NA&ME at PRADS 2007, Houston TX

Or spoken in “longhand,” The 10th International Symposium on Practical Design of Ships and Other Floating Structures.

Three of our outstanding graduate students presented papers at this symposium, meeting for the first time in the United States. Space does not allow us to reproduce the three papers in their full length, but the authors have provided us with the intriguing text which we reproduce following. You will observe that each paper was supported by a faculty advisor through which you might explore anything of interest.

**A Methodology for Creating Design Ship Responses**

L. K. Alford, M.S. Khalid, D. Kim, K. Maki, A. W. Troesch, University of Michigan

Historically, ship hulls have been designed to withstand severe loads from very large waves, such as rogue waves, but a ship is a dynamic system.

Sometimes, a ship has a worse reaction to smaller waves that come at a certain frequency than to one very large wave. Computer simulations can tell a designer how a new ship will react to different ocean conditions by subjecting the ship to random ocean waves for a long time and seeing what the largest response is, but these simulations take a long time to run. Instead, a method was devised that will produce a short time series containing a large response without resorting to brute force simulation.

Random processes are often modeled as a summation of a finite number of sinusoidal components each with a random phase angle that is usually uniformly distributed. Large responses at a given time, however, were found to be related to particular non-F uniform phase distributions that can be modeled using

![Phase distribution for a 7.65σ_{HBM} design load for a mono-hull tanker.](image-url)
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From Armin Troesch, Department Chair

Winter term is over and the Spring-half term is nearing final exams. Many exciting events have occurred since the last mailing of the Nautilus and some of them are described in this edition.

As you will read, the research activities of the department continue to expand. Three of our doctoral students traveled to Houston this past Fall to participate in the 10th International Symposium on Practical Design of Ships and Other Floating Structures, i.e. 2007 PRADS. Drs. Alford, Li, and Nick, (or Laura, Yaning, and Ellie as they are known in the department) presented the results of their thesis work to the several hundred international researchers, scientists, and engineers in attendance. Department-supported travel to professional activities such as this gives our students excellent opportunities to network and exchange ideas with leaders in the marine industry.

Of relevance to the Department’s graduate education mission, the University-wide President’s Donor Challenge for graduate student aid is currently underway. If you make your graduate and professional student aid gift or pledge before December 31, 2008, you can leverage your gift in a one for two match supporting the next generation of leading naval architects and marine engineers and scientists. As of May 31, $25.99 million has been raised across the University with $12.99 million in matching funds committed. Read more about this offer on the back pages of this issue.

During the past year, one of our junior faculty gained another honor, adding to his Office of Naval Research Young Investigator Award (ONR/YIP). Assistant Professor Ryan Eustice has received the National Science Foundation’s CAREER Award for his work in multi-vehicle underwater robotic navigation. You will get a chance to meet Ryan’s research group and learn of their impressive work with autonomous vehicles.

From time-to-time, we enjoy highlighting the significant accomplishments of our famous alumni. In this issue, Ray Pearlson and his patented Synclift are featured. Synclift is now owned by the Rolls Royce Group, but the name is still synonymous for excellence in innovation and entrepreneurship.

On April 9, the Department had the opportunity to award its first

(continued on page 5)
distributions used to generate the design horizontal bending moment load and corresponding incident wave at midship shown in Figure 2. The beauty of this method is that it is fast, many design time series can be generated that are all statistically equivalent, and it works for a wide variety of ship responses.

Fig. 2: Example of design load and resulting excitation for horizontal bending moment. Maximum horizontal bending moment of $7.65\sigma_{HBM}$ is caused by a $6.4\sigma_{WAVE}$ wave elevation.

to calibrate a modified Gaussian distribution that relies on a single parameter. For example, the linear horizontal bending moment response spectrum of a typical mono-hull tanker was calculated using a linear seakeeping analysis. A target design load of $7.65\sigma_{HBM}$ where $\sigma_{HBM}$ is the RMS of the horizontal bending moment response. Figure 1 shows the phase centroid.

To accommodate rectangles, L’s, T’s, and other complex shapes needed to fit spaces efficiently together and around fixed objects, each space is modeled as three contiguous rectangular elements. These three elements can grow and recede as needed in all directions to achieve the goals and constraints for the space. When desired area for the spaces is obtained or a maximum loop count is reached, the algorithm concludes. Bulkheads are then defined within the available envelope to delineate the spaces.

The population of solutions is evaluated on the best fuzzy utility for the goals and constraints for the space (continued on page 4)

Fuzzy Optimal Arrangement of Spaces within a Zone-deck Region of a Ship

E. Nick, and M. Parsons, Arthur F. Thurnau Professor, University of Michigan

The Arrangements Optimization Project currently under development at the University of Michigan is developing software to generate and optimize the layout of a ship in the preliminary design stage. This will provide great improvement in the expediency and solution validation over the current manual methods. Starting with a hull form and space list, the optimization algorithm allocates spaces to regions of the ship called Zone-decks. The Zone-deck is the area on one deck within one transverse subdivision. Next, the spaces assigned to each Zone-deck are arranged.

Space realization is handled in two steps: topology optimization and geometry optimization. The topology designates the relative (forward of, aft of, port of, starboard of, etc.) centroid position and access connectivity of each space relative to each other. The topology solution variable is called a chromosome for optimization using a Genetic Algorithm. Space centroid locations are then mapped to an orthogonal grid for the given Zone-deck area envelope. The geometry generation program then expands the spaces from the centroid.

(continued on page 4)
Mesh Size Effects in Simulating Ductile Fracture of Metals

Y. Li, D. Karr, University of Michigan, G. Wang, American Bureau of Shipping, Houston TX

Physical scale and size effects influence the failure of structures and structural components. This can be especially true when failure is due to brittle, quasi-brittle, or ductile fracture. When simulating ductile fracture using the finite element method, mesh size effects are also encountered. A common approach for analyzing the response of hull structures due to grounding and impact, for example, is to eliminate elements or to allow elements to split when a critical strain to failure is achieved. However, an important

Ellie Nick

Figure 2: Strain bifurcation diagram
(continued on page 5)
(Dept. Chair continued from page 2) endowed chair. Through the generosity of John Couch and family, Professor Robert (Bob) Beck was recognized as the Richard B. Couch Professor of Naval Architecture and Marine Engineering. Professor Beck, following the example set by Richard Couch, is active in hydrodynamic research, theory and experiments.

Bob’s international leadership in ship hydrodynamics is also demonstrated through his work as editor of Journal of Ship Research, co-author of the seakeeping section in Principles of Naval Architecture, and his participation on many industry panels and committees. Bob’s talk on “Modern Marine Hydrodynamics - 45 Years of Evolution” gave an entertaining and informative view of his experiences in that important area of naval architecture.

In May, the department held a retirement reception for two of its dedicated faculty: Research Scientist Klaus-Peter Beier and Professor Michael Parsons. The Michigan Naval Architecture program, with its 127 year history, is rich in tradition and Peter’s and Mike’s contributions have been a key part in maintaining and expanding that tradition. We understand that the success of the future will be due to the efforts of educators and mentors such as Peter and Mike. One of my favorite sayings goes something like this: “A teacher affects eternity; he or she can never tell where his or her influence stops.” I think this aptly describes the impact that Peter Beier and Mike Parsons have had in their many years of teaching, research, and service.

We wish them well in their retirement.

With warmest regards,

[Signature]

(YPRADS 2007 continued from page 4) complication arises because of the observed mesh size sensitivity whereby strain to failure generally increases with finer finite element meshes. In the paper we explored the relation between the critical strain to failure, $e_f$, and the size of the “unit cell” or finite element. Our study focused on applications for marine structures involving fracture of metals including, for example, aluminum, magnesium, and steel alloys. Extensions to two and three dimensional stress states were also discussed.

![Figure 3: Comparison of analytical results and experimental results for aluminum alloy](image)

Yaning Li
Robert F. Beck recognized as the

Richard B Couch
Professor of Naval Architecture and Marine Engineering

Professor Beck was recognized by a formal “Lecture and Ceremony” at the Robert H. Lurie Engineering Center, 9 April 2008, at which the honoree spoke.

