

**UNIVERSITY SENATE**

Third Meeting, Monday, 16 November 2009, 2:30 p.m.  
Room 302, Stewart Center

**AGENDA**

1. Call to order Professor Howard N. Zelaznik
2. Approval of Minutes of 19 October 2009
3. Acceptance of Agenda
4. Remarks by the President President France A. Córdova
5. Remarks of the Chairperson Professor Howard N. Zelaznik
6. Résumé of Items Under Consideration  
by Various Standing Committees For Information  
Professor Alyssa Panitch
7. Question Time
8. University Senate Document 09-1  
Reapportionment of the Senate For Discussion  
Professor Alyssa Panitch
9. New Business
10. Memorial Resolutions
11. Adjournment

## UNIVERSITY SENATE

Third Meeting, Monday, 16 November 2009, 2:30 p.m.  
Room 302, Stewart Center

**Present:** *President France A. Córdoba, Howard Zelaznik, (Chairperson of the Senate) presiding, Professors David C. Anderson, Zarjon Baha, Mark Bannatyne, Patricia E. Bauman, Alan M. Beck, Ernest R. Blatchley, James Braun, Jeffrey L. Brewer, Kristina K. Bross, Becky A. Brown, Bernd W. Buldt, Joseph W. Camp Jr. (Secretary of Faculties and Parliamentarian), Natalie J. Carroll, Steve H. Collicott, Patricia G. Coyle-Rogers, Wei K. Cui, Larry P. DeBoer, Raymond A. DeCarlo, Alphonso V. Diaz, Brian G. Dillman, Paul B. Dixon, Michael K. Dobberstein, Shawn S. Donkin, Nancy E. Edwards, Charlotte E. Erdmann, Michael J. Fosmire, Geraldine S. Friedman, Joan R. Fulton, Ronald J. Glotzbach, Mark A. Green, James P. Greenan, John B. Grutzner, Sally A. Hastings, L. Tony Hawkins, Michael A. Hill, Peter M. Hirst, Jeffrey D. Holland, Kristine Holtvedt, Richard D. Johnson-Sheehan, Adam J. Kline, Joseph F. Kmec, Ravi Krishnan, Robert Kubat, Christine M. Ladisch, Morris Levy, Andrew U. Luescher, Kevin R. Maurer, W. Gerry McCartney, James D. McGlothlin, P. Jane Morris, Samuel P. Midkiff, Mark M. Moriarty, Daniel K. Mroczek, Rabindra N. Mukerjee, Mary B. Nakhleh, James G. Ogg, Kathryn S. Orvis, Alyssa Panitch, Zygmunt Pizlo, Phillip E. Pope, Teri Reed-Rhoads, J. Paul Robinson, Alysa C. Rollock, Carolyn Roper, John A. Sautter, Arthur P. Schwab, Marisol S. Sepulveda, Richard Sévère, Robert D. Skeel, Glenn Sparks, A. Charlene Sullivan, Thomas J. Templin, Volker K. Thomas, Lynda J. Thoman, Bert Useem, Samuel S. Wagstaff, Whitney Walton, Mara H. Wasburn, David J. Williams, G. Thomas Wilson, Yuehwern Yih and William J. Zinsmeister.*

**Absent:** *Professors: Janet M. Alsup, Dana S. Beck, George M. Bodner, J. Stuart Bolton, Lynn A. Bryan, Donald D. Buskirk, Christian E. Butzke, Martin V. Curd, John P. Denton, Phillip S. Dunston, Gabriele F. Giuliani, Chong Gu, Steven G. Hallett, Neal R. Houze, David B. Janes, Eric P. Kvam, William D. McInerney, Robert E. McMains, Martin R. Okos, Suzanne L. Parker, Robert D. Plante, Robert E. Pruitt, Melissa J. Remis, Thomas B. Robinson, Alysa C. Rollock, Sivakumar S. Santhanakrishnan, Jie Shen, Mark J.T. Smith, Elizabeth J. Taparowsky, Marion Trout, Letteri Tsoukalas, Herbert L. Weith and W. Randy Woodson.*

