



Newsletter

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Reverse Engineering Nature's Robots *Control of Flight in Biology*

Prof. Tom Daniel

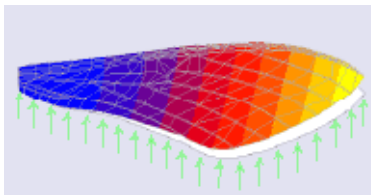
Biology Department Chair - University of Washington



Tom Daniel received his Ph.D. in 1982 from Duke University where he worked on animal locomotion and biomechanics. He followed this with a Bantrell Postdoctoral Fellowship in Engineering Sciences at the California Institute of Technology under the guidance of Ted Wu where he continued working on the fluid dynamics of animal movement. In

1984, he joined the Department of Zoology at the University of Washington. He is the proud recipient of the UW Distinguished Teaching Award and the UW Distinguished Graduate Mentor Award.

Research interests include flight control in *Manduca sexta*, flexible filaments and the dynamics of muscle contraction, and bio-gyroscopes

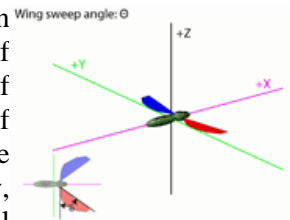


Neurons and neuronal networks decide, remember, modulate, and control an animal's every sensation, thought, movement, and

act. We want to know more about neuronal dynamics and networks; about synaptic interactions between neurons; about how neuronal signaling and behavior and control and environmental stimuli are inextricably linked. Recent research by Jordanna Sprayberry has focused on visual

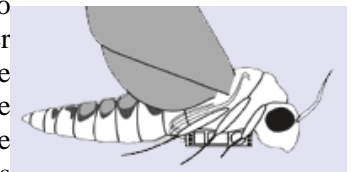
image processing and the patterns of descending motor signals that respond to moving images.

For some time, we have been concerned with the dynamics of muscle contraction at the level of whole muscle and at the level of the molecular motors that drive contraction. In a current study, we are focusing on the total mechanical power output of the



dominant flight muscle of *Manduca sexta*, a muscle whose behavior is remarkably similar to cardiac muscle. Now, under the leadership of Bert Tanner, a Bioengineering graduate student, we are focusing on multiple filament interactions along with spatially explicit models of Calcium regulation of the thin filament.

As part his postdoctoral research, Sanjay Sane has proposed the notion that insects may encode gyroscopic forces by antennal vibration. This in turn has driven a number of related research projects including a blend of finite element analyses, neurobiological approaches and biomechanical approaches to see how antennae or other structures can encode gyroscopic forces. We are particularly interested in the stress and strain distributions in compliant gyroscopes.



Images courtesy University of Washington

AIAA Lecture - Meeting

Date: Tuesday, January 16, 2007
Location: Old Spaghetti Factory
2801 Elliot Ave
Seattle, WA
Time: 6:00 PM Social, no-host bar
6:30 PM Dinner Begins
7:15 PM Lecture Begins

Cost: \$15 AIAA Members & Guests
\$18 Non-Members
\$5 Students
\$5 Educator Associates

Please note a reservation is a commitment to pay.

Reservation Option Via the Section Website

AIAA members can RSVP online at www.pnwaiaa.org or send an e-mail to rservations@pnwaiaa.org. A confirmation e-mail will follow.



From the Left Seat

Paul Kostek: 2006-2007 Chair

Happy New Year, hope everyone enjoyed the Holidays and you're ready for the new opportunities and challenges this year will offer.

We'll continue our monthly program on January 16th with a presentation on Bug Flight by Tom Daniel of the UW. Tom will be discussing his wind-tunnel testing of fly's, quite an instrumentation task. We'll be at the Old Spaghetti Factory in Seattle.

We're using two sites for our dinner meetings this year, the Old Spaghetti Factory in Seattle and Azteca's in Bellevue. If you have any comments on the meeting sites, please contact Scott Eberhardt.

If you'd like to be more active in the Section, we have several volunteer activities available. First is the AIAA Booth at the Engineering Fair next month (Feb 17th) at the Museum of Flight. We need people to staff the booth, contact Jim McClelland for more information. Second, Christian Carpenter is working on a UAV blimp kit for use by K-12 students. Christian needs help with the design/development of the kits and if you're interested please contact him. Christian also leads our Congressional Visits Days activities and if you're interested in heading to Washington, DC or doing local visits, please contact Christian.