Your editor was not privileged to attend, he still being at winter in Arizona on 9 April, and further, he recognizes the futility of trying to reproduce the lecture here, since it depended heavily on Bob’s explication of a large number of slides. However, we can give you Bob’s abstract, following here:

Modern Marine Hydrodynamics
Forty-Five Years of Evolution

The developments in marine hydrodynamics over the last 45 years are a fascinating story. The field has seen an evolution, driven by computers, moving from model testing and empirical based formulas to fast and accurate computations that can be used for design and optimization. This talk will discuss the growth from simple linear theories for individual problems such as wave resistance, to modern nonlinear, viscous flow, computations for the motions of a ship in a seaway. The evolution is not finished; the ultimate goal being a unified approach that is computationally fast and not limited to linear flow analysis. The unified approach must include all aspects of the field—from wave and current loads on offshore structures to maneuvering in a seaway. The computations must be fast enough that they are useful in design and optimization.

For those of you not privileged to be students of NA&ME in the 1960s, we add the biographical note that Richard Couch was chairman of our department, 1957-1967. He was also director of our Marine Hydronamics Laboratory 1970-1981, after returning to Michigan after a period on leave at the General Dynamics Yard, 1967-1970. Following this career of distinction, he became Emeritus Professor, 1982.

Richard Couch’s son, John Couch, BSNAME, 1964, is the donor who has established the chair that Bob Beck now occupies.

Our congratulations to Bob, and our thanks to John and his family.
Richard Bailey Couch was born April 7, 1911 in St. Johns (Portland) Oregon, the first of two sons of Frederick Cornelius Couch and Gertrude Edna Bailey. His career path was shaped by his early experiences with his seafaring father and growing up near the active shipping community of Portland. Upon earning a scholarship to the private college in 1929, Professor Couch attended Webb Institute of Naval Architecture and Marine Engineering in New York City, receiving his Bachelor of Science by 1933. He also earned a degree in aeronautical engineering from New York University in 1934.

Between 1934 and 1957, Professor Couch worked as a naval architect at the Philadelphia Naval Shipyard, Puget Sound Naval Shipyard, the U.S. Navy’s David Taylor Model Basin, the U.S. Navy Bureau of Ships. He also served in the U.S. Coast Guard during WWII.

In 1957, Richard Couch was induced to leave his position as Chief Naval Architect with the Navy Department’s Bureau of Ships to become Chair of the University of Michigan’s Department of Naval Architecture and Marine Engineering. He brought with him ambitious plans for improving the scope of the educational program and the capabilities of the model basin. Under his leadership the department put strong emphasis on graduate education. Couch induced the college to heavily invest in a new carriage and sophisticated instrumentation for the model basin, which took on the more suitable designation as the Ship Hydrodynamics Laboratory. Couch was fortunate in that his arrival coincided with the Soviet Union’s Sputnik I, and with it a renewed national interest in science and engineering, which reflected in generous financial support for the department.

Professor Couch’s modernized Hydro Lab became so much in demand for commercial testing that at times it had to operate two daily shifts. In addition, a 60 by 100 foot wave and maneuvering basin was constructed on North Campus with wave making devices supplied as excess items from the Navy’s Taylor Model Basin. This facility was used for a variety of projects including an ambitious series of tests on oil recovery systems carried out for the U.S. Coast Guard. In time, however, the need for the tank diminished and it was returned to the college in the early 1970s to make room for the Department of Civil and Environmental Engineering.

Our condolences go to the families and friends of our recently deceased alumni

Robert Paul Werner, BSNAM 1951
passed away 3/8/08

F. Leif Eareckson, BSNAM 1948
passed away 11/29/07

George L. Grunthaner, BSNAM 1950
passed away 4/20/08

David D. Walden, BSNAM 1950
passed away 11/9/07

Richard H. Suehrstedt, BSNAM 1951
passed away 1/15/07
A Salute to Syncrolift and Ray Pearlson

A half-century of success! Nautilus is maybe a year or so late with that salute, but we scholars are always so very busy with… well, with our scholarly activities being so physically and mentally taxing (yacking through a whole hour for maybe three hours a week, having at least one new joke for every class meeting!), that we have excuses for a lot of things.

Yes, SYNCROLIFT! Syncrolift and Ray Pearlson, BS NA&ME in 1949 (at Our University, of course) soon after three years of service USN during WWII. On to Newport News Shipbuilding where his brief career is well remembered by none other than another graduate of that institution, the very myself, your editor. Indeed, a recent Nautilus has a pic of Ray and editor-himself enjoying something or other on the deck of a pleasure-boat schooner in Hampton Roads, circa 1950. (No, neither of us owned the schooner; it belonged to an MIT man, a person of such ilk that we usually try not to mention him in our publication.)

In 1953 Ray and family (about which words later) moved to Florida, where he began a new career with Merrill Stevens Drydock Company in Florida. His early work there involved designing boat lifts of the traditional kind, which at that time were limited to about 50 tons capacity. And that kind suffered from a limitation that Ray has described for us, following: it’s primary weakness was the varying lengths of lifting cables which, due to stretch differences that developed over time, caused the platform to become out-of-level, in consequence requiring periodic manual adjustment.

However, after identification of the problem by an educated and innovative Pearlson mind, the Syncrolift idea, which eliminated this defect, was soon being put to practice. And this novel idea not only eliminated that primary weakness of the traditional lift, but eliminated the “small craft only” limitation. Let’s pause for a description, paraphrasing and condensing Ray’s words:

Syncrolift®: a device for lifting a platform supporting a ship so that the ship and the platform are above water, thus making the vessel’s underwater exterior available for maintenance or other work. Its essential element is an array of synchronous electric motors that drive winches that lift the platform. The motors are supplied from a common alternating-current electrical source. Since such motors must turn in strict synchronism with their supplying frequency, the platform rises without the distortion that could otherwise be caused by lifting speeds that might differ along the length of the ship. In addition, an eight-part purchase reduces an variation in cable stretch by a factor of eight. In addition, there is a preset limit switch at each winch which activates at each end of each main lifting beam automatically stopping the platform at transfer level. This limit switch removes all construction and load stretch. Further, the articulation of the platform permits each main beam to auto level when its limit switch actuates independently of the other main beams. By these means, hull distortions that might be caused by differing stretches of the cables are much less than the hull normally experiences from wave action and from internal loads.

The first Syncrolift began operation in 1957. A half-century later, more than 250 units are in operation throughout 69 countries worldwide. Moreover, the original Syncrolift from 1957 has lifted more than 50,000 vessels, all the while using the original motors, gears, and controls.

Ray sold his Sychrolift company, Pearlson Engineering, in 1957, but has continued to live in Miami. Meanwhile, two (Douglas and Richard) of his five children have earned degrees in our NA&ME program. And then we salute wife-and-mother, Marge Pearlson. We who have known the Pearlsons for many years declare Marge to be a remarkable person in her own right.

To the Pearlsons then: May all your lifts be ever synchronous!
The Harry Benford Fund

A generous alum, who asks to remain anonymous, has made a gift of $10,000 to establish the “Harry Benford Fund.” A rather lengthy gift agreement between the donor and the University tells us that “distributions from the fund will be used as discretionary resources for the chair of the Department of Naval Architecture and Marine Engineering.” An interesting proviso is “if at a later date an endowed professorship fund is established in the College of Engineering named in honor of Professor Emeritus Harry Benford, the Fund may in its entirety be added to the endowed professorship fund and used thereafter to support the professorship bearing the name of Professor Emeritus Harry Benford.

By a recent count, 69 entities had contributed to the Harry Benford Fund. (Entity? That is often a “person” or an “alumnus,” but it many cases it is an alumn plus his/her spouse.) And yes, the fund has had many contributions already. (Note: Harry’s flair for the English language entitled the headings below.)

