and Washington's Farewell Address." American Political Science Association Annual Meeting, September 1999.

USAFA Research Points Of Contact

To learn more about research at the United States Air Force Academy, we encourage you to visit our Web site at www.usafa.af.mil/dfe. If you want to focus on a particular department or effort you might want to contact the associated Department Research Director. Each phone extension is preceded by (719)-333 commercial or 333 DSN. Each e-mail is followed by @usafa.af.mil

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