**Guests:** *Marissa Sura, and Valerie O'Brien.*

1. The meeting was called to order at 2:35 p.m. by Chairperson Howard N. Zelaznik.
2. The minutes of the meeting of 19 October were approved as distributed.
3. The agenda was accepted as distributed.
4. President France A. Córdoba presented remarks to the Senate.
5. Professor Zelaznik presented the report of the chairperson (see Appendix A).
6. Professor Alyssa Panitch presented, for information, the Résumé of Items under Consideration (ROI) by Various Standing Committees (see Appendix B). Professor Natalie Carroll asked about the progress of the Core Curriculum Committee. Chairperson Zelaznik stated that this item would be discussed during "New Business."
7. At "Question Time" several questions came from the floor. Professor DeCarlo asked President Córdoba about the budget discussions that are occurring especially in light of the call by Governor Daniels for reductions and potential rescissions in the Purdue University budget. In particular, he asked if non-core activities as well as core activities would be considered for reductions. The

President referred the question to VP Al Diaz. VP Diaz explained that the discussions are ongoing and that all operations are on the table for consideration, but no directives have been created at this time. President Córdoba reiterated this point and emphasized that a strategic approach will be taken. There will probably not be an across-the-board cut of a given percentage. Instead all operations would be examined and some units/programs/operations might get increased funding while others see reduced funding or even elimination. In response to a question from Professor Alan Beck, VP Diaz stated that there will be a web site available to all members of the Purdue University community at which they can provide comments and suggestions on the budgeting process. Professor James Braun asked if the data on university spending would be available so that individuals could ask informed questions and make informed suggestions. VP Diaz stated that the data would be available and the process will be transparent. In addition, there will be monthly fora (forums) that will allow members of the Purdue community to provide input into the budget deliberations.

Professor John Grutzner brought to the attention of VP Gerry McCartney concerns among the faculty that the Purdue search engine does not work well and that it might be a waste of Purdue's money as it is currently configured. He stated that the standard Google search works better than the Purdue search engine for Purdue-related searches. VP McCartney explained that several years ago ITaP and PMC (Purdue Marketing Communications) had gone in together to purchase a renewable annual license for the Google Search Appliance. This appliance is available to the various IT units on campus and usage varies widely. Some units use the Appliance extensively, while others do not use it at all. Recently a committee was formed to determine if the Google Search Appliance should continue in use or if other options are available to enhance the search functions at Purdue. A report will be prepared with a publishing date set for 30 June 2010.

Professor David Miller and Director of Staff Benefits John Beelke came to the podium to answer questions about the new Purdue Health Benefits package and the change to CIGNA as the managing partner. Professor DeCarlo asked what percentage of the medical insurance premiums is paid by Purdue. Purdue pays 87% of the total medical premiums. Mr. Beelke also said that our costs per participant were close to our peers and less than costs in industry. The lower costs in the education field may be due to the efforts by the wellness programs found in education that may be lacking in industry. Professor Miller noted that he serves as chair of the Faculty Compensation and Benefits Committee and he is also the co-chair of the university's health advisory committee. He has a good grasp of the forces that drive prices and changes in health care and he said that outside forces have played the biggest role in these changes. These outside forces are often difficult for the university to influence. Professor Morris Levy asked when the debit cards will be issued for the Flexible Spending Accounts (FSA). Mr. Beelke said they would be issued in time to use at the change-over to CIGNA with the new year. Professor Paul Robinson asked what would happen to unspent FSA funds. Mr. Beelke stated that the fate of these funds and the changes in the FSA format are determined by IRS rules. Leftover FSA funds from 2009 can be used for dental and vision only, but in 2010, there will be no carryover of these funds and they must be used within the calendar year. IRS rules also affect the HSA option of the Purdue Choice plan. Carryover will be allowed for HSA funds. Professor William Zinsmeister commented that in previous years the Senate had informational presentations about changes in the health care plans prior to the enrollment period. He said these presentations had been quite useful and suggested that they be held again in the future. Professor Zelaznik will encourage the Steering Committee to have this type of presentation at one of the first two Senate meeting next fall semester. Professor David Williams asked why the health care and medical costs were so much higher in the greater Lafayette area than in other parts of Indiana. Mr. Beelke said it is all about competition and the ability to get contracts signed that limit costs. To this end, the bidding process that occurred several years ago led to the current change-over to CIGNA. CIGNA has its own contracts with providers and negotiates with the providers to get the lowest costs. However, providers do not have to sign a contract with CIGNA to be in their network. Providers charge amounts to maximize their profit, but those with CIGNA contracts will only be paid the negotiated amount, as is typical in