Bachelors of Generosity  ($1-$999)

Alan McClure Associates, Inc. (Scott McClure)
Anderson, Raymond and Carol
Barber, Bruce
Benford, Harry
Bergmann, Michael and Carol
Canby, Timothy
Carlson, Craig
Cebulski, Donald
Chen, Victor and Jacquiline
Chu, Ching-yuan
Cohen, Stuart and Susan Hartman
Colborn, George
Comer, Joe (Maritime Solutions South, LLC)

Comstock, Edward and Rita
Cowles, Walter
Dankers, Jr., George and Lauretta
Davies, David and Adelaide
Devine, Matthew and Karen
Doctors, Larry
Dunn (McLarty), Marjorie and Michael
Garzke, Jr., William
General Motors Corporation
Grey, William
Haskell, John Jr.
Hird, Jane (Tim)
Hurley, Jr., William
Keane, Robert (Ship Design USA, Inc)
King, James and Lei
Knapp, Alan
Korenkiewicz, Mark
Kowalyshyn, Dina and Robert
Kramer, Robert and Diane
Krumpen, Jr., Robert and Barbara
Kypke, Dean and Phyllis
Loos, David and Carolyn
Lunsford, Jr., Everett
Martin, Douglas
Pieper, Walter
Plude, George and Cathy
Pritchard, David
Puffenberger, Charles and Janice
Raytheon Company
Rosenblatt, Bruce
Scher, Robert and Ellen
Schwam, Owen
Shen, Young T. and Carol
Shumaker, Fred and Mary
Soden, James and Marthe
Suehrstedt, Arlene (Richard)
Sun, Jing
Taylor, Suzanne
Teachey, Jr., Marvin and Diane
Townsend, Corning and Tita
Troesch, Armin and Linda
Vibrans, Jr., Frank

(continued on page 11)
A Cat Named Cheshire

The mystery of a cat named Cheshire, as told by Eric Sponberg, our class of 1971, and practicing yacht designer. The telling was at a Quarterdeck meeting in Ann Arbor, earlier in 2008. It’s a long tale of intrigue, murder (most foul!), possible thefts and frauds, and one in which Eric was involved — no, heavens no! — NOT in those things, but in a naval architect’s contribution toward recovery of the gold, finding WhoDoneIt, and other intriguing things.

Gold? Yes, we said gold, as well as intrigue, etc. So…. Cheshire was an aluminum catamaran, a 60-footer that a new owner had brought across the Caribbean from Belize to Florida. It had sustained some damage on the passage, leading to insurance claims, in turn leading to disputes about the insurer’s liability.

Eric was retained by the owner to examine the boat. The vessel was ashore in Florida yard, but a distinct scum line on the hull showed a waterline 10-5/8 inches above the design waterline, indicating a displacement 8.8 tons greater than the estimated design displacement of 15 tons. Analysis showed that what should have been normal gear on board could contribute only 2 of those 8.8 tons.

Mystery, mystery, and worth the solving, since the greater inertia of 8.8 tons and the deeper draft could account for the sea-caused damage to the hull. The mystery deserved an effort for solution — more careful measurements and weighings and allowances — but those efforts left 5.7 tons still not accounted for.

But now the mystery leaps backward in time, and into a different hemisphere — to 1983, and to Nice on the French Rivera coast, i.e. to the time and the place where the boat was built. Before the building had been completed, however, the owner, and the shipwright who had done most of the building, had both died. The defunct yard and the unfinished boat languished, unloved, for five years.

But then, a new owner of yard and boat restarted the tale. And a Dark Eminence entered the scene. The latter was a young man — name unknown to Eric— who wanted that catamaran awfully, awfully bad. But he didn’t have the francs to buy. Nonetheless, he wanted the boat badly enough to commit murder to acquire it. And he did. Commit, that is.

The tale is long and sordid, but it is also too long to be detailed here. However, and in short, this “young man” collected insurance on his own life by murdering a homeless tramp, then convincing the insuror that it was his own remains lying there awaiting Judgment Day.

He did it! He collected the insurance on his own life! Then he had plastic surgery to alter his appearance, and after that approached the boatyard to buy the boat of his dreams. Ah, but too clever! He was recognized, and arrested. The tramp was exhumed from his grave, and positively identified. The imposter/murderer was imprisoned under the weight of a life sentence. But he did not (and has not) revealed his motive, though the obvious suspicion is that it was not the boat he wanted so badly, but the Whatever that gave it that unexplained excess draft.

Murderer goes to prison for life. Will not or cannot talk. Boat remains in the French shipyard, but after a few years was acquired by new owners who had it completed, then shipped to America, where it was put to its intended use. However, throughout its life until… until, well, sometime that has not yet arrived, the unexplained deeper-than-possible draft has remained unexplained.
Harry, but it had its origin five or six decades ago.)

Your editor was a work in a well-known East Coast shipyard. He went on the trial-trip of a nuclear-powered, missile-firing submarine. It was a unique experience for a young farm boy who at that time had not a single degree from UM NA&ME. But he survived, somehow, and back at his desk he sat down to write an account of the trip, entitled “Life Among The Missile Tubes.” Lost long ago, and mercifully so, but…

But a colleague who read the account exclaimed, “Hey, this reminds me of something a guy wrote… not around now… went to the University of Michigan… professor, or something, now.” Whatever, colleague had a copy that he fished out of a drawer for my benefit.

I forget the title, but do recall that one section told of a Greek freighter name Essence of Putrescence. Another told of repairs to an anchor accomplished with a “fluke flattening flatter.”

My informant added — an afterthought, really: “His name was Harry Benford. You’d a liked him.” Further instruction revealed that this Harry-Something had left for some kind of job at… well, that college in the Midwest.

Anyhow, the “something a guy wrote” was a clever dissertation on the work being done on the bedraggled ships that Greek shipowners were using in an attempt to rebuild a merchant marine in the decade following WWII.

Had I but known that fate would soon drop me at that same university, I might have saved a copy of that early Benfordian dissertation. But — who knows — he may have kept one himself. You could ask him.

Or maybe when he reads this he will dig out a copy for reproduction in the esteemed publication that you are reading at this moment. Your editor will surely seize upon it for immortalization on these very pages.
Associate Director of our Marine Hydrodynamics Laboratory, and familiar to many of our alumni, is leaving the Department and the University.

Hans wrote the following note:

“I will embark on a new career, but plan to maintain many of my University/Research/commercial contacts. In the interim, I will be consulting in Traverse City and working on many projects both locally and nationally. There are many opportunities that I am exploring and that will most certainly involve work on the Great Lakes.

My reason for leaving is that I inherited a home on East Grand Traverse Bay next door to my parents and childhood home. My wife’s parents are also in Traverse City along with just about all of our extended families. This is a dream opportunity for us and we are very excited. We have always wanted to be back close to our families.

I will miss the many experiences that I have had over the past 21 years at the University and the places around the world that I have been able to visit through my work. Though there are many to thank, the team at the MHL and specifically Guy Meadows have provided me with fantastic work environment and support over the years. The laboratory is in great shape and has evolved quite a bit over the last 10 years with many new and exciting projects. This will be the hardest part to leave (along with Michigan Football games being a little farther away).”

Good Luck, Hans; the department will miss you!

WE PROUDLY LIST OUR RECENT GRADUATES!

December 2007

**BSE Recipients**

Rebecca Macklem  
CDI Marine

**MSE Recipients**

Kasant Atibodi  
Royal Thai Navy

Edan Avny  
Israeli Navy

Sai Majhi  
Delta Marine

Zheyu Hong  
ABS Consulting

Varun Raghunathan  
(continued on page 14)

**PhD Recipients**

Vasilios Tsourapas  
Eaton Corporation

Kamaldev Raghavan  
Chevron
Awards and Scholarships Academic Year 2007-08

College of Engineering/NA&ME
Undergraduate Distinguished Achievement Award

Martin Wibawa

Society of Naval Architects & Marine Engineers Undergraduate Scholarship

Mark Ausborn         Jacob Faust
Justin Gillespie    Adam Merillat
Nathan Niese         Scott Grost

American Society of Naval Engineers Undergraduate Scholarship

Justin Gillespie

College of Engineering Henry Ford II Prize (Top CoE Junior)

Erin Bachynski

American Bureau of Shipping Undergraduate Scholarship

Martin Wibawa         Shari Hannapel
Erin Bachynski        Dominic Piro

Charles V. Boykin Scholarship

Joshua Guedessa

Tripp Memorial Scholarship

Jacob Faust

Department of Defense Fellowship

Christopher Hart

Society of Naval Architects & Marine Engineers Graduate Scholarship

Robert Madsen        Johan Kemnitz

Frank C. and Irving Pahlow Scholarship

Christopher Hart

Robert J. and Evelyn T. Kemp Scholarship

James Bretl

Regents Fellowship

Deborah Edmund

College of Engineering Hugh G. Rumler Prize (Top CoE Senior)