The Puget Sound Engineering Council is holding a Mentor Night at the UW on January 23rd. To sign up, go to <http://www.pseconline.org/Events/MentorNights/SignUp.html>. The Section is also helping Aviation High School by providing mentors. If you're interested, visit the AHS Website (<http://www.aviationhs.org/pub/pub.aspx>) and under the left pull down menu, About AHS, there is a mentoring form.

Contact information for all of the Council Officers is listed on the Section Website.

Congratulations to Emmanuel Domingo on receiving an AIAA Special Service Citation for his work with the Section. Emmanuel serves as NL editor, Young Professionals focal, and has coordinated the Section's Engineering Fair participation. Thanks Emmanuel for all your support of Section activities.

AIAA Membership

Many memberships will be expiring soon. Please check your membership status to prevent any disruption with AIAA services.

AIAA 75 Years

In honor of our 75th anniversary, the following series will cover the Institute's history. The entire series can be read on the AIAA website.



AIAA – 1988 to the Present

By 1965, AIAA had 37,931 members and 209 staff in offices in New York, Los Angeles, and London. It had an active conference, publication, and honors and awards programs, and had begun to get more involved in public policy issues during the 1970s, becoming a nationally respected voice in the aerospace community. This activity was part of the decision to move from New York to Washington, D.C., in 1988. The Technical Information Service remained in New York, but all other positions were moved to the new Aerospace Center Building at 370 L'Enfant Promenade. Only 25 staff members chose to move to Washington, and Jim Harford also retired at this time after 35 years with the ARS and AIAA. The new Executive Director, Cort Durocher, started on 1 October 1988.

The AIAA was now a mature professional society. Cort Durocher brought AIAA into the computer age with the purchase of 100 desktop computers for all staff, that could be networked, and under his management the Institute weathered years of fiscal ups and downs. AIAA conferences branched out from just specialist meetings to include governmental support, from NASA to the Air Force and others. The most notable achievement of AIAA during this time, however, was the creation of the AIAA Foundation in 1996 to administer AIAA-funded awards and scholarships. Today, the Foundation awards over \$150,000 in scholarships, grants and honoraria per year.

To celebrate 100 years of powered flight, the AIAA Board allocated \$3.7 million for the Evolution of Flight Campaign, the largest investment in a single program in the history of the Institute. Comprising over three years of activities, the program culminated in a week-long celebration coinciding with other centennial events in Dayton, Ohio in July of 2003.

Cort Durocher retired from AIAA in 2004 and the current Executive Director, Robert Dickman, started in February 2005, inheriting an organization that has never offered a broader range of programs supporting the members and the industry. For 75 years, AIAA has taken great pride in its achievements and those of its members, and looks forward to continuing its support into the far future.

Events

PSEC Mentor Night at the University of Washington

If you are interested in being a mentor for a night for college students, PSEC needs your help! The purpose of the mentor night activity has been to bring as many practicing engineers together with as many students as possible. We are trying to inspire the students, most of whom are sophomores or juniors, toward a career in engineering. The mentoring has been focused on the one night, with engineers explaining what their experience in the profession has been and answering questions posed by students.

The event will be held Tuesday, January 23rd, from 6 pm to 8:30 pm. The tentative schedule is as follows:

- 6:00 pm Welcome & Introductions
- 6:10 pm Panel Discussion (4-5 Mentors)
- 6:40 pm Introduction of all Mentors (Mentors not participating in panel will need to arrive by 6:30pm)
- 6:50 pm Break; food will be served only during the break!
- 7:10 pm Break-Out Session 1
- 7:30 pm Break-Out Session 2
- 7:50 pm Break-Out Session 3
- 8:10 pm Conclusion & Wrap-Up

A panel discussion will be comprised of 4-5 mentors from various organizations, disciplines, years of experience, and diversity. Students will be able to ask general questions about engineering to any of all of the panelists. Mentors are welcome to come early to hear the panel.

Break-out sessions will focus on one-on-one mentoring of students by mentors in their discipline. Students will rotate between mentors and tables to get a broad overview of answers to their questions.

If you are interested in being a mentor, please sign up online at www.pseconline.org/Events/MentorNights by January 18th.

PNW Aerospace Alliance 2007 Aerospace Conference

Sharing Risks, Resources and Opportunities- The Supplier Management Chain

The Pacific Northwest Aerospace Alliance together with the Washington State CTED and the Canadian Consulate in Seattle presents the sixth annual 2007

Aerospace Conference at the Lynnwood Convention Center February 12 to 13 in Lynnwood, WA.