these arrangements. Hence, CIGNA will provide stability in prices for the length of the contract. Professor Williams suggested that more information was needed by faculty and staff about the prices in our area to help in the decision-making process by faculty and staff. Professor Miller noted that anesthesiologists are independent providers and do not have contracts with CIGNA or similar groups. Hence, they hold a monopoly and can charge whatever amount they deem appropriate. Professor Mara Wasburn said that CIGNA has a poor reputation for paying claims and asked if Purdue had vetted CIGNA appropriately. Mr. Beelke said that he was confident in the vetting process that was undertaken. In addition, there are performance clauses in our contract with CIGNA and they will be penalized if they do not meet the specified performance levels. Therefore, Mr. Beelke expects our claims experience to improve compared with the current situation. Professor Charlene Sullivan stated that in a recent Faculty Affairs Committee meeting they had learned that CIGNA will have a team of 10 to 12 people at Purdue's disposal. Mr. Beelke said that there will be a team available for handling a variety of services and he expected a more proactive approach from CIGNA than has occurred with our current arrangement.

8. Professor Alyssa Panitch asked for suspension of the rules in order to consider and vote on Senate Document 09-1, *Reapportionment of the Senate*. Her request was seconded and the motion to suspend the rules was passed by unanimous voice vote. Professor Panitch then made a motion to approve this document. Her motion for approval was seconded. Following a brief discussion, the document was approved by unanimous voice vote.
9. In New Business, Professor Andrew Luescher presented a brief report on the progress of the Core Curriculum Committee (see Appendix C). Following the presentation, Professor Charlene Sullivan asked if the intent was for freshmen and sophomore students to follow a common curriculum. Professor Luescher stated that a common curriculum is the intent, but no format has been set at this time. In fact, many of the current general education type courses currently offered by the colleges and schools may fit into a future core curriculum.

Professor Joan Fulton reminded the Senators that the Nominating Committee will be seeking volunteers for the various standing and faculty committees associated with the Senate in January. She encouraged the Senators to give serious consideration to serving on these various committees and to sign up on-line at the Senate web site link. Professor Carroll added that these committee appointments will be for the upcoming 2010-2011 (and beyond) academic year.

10. Three memorial resolutions had been received for Professors Emeritus Robert Arnold Gambill, Richard A. Hunt, and Samuel Perlis. Out of respect for their departed colleagues the Senators stood for a moment of silent reflection.
11. The meeting adjourned at 3:35 p.m.

**REPORT TO THE UNIVERSITY SENATE - PROFESSOR HOWARD N. ZELAZNIK**

Welcome to the last Senate meeting of the Fall Semester. I trust that you are gearing up for grading term papers, and final exams. This is a busy time for professors. Good luck in having a great end of semester.

As there was not Board of Trustees meeting since our last Senate meeting, I have no reports about the Board of Trustees.

Let me echo some of the words of President Córdova relative to the impending budget situation. This will be a difficult time, but clearly not as difficult for us, than for our colleagues at various other universities. This is an opportunity to be fully involved in the process of evaluating where and how to trim our expenditures so that we can adapt to the new financial realities of our current and perhaps future economy.

I will be asking many of you to step up and serve on committees that I trust will be set up in partnership with upper administration to provide a clear faculty voice on essential and non-essential aspects of our fiscal expenditures.

If we want to have voice, then we must become engaged even though our research might seem to be more important to us. We need many faculty to become involved and provide our unique faculty perspective to the issues at hand. This is a golden opportunity for us. I trust we seize this chance.

That is all I need to report on today. Have a great finish to this semester.

November 16, 2009

**TO:** University Senate  
**FROM:** Alyssa Panitch, Chairperson, Steering Committee  
**SUBJECT:** Résumé of Items under Consideration by the Various Standing Committees

**STEERING COMMITTEE**

Alyssa Panitch, Chairperson  
[apanitch@purdue.edu](mailto:apanitch@purdue.edu)

The primary responsibility of the Steering Committee is the organization and distribution of the agenda for each meeting of the University Senate. This committee also receives communications from any faculty member or group of members and directs such communications to appropriate committees or officers for attention.

**ADVISORY COMMITTEE**  
Senate

Howard N. Zelaznik, Chairperson of the  
[hzelaz@purdue.edu](mailto:hzelaz@purdue.edu)

The responsibility of the University Senate Advisory Committee is to advise the President and/or Board of Trustees on any matter of concern to the faculty.