Nathan Niese

J. Reid and Polly Anderson Fellowship

Jason Morrison

(continued on page 15)
WE PROUDLY LIST OUR RECENT GRADUATES! (continued from page 12)

April 2008

**BSE Recipients**

Sarah Carr  
NAVSEA – Combatant Craft Division

Alyson Dunklin  
UM Grad School

Christian Fowler  
U S Navy

Justin Gillespie  
UM Grad School

Scott Grost  

Shari Hannapel  
UM Grad School

Adam Merillat  

Nathan Niese  
UM Grad School

Timothy Peters  
UM Marine Hydrodynamics Laboratory

Cory Rettenmaier  
CDI Marine

William Rosemurgy IV  
UM Grad School

James Schmakel  
UM Grad School

Milena Soto Pinto  

Stephanie Smith  
NAVSEA HQ

Jake Thomas  
NAVSEA HQ

Martin Wibawa  
UM Grad School

**MSE Recipients**

Michael Brown  
NAVSEA Carderock

Justin Freimuth  
DRS Technologies

Johan Kemnitz  
Det Norske Veritas

Brian Lied  
US Coast Guard

Kevin Morath  
ExxonMobil Dev. Co.

Page Switzer  
US Coast Guard

Emily Tharp  
US Coast Guard

Kristina Thomsen  
US Coast Guard

**MEng Recipients**

Malcolm Belt  
US Coast Guard

Kevin Keenan  
US Coast Guard

Jeffrey Payne  
US Coast Guard

**PhD Recipients**

Laura Alford  
UM NAME Postdoc

Xioayan Yan  
Chevron Energy Technology Company  
(continued on page 28)
If Ships Aren’t Boats, What Are They? (M)

All of us know that floating on the Waters are things called boats, ships, yachts, craft, and maybe some other things, especially if we stoop to allowing words from other languages. Think of the French-persons’ bateau, or the German-persons’ Schiff and Boot, for good grief. And out there somewhere are those that say barco, nave, and maybe other things, though who they are and why they use such words I’m not sure. And think of what real foreigners like Japanese, Russians, Tipbootans, and the like are saying! Better to stick to English because there’s confusion there enough already.

Yes, confusion. Pity the poor professor of naval architecture and marine engineering at a Leading University who was asked by his students to tell them such a simple thing as the difference between a boat and a ship, they being two nouns so often applied indiscriminately to one thing or the other by different people talking about the same thing, or maybe different things with each peep thinking the other was which, but was afraid to ask.

Two of them with this problem who were students of mine. They never came to blows nor even insults, but they did disagree to the point of agreeing to asking that professor. He was known for his cleverness, since he claimed to be a “PhD,” and liked lesser persons to address him as “Doctah.” (Yes, we remember that he pronounced it like that.)

The students thought that a profound answer would surely be returned when they asked, “Professor, please tell us the difference between “ship” and “boat.”

Observe that we said “answer,” not “lecture on the subject.” They wanted it straight and simple, but….

His lecture began with detours through the intricacies of bateau, nave, Schiff, Boot (with diversions to explain the differences between Schiff and Boot, for example), until he noticed that the two students were beginning to drift away, for they had asked a simple question, but the old crock was nonetheless launching into a lecture that seemed like it might evolve into a 50-minute mumble just like his scheduled lectures.

But no! He noticed their discontent, and miracle among miracles, he experienced a sudden inspiration to give them a straightforward, short, simple answer! Like so:

If you think it’s a boat, call it a boat. You think it’s a ship, call it a ship. If any idiot disputes you, just say that you heard of that gloriously simple solution from Professor _______.

Ere they passed out of hearing, he added this advice: “And if that idiot disputes your choice, tell him/her to stop wasting your time in splitting hairs when the hairs really don’t need splitting.”

Awards and Scholarships Academic Year 2007-08 (continued from page 13)

College of Engineering Graduate Distinguished Achievement Award

Xiaoyan Yan

Office of Naval Research Award for Sequential Graduate/Undergraduate Study

Johan Kemnitz

Justin Freimuth

Kevin Morath
NSF CAREER Award: Toward Robust Multi-Vehicle Multi-Scalar Underwater Robotic Navigation - Given to Ryan Eustice

The objective of this career development plan is to foster a focused area of research that will advance the current state-of-the-art in underwater multi-vehicle simultaneous localization and mapping (SLAM) while engaging and mentoring the next generation of students in the special challenges and opportunities of underwater robotics. The goal is to investigate new probabilistic methods for SLAM that will scale to multiple heterogenous vehicles, allow for extended exploration over long time durations and over multiple spatial scales, and are robust to the challenging limitations of the underwater environment.

Many land/air SLAM methods are largely inapplicable underwater because of (a) a lack of point features of unstructured seafloor, and (b) the rapid attenuation of electromagnetic, optical, and acoustic radiation in comparison to land, air, and space. The proposed multi-vehicle multi-scalar SLAM navigation framework overcomes these challenges by fusing information from three disparate technologies: 1) real-time vision-based seafloor navigation, 2) inertial navigation systems, and 3) acoustic modem-based communication, to create a flexible navigation methodology that allows for inter-nodal ranging and data sharing among heterogenous nodes. The goal is to improve the localization and mapping ability of disparate platforms by leveraging the perception and localization capability of neighboring vehicles via a (low-bandwidth) distributed estimation framework — thus, improving the precision and scale of robotic mapping in ocean science.

Complementary with its technical goals, this proposal outlines teaching, mentoring, and outreach in subject areas that are closely related to the research. The proposed robotic navigation framework will be experimentally validated in a real-world engineering testbed via a new collaborative effort between Prof. Eustice and the National Oceanic and Atmospheric Administration (NOAA) Thunder Bay National Marine Sanctuary (TBNMS). This collaborative/public outreach effort will include joint field work with the NOAA staff to survey and document historic shipwrecks in the TBNMS using the robotic navigation techniques (c) Proposed and existing national ocean observatory sites.

(continued on page 21)

(a) NSF sponsored NEPTUNE permanent seafloor ocean observatory network off the coast of Seattle, WA.

(b) An axial seamount sensor node.

(c) Expanded Network of Coastal Observatories

Images provided courtesy of the NEPTUNE Project (www.neptune.washington.edu).
Let us Fuse!

Eh? How does one “fuse?” Is this a misprint from which you really meant “refuse?” No, nothing so simple. What you are about to read is what scholarly research (hey, don’t quit here!) tells us is the only desecration (ed: I think he means “dissertation”) on fusion power for ship propulsion.

Once, many years gone, beginning with the advent of the pioneer nuclear-powered submarine USS Nautilus, the commercial shipping world was stirred by the notion that its ships would soon go atomic as well. Several professors (now retired) of your acquaintance published negative thoughts, and now cackle and crow over how them negative thoughts were the correct thoughts, for in 2007 where upon the seas driveth the atom except in the rarified realm of a few naval powers?

One of them (them = profs, not “naval powers”) is distilling that cackle and crow into a history of the effort to fission atoms in that realm where they were best left alone, and as he distills he remembers the idea of certain UM professors (not NA&ME) that nuclear fusion might power ships, at least for the USN.

What idiocy! But hey hey hey they want to pay…. Pay for some NA&ME help, that is, so let’s see what they have. Two of the appropriate our-guy professors made a see-what-they-have visit to the appropriate lab, and one of them offers, following, a recollection of his footless involvement. Read on.

*** *** ***

Fusion, that thing that the hydrogen bomb supposedly does so well? Yes, fusion. Oh, if only that could be harnessed to supply a planet’s worth of energy. As this is being written in the early twenty-first century, the magic break-even point — the point where a controlled (i.e. non-explosive) fusion reaction produces more energy than required to cause it — has not been reached. If only wishes were horses.... Many wishers have wished, and some of the many have claimed to hear the nickering of the horses somewhere close at hand. Among them in the early 1970s were two professors of nuclear engineering at the University of Michigan. Their shtick was laser-induced fusion, a path to fusion success that seemed to them better than all others. In their scheme, a small sphere (maybe 1” diameter) of a deuterium compound would be suspended at the center of a spherical chamber of perhaps two feet in diameter. Laser beams in large number would impinge from all sides on this little pea of paraffin (or similar hydrogenous substance), instantly heating it to a center-of-the-sun temperature, thereby causing fusion with its release of more energy than that required to produce the laser beams. Presumably this energy would be in the form of heat, which somehow could produce steam, which could turn a shaft, etc. In its operational manifestation, this “reactor” would be fed with a repeating stream of the potent little spheres, so that the shaft turning would be a continuous process.