The PNAA conference is the only major aerospace conference in the Pacific Northwest. Don't miss this opportunity to meet with some of the major companies in the aerospace industry. This year's theme is "Sharing Risks, Resources and Opportunities- The Supplier Management Chain" Meet and network with aerospace companies during this two-day event!

Richard Aboulafia from the Teal Group will be returning as our featured speaker. Mr. Aboulafia is a nationally recognized authority in the aerospace industry and will present an overview of the aerospace industry and his forecast of the opportunities and challenges that lie ahead.

Phil Hopton, vice president, Seattle Operation, Rolls Royce; Erick van Houtte, Dassault Systèmes, and Mike Gray, Supply Chain Evangelist, Dell Computers, have confirmed and will provide insight into issues and solutions for today's supply chain management. For more information, see www.pnaa.net or call Bill King at 206-256-6128.

Young Professional Presentation Program at Space 2007

The conference will be held in Long Beach, CA, from September 18 to 20, 2007. The event is sponsored by Boeing with abstracts due January 26.

Young professionals are sought to participate in the YP Presentation Program, which provides young professionals under the age of 35 the opportunity to present their work at a national AIAA technical conference. This program integrates young professionals into the regular sessions and allows them to give presentations covering continuing and in-process design or research works, in addition to completed projects. The Program allows for oral presentations only, published papers are not required. Please note the Program does not violate the "no paper, no podium" policy, the Program is fully supported by the AIAA Technical Activities Committee.

Presentation topics should be work with which the presenting speaker is engaged or intimately familiar. When submitting your abstract to a session, please indicate it is a YP presentation. To submit your work for consideration, submit a brief (500 words or less) abstract for the appropriate technical track. For more information, visit www.aiaa.org/Space2007.

Events



Top: (L-R) Paul Kostek (PNW AIAA Chair), Andrew Greenberg, and Jamey Sharp (Portland State Aerospace Society) at the Museum of Flight.

Top Right: Jamey Sharp & Andrew Greenberg discussing their presentation with attendees.

Middle & Bottom: Attendees examine a tested rocket and various rocket instruments.

2006-2007 PNW AIAA Calendar

Tuesday, January 16	
Speaker:	Tom Daniel-University of Washington
Topic:	Bug Flight
Location:	Old Spaghetti Factory ²
Tuesday, January 23	
Event:	PSEC Mentor Night: University of Washington
Location:	University of Washington, McCarty Hall Seattle, WA
Saturday, February 12-13	
Event:	PNW Aerospace Alliance 2007 Aerospace Conference
Theme:	Sharing Risks, Resources and Opportunities- The Supplier Management Chain
Location:	Lynnwood Convention Center
Saturday, February 17 (CORRECTION)	
Event:	PSEC Engineering Fair
Time:	10:00 am to 5:00 pm
Location:	Museum of Flight
Tuesday, February 20	
Speaker:	Roger Launis
Topic:	Apollo: The Thrill of a Lifetime
Location:	Old Spaghetti Factory ²
Tuesday, March 20	
Speaker:	Aviation Partners Boeing
Topic:	TBD
Location:	Azteca ¹
Tuesday, April 17	
Speaker:	Brien Wycle
Topic:	Flight Testing the B-52
Location:	Old Spaghetti Factory ²
Tuesday, May 15	
Speaker:	Paolo Feraboli-University of Washington
Topic:	TBD
Location:	Azteca ¹
¹ Azteca 150 112 th Ave NE Bellevue, WA	² Old Spaghetti Factory 2801 Elliott Ave Seattle, WA

Events

2006-2007 Retired Members Brunches

Saturday, January 20

Speaker: Billy Roeseler

Topic: Windmills

Saturday, March 17

Speaker: Dr. Bonnie Dunbar

Topic: Museum of Flight

Saturday, May 19

Speaker: Bob Bogash

Topic: Caretaker of the Original 737: The Last 30 Years

All Retiree meetings are held at the Museum of Flight, Seattle, WA. Contact Tom Holgate (see list of officers) for more information.

-Define and address issues and capabilities common to the T&E community;

-Identify and enhance T&E partnership opportunities across Air Force commands and among industry partners;

-Continue alignment of the Air Force T&E Enterprise through communication of the Air Force T&E Enterprise Roadmap; and

-Foster Technical workforce expertise and development through training, technical presentations, and discussions.

T&E Days will broaden the enterprise concept presented in Nashville in 2005 through participation by space command and combat/mobility air forces. The focus of the Enterprise is to transform T&E for the future. As transformation occurs, alignment of capabilities and resources is critical to ensure that development, acquisition, test, training, and sustainment activities are provided on time and on cost. T&E Days will bring together the key players to continue the transformation and align T&E for the future.