Would the hoped-for power machine go “putt putt putt...” like a primitive outboard motor, each putt perhaps a pill of paraffin popping?

Suitable for ship propulsion? If asked, I would have said NO, but I wasn’t asked. Instead, the question put to me was “How can we get the US Navy to support our research?”

The two professors had such confidence in their scheme that they had established a commercial research company, rented a small off-campus laboratory building, and invested in suitable laboratory equipment. They doubtless had an appropriate grant of funds from someone, somewhere, but more money would be needed from other sources. They were well acquainted with Professor Harry Benford, and this valuable friend was in naval architecture, and the (continued on page 18)
Let us Fuse! (continued from page 17)

U S Navy did nuclear [fission] propulsion already, and.... He was invited to the lab for a tour and a bit of chat-up on how the Navy might be caused to take an interest.

Well, it was a bit early in this new nuclear game to employ the professor’s specialty of commercial ship economics. This wasn’t commercial anyhow, and making a propulsion shaft turn was much more the specialty of Professor W____, who, moreover, had done design work on nuclear ship propulsion. Perfect, Harry! Bring this W____ guy with you.

So I tagged along, listened to the explanations, saw the chamber where the paraffin was going to get zapped, mumbled how it seemed like a great idea, but beyond all that, was overwhelmed by the notion of how fusion — yes, fusion, the thing of the H-bomb — was going to drive a ship. But mercy, I was not asked that. My assigned task was to sketch a framework within which the never-to-be fusion propulsion plant might interest the Navy, what physical dimensions and machinery weights would be acceptable, what cruising ranges would be attractive, and similar. I whipped up a report that — if it had led to triumphant cry of “Underway on Fusion Power!” — would have been worth far more than the $200 or so that I billed the company of the two hopeful professors.

Navy buy the idea? I remember that the Navy did send someone to Ann Arbor to explore matters with those non-NA&ME researchers. But no. By 2000 the kudzu vines hid the little building where once laser beams had probed for the ultimate propulsion source. Perhaps a few discarded pellets of paraffin lie among the weeds, discarded because they might sigh but never reen.

The concluding remark from an old joke: a policeman reports that the siren on his patrol car is defective because “it sighs but it won’t reen.” Source unknown.

How Shall We Get Our Battleships to Chicago?

This is the title of a paper presented by your editor at a meeting of the Great Lakes — Great Rivers Section of SNAME in May of 1991. It concerned certain attempts (all of which failed) to promote the building of canals across Michigan’s Lower Peninsula between Lake Michigan and either Lake Huron or Lake Erie. The paper’s title repeats the anguished cry of one promoter when he was informed of the Corps of Engineers’ scorn for his proposal.

Now, Editor didn’t think that the paper was worthy of publication in any respectable journal, nor for preservation in any venue. But lo! In a lower-level file drawer where paper turns yellow and brittle, he recently discovered that a copy still exists, along with a mélange of loose material on never-built Midwestern canals.

Anyone interested in such etoterica? Probably not, but Editor is willing to supply a list of references, and even a copy of his paper if you ask real nice.
Klaus Peter Beier, Dipl.-Ing and Dr.-Ing, research scientist and adjunct associate professor, Department of Naval Architecture and Marine Engineering, College of Engineering, will retire from active faculty status on June 30, 2008.

Dr. Beier received his Dipl.-Ing and his Dr.-Ing degrees from the Technical University Berlin in 1970 and 1976, respectively. Prior to joining the University of Michigan he directed the CAD Computing Center, Technical University Berlin from 1975-83. In 1984 he joined the Department of Naval Architecture and Marine Engineering, College of Engineering, as associate professor. His appointment changed to research scientist and adjunct associate professor in 1991. In 1993, he introduced the emerging area of virtual reality (VR) to the University and founded the Virtual Reality Lab (VRL). Since 2002, he also directed the 3D Lab at the Duderstadt Center.

While at the VRL and 3D Lab, Dr. Beier conducted pioneering work in virtual prototyping which significantly advanced emerging technologies of immersive VR and paved the way for industrial applications. His research in Virtual Reality Modeling Language on the WWW led to many applications in collaborative engineering and knowledge representation. Recently, he has been working with virtual avatar animation, resulting in new methods for scripting complex movements of virtual humans. He was named Medalist and Laureate of the Year 2000 Computerworld Smithsonian Award and received the Teaching Excellence Award and the Outstanding Research Scientist Award from the College of Engineering in 1988 and 1996, respectively.

In addition to teaching courses in the NAME and EECS Departments, Dr. Beier developed “Principles of Virtual Reality,” an interdisciplinary course involving students and faculty from many schools and colleges. He chaired the CoE’s CAEN Executive Committee from 1989-90 and has worked at the University level as a member of the Information Technology General Council, 1989-93, and the OVPR’s Research Computing Task Force, 1994-95.

The Regents now salute this distinguished faculty member by naming Klaus Peter Beier research scientist emeritus.

Requested by:
Sally J. Churchill
Vice President and Secretary of the University
THE UNIVERSITY OF MICHIGAN

Regents Communication

Michael G. Parsons, Ph.D., Arthur F. Thurnau Professor, and professor of naval architecture and marine engineering in the College of Engineering, will retire from active faculty status on May 31, 2008.

Professor Parsons received his B.S.E. degree from the University of Michigan in 1963, his M.M.E. degree from The Catholic University of America in 1969, and his Ph.D. from Stanford University in 1972.

He joined the University of Michigan faculty as assistant professor in the Department of Naval Architecture and Marine Engineering, College of Engineering, in 1972, was promoted to associate professor in 1977 and to professor in 1982. He chaired the Department from 1981-91. Within the College of Engineering, Professor Parsons served as associate dean for undergraduate education from 1991-96 and as director of the Michigan Sea Grant College Program from 1987-92.

Professor Parsons’ research has dealt with various aspects of marine engineering and ship systems design. Since the 1990’s, his interests broadened to include the prevention of the introduction of non-indigenous species into the Great Lakes, resulting in a patent for a ballast-free ship design concept. He has published numerous journal articles and contributed to book and many published conference and symposium proceedings. He is a Fellow of The Society of Naval Architects and Marine Engineers and in 2003 received the prestigious William H. Webb Medal, awarded for outstanding contributions to marine education.

Professor Parsons’ teaching success is legendary. During his years at the University he has received numerous teaching awards from the Naval Architecture and Marine Engineering Department’s student group, The Quarterdeck Society, as well as from the College and in 1997 the University named him Arthur F. Thurnau Professor for outstanding contributions to undergraduate education. Professor Parsons has chaired or co-chaired the dissertations of 17 Ph.D. students and has advised many more, often co-authoring journal articles and conference presentations with them.

The Regents now salute this distinguished teacher, scholar, and administrator by naming Michael G. Parsons Arthur F. Thurnau Professor Emeritus and professor emeritus of naval architecture and marine engineering.

Requested by:
Sally J. Churchill
Vice President and Secretary of the University
The Captain Ralph R. and Florence Peachman Lecture
February 21, 2008, Ann Arbor

Dr. Owen H. Oakley, Jr.
Research Consultant
Chevron Energy Technology Company
San Ramon, California

Dr. Owen H. Oakley, Jr. received his undergraduate training in naval architecture at the Univ. of Michigan (BS’66). He did his graduate work at MIT in naval architecture and ocean engineering (MS’69 on ship slamming; Eng. ’69; PhD ’72 on ship rolling) and post-doctoral work at UC Berkeley (’72-’74 on ship capsizing). As an Asst. Prof., Owen taught hydrodynamics topics in the Dept. of Ocean Engineering at MIT for three years and then in 1977 moved to the offshore research group of Gulf Oil Corp. in Houston, TX. Topics there included metocean criteria, deepwater riser hydrodynamics and field development planning.

Post merger with Chevron, Owen transferred to head the Anoa Field Development Project in Indonesia in 1985. This involved the design and construction of an offshore platform in Java and an FPSO in Japan. These were successfully installed in the Natuna Sea and production started in late 1989. He also worked on the design and construction phases of the topsides for the Hibernia gravity based platform in both Canada and Korea from ’90-’95. Since then, he has been with the Chevron Energy Technology Company floating production team in California working on deepwater issues, primarily hydrodynamic research, field development planning, vortex induced vibration and computational fluid dynamics.

Lecture Abstract:

“Technology Challenges-Meeting our Energy Needs from Deepwater”

This presentation will be a broad discussion of our energy needs and the drivers that affect deepwater production of oil and gas. Examples of deepwater facilities will be used to introduce some of the technical challenges currently faced by offshore designers and operators, particularly in the realm of fluid-structure interaction. Examples of recent computational fluid dynamic analyses will be presented addressing vortex-induced vibrations of hulls and risers.

NSF Career Award (continued from page 16)

developed herein, an exhibit at the NOAA museum to educate the public in the engineering science and technology of underwater robotics, and a series of public lectures.
WHIRLPOOLS created by currents as they flow over obstacles are powerful enough to tear apart bridges and offshore rigs. So why not use them as a source of renewable power?

Previous attempts to harness energy from the flow of the world's rivers and oceans have had limited success, at best. Tidal flow can only be tapped at certain times of day, while underwater turbines are only viable if they are mounted in rapid currents.

Now researchers led by Michael Bernitsas at the University of Michigan, Ann Arbor, are preparing for the first outdoor trials of a technology that makes use of the slow-moving currents down rivers and across the ocean.

When water flows over an underwater obstacle, whirlpools or vortices form alternately above and below it. The vortices create an tugging effect, so the result is an alternating force that yanks the object up and down (see Diagram). It is these oscillations that can have devastating consequences for rigs and bridges, but Bernitsas has now created a device that turns them into usable amounts of electricity.

In his lab, he took a cylinder 10 centimetres in diameter and 91 centimetres long with the same average density as water and suspended it horizontally in a bath. Then he generated currents of between 0.5 and 1.0 metres per second – speeds that are common in rivers. The vortices generated by the flow moved the cylinders up and down, and by attaching the cylinders to springs that turn an electric generator he was able to convert the motion into 10 watts of electrical energy. Bernitsas calls the technology Vortex Induced Vibrations Aquatic Clean Energy, or VIVACE, and plans to commercialise it with his company Vortex Hydro Energy.

He has also come up with an idea for squeezing more energy from VIVACE. At the Offshore Mechanics and Arctic Engineering conference in Estoril, Portugal, in June this year, he will show how roughening the surface of the cylinders allows them to capture more energy. The idea was inspired by the fact that fish that use energy from vortices to help propel themselves forward also have rough skin.

VIVACE’s big test will come next year, when the team plans to deploy a larger version in the Detroit river. They expect it to generate 3 kilowatts, enough to power lights on a nearby pier, and claim that still larger versions could produce megawatts of power at a cost of around 5 cents per kilowatt-hour. This would make it competitive with coal and gas-fuelled generators.

These projections are contested, however, by commentators who point out that the performance has yet to be tested in the fluctuating current of a real river. They also have doubts about the claimed cost of the power it produces, since it is not yet clear how much the system will cost to maintain. “It is very new and very different to existing devices,” says Walter Musial of the National Renewable Energy Laboratory in Golden, Colorado. “There are a lot of questions still to be answered.” Jim Giles

This article is reprinted from NewScientist April 2008
Professor Emeritus Harry Benford turns 90!

Professor Harry Benford turned 90 years young in 2007. To commemorate this wonderful milestone, Harry was honored at the University of Michigan, Dept of NA & ME Alumni Dinner that was held during the annual SNAME meeting in Ft. Lauderdale on November 16, 2007. Friends/colleagues/ex-students shared stories and thoughts about Harry. Please read below:

Herb Pollock, BSNAM ‘57 writes:

Benford regaled us in class, one day, with his tale of inspecting the bottom of a Greek ship in drydock, with a co-worker, during his Newport News days. An onboard crew member flushed a toilet thru a hull opening, scoring a direct hit on the colleague, who, of course, responded in strong terms --- and then included “damn, I can even tell there was a lot of garlic in his dinner!”

Prof. Benford’s admonition on the first day of NA101 was that any student who misspells propeller with an OR on a bluebook exam will be rewarded with a failing grade. That has regularly been a useful memory for me.

A personal note. Two sorority sisters, MaryAlice Robertson and Jane Mcarthy, audited the NA101 course in which I was enrolled. The reason: Jane was dating Jack Gilbert, a NA senior. At the end of class, Benford would often remind Jane “there is a large, faithful dog (Jack) patiently waiting for you in the hall.” This, of course, was some years before publication of Benford’s informative tome “What Every Young Girl Should Know Before She Marries A Naval Architect.” Anyway, the girls introduced me to another sorority sister, Sally Swigert, who I would not have otherwise met. We have been married 49 years, at last count.

John Couch, BSNAM’63/MSE ‘64 writes:

November 3, 2007

Dear Harry,

Happy birthday! Sorry I cannot be there in Florida for the festivities but I wanted to let you know I am thinking about you. There are few individuals outside my immediate family who have had as significant, and as positive, an impact on my life and career. Hardly a day goes by that I don’t use the analytical tools (e.g., discounted cash flow or DCF analyses) that you introduced to me in your engineering economics class. In fact, that course was somewhat of a turning point in my education. I was an unenthusiastic and somewhat disaffected student until you revealed the wonders of compound interest to me. Of course, I also benefited immensely from the persistence with which you encouraged all your students to learn the basics of good written communications.

It was this early enlightenment and training plus your unfailing encouragement and support that led to my seminal SNAME student paper, “The Cost Savings of Multiple Ship Production.” The recognition the paper received launched a rewarding career at Litton Industries and eventually led me to Stanford’s Graduate School of Business. That additional academic experience was a perfect complement to my early training at Michigan and my professional experience at Litton. The combination enabled me to enjoy a second career and many years of success with Matson Navigation Company and Alexander & Baldwin, Inc. Now, in my third career, working with an investment management company I am still profiting from your teachings. An essential component of my work today is the analysis of investment alternatives which at its core involves both DCF analyses and

(continued on page 24)
writing persuasive recommendations to investors. So, the basic tools and knowledge you provided in Ann Arbor nearly fifty years ago are timeless! Fortunately, Personal Computers have replaced Friden calculators but otherwise the economic problems and solutions are remarkably similar to those we studied years ago.

Finally, another wonderful lesson you taught was the value of humor. So, I have enclosed a piece I began working on awhile ago to capture and memorialize your pivotal contributions to my success. It is tendered with my apologies to Messrs. Gilbert and Sullivan but my sincere thanks to you.

When I was a lad at Michigan*

November 3, 2007

When I was a lad I studied constantly,
As a student at the University,
I cleaned the windows and I swept the floor,
And I polished up the handle of the big front door.

He polished up the handle of the big front door
I polished up the handle so carefully
That I soon was a Captain of Industry,

He polished up the handle so carefully
That he soon was a Captain of Industry.

As a student I became such a star
That they gave me the chance to go quite far
I did numbers with a pace so grand,
And completed all my drawings in a precise hand,

He completed all his drawings so perfectly
That he soon was a Captain of Industry.

I added such value they rewarded me
By making him a Captain of Industry.

He easily mastered high finance and all.
I grew so smart that I was sent,
By fate, into asset management.
I always ignored the market’s call
And easily mastered high finance and all

He added such value they rewarded he
By making him a Captain of Industry.

(continued on page 25)
Harry Benford turns 90 (continued from page 24)

Now Engineers all, whoever you may be
If you want to rise to the top of the tree,
If your soul isn’t fettered to a technical stool,
Be careful to be guided by this golden rule.

Be careful to be guided by this golden rule.

Learn DCF as well as LCG, and you all may be Captains of Industry.

Learn DCF as well as LCG,
And you all may be Captains of Industry.