In conjunction with the underlying theme, senior Air Force military leaders will present their vision for T&E and the challenges for aligning the Enterprise. Plenary speakers from DoD, the Air Force's sister services, other government agencies, and industry will provide their perspectives on the overall effects of a transformed and aligned T&E Enterprise on policies and approaches.

For updates on the conference, visit www.aiaa.org/events/tedays.

2007 PSEC Engineering Fair

Join AIAA Saturday, February 17, between 10 am and 5 pm at the Museum of Flight for the annual 2007 Engineering Fair presented by the Puget Sound Engineering Council. The Fair is open to the public and is free of charge. Access to the Museum is separate.

National societies of various engineering disciplines will be on hand. The Fair is designed toward K-12 students though there is plenty to see and do for all ages.

If you would like to volunteer at the booth, please contact Jim McClelland at James.McClelland@boeing.com.

For more information, visit www.pseconline.org.

US Air Force T&E Days

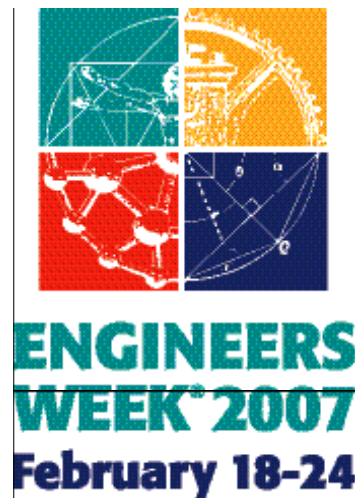
Aligning the T&E Enterprise

February 13-15, 2007

Destin, FL

US Air Force T&E Days will bring together senior Air Force, DoD, NASA, and industry leaders, as well as systems acquisition, development, and test professionals, to further the development and implementation of the Test & Evaluation (T&E) Roadmap. The Roadmap aligns the Air Force T&E activities for both current and future test requirements into a cohesive plan with a clear vision and achievable goals. The T&E Days environment will provide an excellent opportunity for technical exchange, collaboration, and cooperation among senior management and test professionals on issues and topics related to aligning the T&E Enterprise.

The T&E Days program is targeted for senior leaders, acquisition professionals, T&E practitioners, and training professionals. The objectives of this forum are to:



Section website: www.pnwaiaa.org
 National website: www.aiaa.org

Please submit newsletter materials to the editor by the 21st of January for the February newsletter.

A PUBLICATION OF THE PACIFIC NORTHWEST SECTION OF AIAA
Address Corrections

Mail to:
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Reston, VA 22091

On-line at
<http://www.aiaa.org>
 (Join/Renew/Update). Membership ID needed

Section Officers and Directors

Position	Name	Address (Mail stop if Boeing*)	Phone	Email address
Council				
Chair	Paul Kostek	6M-EU	-	kostek@pnwaiaa.org
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Secretary	Jon Lee	02-XJ	-	lee@pnwaiaa.org
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Advisory Council	Ratan Khatwa	-	-	-
Past Chair	Dave Lednicer	2133 152nd Ave NE, Redmond, WA 98052	425-643-9090	lednicer@pnwaiaa.org
Elected, non-voting				
Vice-Chair-Elect	Steve Runo	-	-	-
Secretary-Elect	Mark Viviano	-	-	-
Treasurer-Elect	Jim McClelland	-	-	-
Appointed				
Webmaster	Andrew McComas	2133 152nd Ave NE, Redmond, WA 98052	425-643-9090	mccomas@pnwaiaa.org
Honors & Awards	Scott Eberhardt	-	-	eberhardt@pnwaiaa.org
Retired Members	Tom Holgate	2704 SW 314th, Federal Way, WA 98023-7842	253-838-0333	holgatz@aol.com
Newsletter	Emmanuel Domingo	03-JP	206-227-7819	domingo@pnwaiaa.org
Nominations	Vera Martinovich	02-XJ	425-266-8664	martinovich@pnwaiaa.org
Museum of Flight Liaison	Bonnie Dunbar	-	-	-
Pre-College Outreach	Scott Eberhardt	-	-	eberhardt@pnwaiaa.org
Public Policy	Karl D'Ambrosio	5026 18 th Avenue NE, Seattle, WA 98105	253-395-3710	dambrosio@pnwaiaa.org
Young Professionals	Emmanuel Domingo	03-JP	206-227-7819	domingo@pnwaiaa.org

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