* With apologies to Gilbert and Sullivan and many thanks to Professor Harry Benford.

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Horst Nowacki writes:

…express a token of my gratitude to and loyal association with the University of Michigan NAME Department, and in particular my appreciation to Harry Benford, my friend and lifelong mentor, for all the help and friendship received from him personally and from the NAME team surrounding him. A cordial thank you!

*******************************************
Paul W. Vickers, BSNAM ‘80/MSE ‘81 writes:

Professor Benford: You are truly one of a kind—trouendous asset to the University and Department. It was an honor to study under you.

*******************************************
Alan Woodyard, BSNAM ‘68 writes:

There are precious few teachers that we remember.
Of the hundreds I have had I can count on my fingers those that made an impression. I am pleased to say that Harry Benford one of the fingers on the first hand :)

In 1967 Harry was younger than I am now (is that possible?) when he taught ship design economics. He presented the material to this eager junior transfer student in a fresh and sensible manner. No esoteric mathematics in Harry’s class; only practical measures of merit.

How practical? Well I still have “Measures of Merit for Ship Design” (Feb 1968) and “Fundamentals of Ship Design Economics” (Jan 1968) on my reference shelf. They still offer useful examples that I can apply to a range of “real-world” problems long after “Fundamentals of Fluid Dynamics” and “Advanced Calculus” have been recycled.

I wonder if these are now considered “out of print classics”? Next stop: Ebay!

Besides the course material I remember Harry as an easygoing professor who was very approachable (unusual even in a Navel Architecture Department of 60 or so). He also added “color commentary” to each class with stories about his shipyard experiences.

These were little gems for aspiring naval architects.

One such story was about how a taught line (before lasers and GPS an actual line was used to measure lengths on vessels under construction) was snapped by an over eager companion of Harry’s. Since it was a critical measure not easily recreated the fellow hid out for days (according to Harry) waiting for the catastrophe to blow over.

When I was crawling under the US Lines American class container ships at Sun Ship after graduation (we had lasers by then) I recalled Harry’s anecdote and

(continued on page 26)
Harry Benford turns 90 (continued from page 25)

understood how it could have happened.

My professional career veered away from naval architecture when I went to work for an oil company a few years after graduation. But even while working on computer applications, pipelines, offshore operation simulations, and risk analyses I was using many of the same economic measures Harry so ably taught me.

Happy Birthday Harry! Thanks for the memories.

PS: can you apply any of your teaching wizardry to Michigan football this season?

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Stuart B. Cohen writes:

A named professor’s chair for Harry Benford is a wonderful idea. He was, like just about everyone in NAME, my first Naval Architecture instructor. I still remember his first class in which he said, “We will teach you everything you need to know about unimportant things like I-beams, but nothing about the most important thing, that is, who you should marry.” I think this is typical Benford style.

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G. L. Colborn, BSNAM ‘56 writes:

Having attended both the University of Michigan and Webb Institute, Professor Benford is the lone survivor of my college years. My wife and I visited with him during the 2002 multi-class reunion.

Best wishes.

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R. O. Anderson, BSNAM ‘50 writes:

I attended classes in engineering economics taught by

Harry Benford at the U of M in 1949. Also saw him periodically at SNAME annual meetings in New York City. My sincere best wishes and congratulations to Harry!

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Tassos Perakis, current NA & ME faculty member writes:

My two cents on Harry Benford’s 90th birthday:

I joined this Department in August 1982, and was hired specifically to replace Harry Benford, who retired in December of that year. I therefore had a chance to interact with him a lot at work, and he also invited me to his home, where I got to know his late, remarkable wife Betty, his three sons, his daughter-in-law and three grandkids, one of whom now has a kid of her own.

Harry was clearly the best known faculty of this Department to the Maritime Industry in the US and abroad. When I was an undergrad NA&ME student in the NTU of Athens, Greece, the only Michigan faculty I knew (from their published works) were Harry and Horst Nowacki, and to a lesser extent Francis Ogilvie, whose papers I reviewed for my diploma thesis.

Harry must be, by far, the most popular of our faculty in my memory, to the alumni of our Department, and to the US and World Maritime Industry in general. No other faculty over my 25 years in this department has such an appreciative following among our alumni. Not even close! One of them recently told me he would name a ship after Harry if he could, the USS Benford!! This year, which marks his 90th birthday, we had spontaneous gifts in the high five figures (and maybe more) from grateful alumni.

(continued on page 27)
Friends and colleagues of mine were uniformly praising Harry when they talked about him. Larry Doctors, who saw him as the chair of NA&ME in the early 70s, told me he was very impressed by his leadership. Bob Scher, a past NAME PhD graduate, who worked with Harry, told me that he never heard him tell a lie. Horst Nowacki, who also worked closely with Harry during his 10 years as a NAME Faculty and beyond, was always appreciative of Harry’s humor, with examples such as Harry’s observation that, every new academic year, the students seemed to get younger and younger!

I could not attend this meeting to deliver my comments in person, but I am glad that Harry is alive and well at 90, and can enjoy these uniformly appreciative comments from all that had a chance to know him and work with him! So, Happy Birthday, Harry, I wish you and your new wife the best of health, and I look forward to celebrating your 100th!

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Doug Martin, BSNAM ’71 writes:

While you didn’t ask for testimonials regarding Professor Benford, I feel duty bound to jot down a few thoughts nonetheless.

Harry doesn’t remember me. (I confirmed this when I stopped by the department formerly the first time since graduation during last year’s anniversary luncheon event. Harry, while cordial, could muster only somewhat confused smiles as I related parts of the following story to him. However, I owe him a great debt of gratitude, and I’d like him to hear my story and my thanks.

As I approached graduation in the fall of 1971, I had a brand new wife and an appointment with the Naval Officer Candidate School in Newport, RI roughly 16 months hence. So, confronting the 12 months or so between my impending graduation and the report date for OCS, I quickly realized that I had an impending cash flow problem (in fact, I think that’s the way Harry characterized it).

Sometime in October of that year, I mustered the courage to approach Harry (then chairman, as I recall), about possible employment in the department. He muttered some discouraging words, and something about a MarAd project, and said he’s “see what could be done”.

Weeks turned into more weeks and sometime late in November or early December Harry called me into inform me that he had a teaching assistant position for me, augmented by work on the MarAd-funded project to assess the economics of extending the Great Lakes shipping season. Having visualized myself working as a gas station attendance or burger flipper, needless to say I was ecstatic at hearing this news.

So for the next nine months I graded papers for Peter Swift, and worked with Harry, Movses Kaldjian and Horst Nowacki on the MarAd project, the highlight (?) of which was a -24 Fahrenheit January ore boat ride from Two Harbors, Minnesota to Sault Saint Marie on one of the US Steel boats to observe ice conditions on Lake Superior first hand, and their affect on shipping (you know…freight rates). I found that there is something deeply humbling about standing in the forepeak of an ore boat as it deafeningly plows through the pancake ice in Whitefish Bay and watching its shell plates “work”.

Actually, the work on the project was exhilarating—developing operational models to simulate shipping in the “extended season” based on statistical predictions of ships being slowed or stopped by ice conditions,
Harry Benford turns 90 (continued from page 27)

the wait time for ice breaker assistance, and, of course, the affects of these events on the operators making money.

So to Harry, I say thank you, most sincerely. Not only were my bride and I able to eat and put a roof over our heads for those months, but I learned far more about economic analysis of marine systems in those months than I had in my undergraduate career. And, perhaps more profoundly, because of my experience developing the project’s simulation and analysis software, I was led into a career in computers systems for ship design and shipbuilding that continues to this day.

Thanks, Harry and all the best in your next 90.

Warm regards,

Jon Hodgdon, BSNAM ‘78 writes:

It’s been 30 years since I took your “Engineering Economics” class while pursuing my BSE in Naval Architecture and Marine Engineering at Michigan. I’m writing to thank you for providing me the foundation for making wise financial decisions, both business and personal. Your insistence that we engineers understand the basics of the time value of money, capital recovery, factors, etc., has stood me in good stead over the years. I’ve quite often thought of you while working through a complex analysis, and each time I’ve worked hard to make sure that you would have agreed the result was complete, accurate, and believable. So, thanks for providing both knowledge and motivation that has endured across time and distance. Although the uncertainties of life sometimes prevent a course of action from being as successful as we might wish, I can say that hindsight has never caused me to regret the method use to make financial decisions. My NA & ME degree led me to the oil tanker business. The oil tanker business led me to the occasional visits to the Pacific Northwest, which planted the seed of my retirement dream. Meanwhile, wise decisions based on your teaching led to modest career and personal financial success, such that my retirement dreams stayed alive. And now, I’m “running the numbers” to help decide if it really makes sense to buy that beautiful house in the Pacific Northwest and rent it out for the few remaining years before retirement. So once again, you are touching my life, and I felt compelled to take a time out and send a very belated “thank you.”

WE PROUDLY LIST OUR RECENT GRADUATES! (continued from page 14)

Anticipated August 2008

**BSE Recipients**

Andrew Litwin  
UM Grad School

**MSE Recipients**

Jason Morrison  
Pearl Harbor Naval Shipyard

**MEng Recipients**

Robin Madsen  
The Glosten Associates
Daniel W. Kabel
MSE 1978
Principal,
Blue Planet
Power LLC

Dan Kabel is a business advisor and consultant providing direction to CEOs, boards, and investors in the areas of organizational assessments, strategy, tactics, acquisitions assessments, strategy, tactics, acquisitions, and overall troubleshooting. His main industries of focus are energy technology, renewable energy, and the marine industries. He usually works for clients who have a strong desire to grow their businesses. Prior to running his own business, Mr. Kabel has held the following positions:

- President, Wartsila N. America
- CEO, Clean Air Power
- General Manager, GE Distributed Power
- President, MKW Power Systems

Dan has provided CEO and senior management coaching. Along the way, he also worked for GE in mergers & acquisitions. Earlier in his career, Mr. Kabel headed up sales and services organizations offering products and services both to the private sector and the US government.

Dan has a lot of experience with start-ups and turn-arounds. He has founded or helped to start up companies in the energy, marine, and transportation sectors. One of his first start-ups was Sea Mobility, Inc., a ship management firm which utilized civilian crews to operate U.S. Navy Surveillance ships on Top Secret missions. He was also the Founder of GE Distributed Power, a start-up funded by the General Electric Company.

Mr. Kabel received a B.S. degree from the U.S. Merchant Marine Academy, an M.S.E. degree from the University of Michigan, and an M.B.A. degree from the Wharton School at the University of Pennsylvania. He is currently working on an MSc in Organizational Psychology at the University of London.

In his free time, Dan works on aid projects for the poor in Ecuador.
Alumni News (continued from page 29)

Dr. Leigh McCue receives a National Science Foundation (CAREER) Award

Dr. Leigh McCue (Ph.D. 2004) received a National Science Foundation Faculty Early Career Development (CAREER) award for $410,000. The NSF CAREER program supports the activities of junior faculty with grants integrating research, education, and outreach activities. Dr. McCue’s project, entitled “A unified research and outreach program in nonlinear vessel dynamics,” aims to develop analytical and computational tools that will help ship designers understand and prevent dangerous vessel phenomena such as capsizing. The fundamental research in her CAREER project is coupled with active outreach to recruit and retain outstanding pre-college and college students into engineering. Dr. McCue’s education and outreach goals are closely tied to the Virginia Tech Center for the Enhancement of Engineering Diversity (CEED) including incorporating SeaPerch underwater robotics activities into CEED’s pre-college initiatives.

Dr. Leigh McCue

Xin Sun (Ph.D. 1995), Canhai Lai (Ph.D. 1994) & family on vacation in the Canadian Jasper National Park (Summer 2006)

(continued on page 31)
This article was submitted by Timothy Graul (PhD 1964). Bill Steger was a PhD graduate from 1964, he worked for the Navy Supship office in Sturgeon Bay, MI. When the facility closed, he retired. Bill died suddenly in 2004. (This article was published in the Door County Extra, September 9, 2006)
Calling all U-M Naval Architecture and Marine Engineering Alumni, Friends, Faculty and Staff!!

Imagine an investment that provided an immediate return rate of 800%!

Then imagine the same investment benefiting the outstanding graduate students who earn degrees from the Department of Naval Architecture and Marine Engineering ...............are you interested???

As alumni, friends, faculty and staff of the University of Michigan Dept of NA & ME you have a unique opportunity to see such a return on investment. U-M President Mary Sue Coleman announced Phase II of her “President’s Donor Challenge” designed to specifically benefit graduate students at the University of Michigan. Under her plan, President Coleman will provide one dollar to match every two dollars donated to graduate student support.

How does this translate to an 800% return?

For a donor in the State of Michigan, a $400 gift receives a federal tax savings of $100 (assuming a 25% tax bracket), a Michigan tax credit of $200, and a federal attribution of $50 resulting from a decrease in Michigan tax paid. The gift from a State of Michigan resident, then, will cost a donor $150. Most important, a $400 gift is matched by $200 from President Coleman. If a donors’ employer also matches, the $400 gift becomes $800—and President Coleman matches that $400 gift at a level of $200. A final out-of-pocket donor cost of $150 yields $1200 for the support of students.

President Coleman’s challenge translates into a huge opportunity for NA & ME alumni, friends, faculty and staff. If you wish to make a contribution, please make your check out to the University of Michigan and write in the note section “Phase II-President’s Donor Challenge.” Send the check to Kay Drake, Dept of NA & ME, 2600 Draper Drive, Ann Arbor, MI 48109-2145. If you wish to make a credit card donation online, please go to the website http://www.giving.umich.edu/where/presidents_challenge.htm

Please consider making a contribution to continue to make our Michigan students the leaders and best!

Thank you!

IMPORTANT NOTE: As of the end of May 2008, 65% of the matching funds have been used. The match will be available as long as funds remain available.
Photos from Mike and Peter’s Retirement Reception
(Special thanks to Kathy Stolaruk for snapping these photos!)

Associate Dean of Academic Affairs Tony England, Mike Parsons and Peter Beier

Stephen Bayne and Sharon Grayden (School of Dentistry). Friends of the Beier family

Jing Sun (NA&ME), Sandy Parsons and Lorelle Meadows (CoE)

Ellie Nick and Robin Madsen (NA&ME students)

Lisa Payton and Virginia Konz (former staff members)
***CALLING ALL ALUMS AND FRIENDS OF NA & ME***

- Do you have news to share? Career? Family? Your latest adventure?
  We would love to hear from you!!

  - Would you like to be a guest columnist in the Nautilus?
    We would love to discuss your ideas!!

  - Would you like to Receive the Nautilus electronically?

Please contact Kay Drake at kdrake@umich.edu or 734-936-7636

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Photos from Mike and Peter’s Retirement Reception

- Professor Emeritus Harry Benford and his wife, Kathy
- Peter Beier
- Mike Parsons
- Johan Kemnitz and Steve Zalek (recent graduate students)
- Derrick Scott (CoE) and Dale Karr (NA&ME faculty member)
Would you care to do your share to advance our programs? Here’s a convenient form to fill out:

YES! I am pleased to help the good cause with a gift of $_________.

CHECK ONE:

_____ Loyal Crew Endowment Fund
_____ NA&ME Scholarship Gift Fund
_____ R.B. Couch Memorial Scholarship
_____ Frank C. and Irving Pahlow Memorial Scholarship
_____ Henry Carter Adams II Memorial Scholarship
_____ George L. West, Jr. Memorial Scholarship
_____ Raymond Yagle Memorial Fund
_____ Rosenblatt Scholarship

_____ Benford/Zimmie Scholarship Fund
_____ Charles Dart Fellowship
_____ Robert & Evelyn Kemp Fund
_____ Amelio D’Arcangelo Memorial Fund
_____ Madge Roy Scholarship
_____ Carlton & Frances Tripp Mem. Scholarship
_____ Boykin Scholarship

_____ My company will match my gift. The appropriate form is enclosed.

_____ I would rather pledge $_________ for each of the next _____ years.

Signature ___________________________________________________   Date ___________________________

Please make checks payable to University of Michigan and mail to Kay Drake, 2600 Draper Rd, Rm 219, Ann Arbor, MI 48109-2145.
222 NA&ME Building
2600 Draper Road
Ann Arbor, MI 48109-2145

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