**NOMINATING COMMITTEE**

William D. McInerney, Chairperson  
[bmcinern@purdue.edu](mailto:bmcinern@purdue.edu)

The Nominating Committee is responsible for presenting nominations for the University Senate and University committees. In filling committee vacancies the Nominating Committee seeks to have all interested Senators serve on at least one committee.

**EDUCATIONAL POLICY COMMITTEE**

John B. Grutzner, Chairperson  
[grutzner@purdue.edu](mailto:grutzner@purdue.edu)

1. Remedial 1-credit course for students on probation
2. Core Curriculum
3. University wide policy on starting date for new and changed Plans of Study
4. Internationalization initiative
5. Transfer credit for military service

**FACULTY AFFAIRS COMMITTEE**

David J. Williams, Chairperson  
[djw@purdue.edu](mailto:djw@purdue.edu)

1. Petition to allow noncontract funds be used for professional expenses
2. Review of faculty surveys at Purdue
3. Annual budget for Senate activities
4. Review of Executive Memorandum C-19 regarding faculty grievances
5. Purdue Retirement Plan Task Force

**STUDENT AFFAIRS COMMITTEE**

Thomas J. Templin, Chairperson  
[ttemplin@purdue.edu](mailto:ttemplin@purdue.edu)

1. Review of the Student Bill of Rights
2. Follow-up concerning the Student Conduct Code
3. Follow-up with Student Services Office concerning disciplinary process

**UNIVERSITY RESOURCES POLICY COMMITTEE**

Morris Levy, Chairperson  
[levy0@purdue.edu](mailto:levy0@purdue.edu)

1. Review fiscal policies and aid in generating budget transparency and economy
2. Review of campus energy sufficiency, safety, and other Physical Facilities operations
3. Enhancing graduate education and research opportunities
4. Review of faculty committees

Chair of the Senate, Howard N. Zelaznik, [hzelaz@purdue.edu](mailto:hzelaz@purdue.edu)  
Vice Chair of the Senate, Joan Fulton, [fultonj@purdue.edu](mailto:fultonj@purdue.edu)  
Secretary of the Senate, Joseph W. Camp, Jr., [jcamp@purdue.edu](mailto:jcamp@purdue.edu)  
University Senate Minutes; <http://www.purdue.edu/usenate>

**UPDATE ON THE CORE CURRICULUM OVERSIGHT COMMITTEE**  
**PROFESSOR ANDREW LUESCHER**

The Core Curriculum Oversight Committee has met four times so far. Several sub-committees were formed to address specific topics. Team 1 collected information on general education requirements of peer institutions. Team 2 gathered data on general education requirements of Purdue colleges and schools. Team 3 identified Purdue-specific areas of expertise and resources. Team 4 looked at academic program accreditation requirements. These teams reported to the Oversight Committee. An additional sub-committee was then formed whose task it is to integrate the collected information and come up with some proposals. This group is expected to report to the Oversight Committee at its December meeting.

**CALENDAR OF STATUS OF LEGISLATION**

<b>SENATE DOCUMENT</b>	<b>TITLE</b>	<b>ORIGIN</b>	<b>SENATE</b>
*09-1	Reapportionment of the Senate	Professor Alyssa Panitch	Approved 11/16/09

\*Approved

TO: The University Senate  
 FROM: University Senate Steering Committee  
 SUBJECT: Reapportionment of the University Senate  
 REFERENCE: University Senate Document 90-5; University Code D 3.00; Bylaws of the University Senate, Items 2.00 and 2.01  
 DISPOSITION: Faculty Units

Section D 3.00 of the University Code, and the Bylaws of the University Senate, provide that the University Senate shall be composed of one hundred two members. Eleven of these are specified in the items 1 through 11 below. The other slots will be apportioned among the West Lafayette faculty units, according to the number of faculty members, with the provision that no faculty unit shall have fewer than two senators. There are 2010 voting faculty members at the West Lafayette campus. When this number is divided by ninety-one the result is 22.1. Therefore, to qualify for more than two senators, a faculty unit should have 44 or more voting faculty members. Since no faculty unit can have fewer than two senators, the Libraries unit qualifies for two senators. The remaining units have a total of 1969 voting faculty members with eighty-nine senate seats remaining to be apportioned among them. The apportionment of senators for each of these remaining units was obtained by dividing the number of voting faculty in the faculty unit by 22.1. The results are as follows: Agriculture, 13.574; Consumer and Family Sciences, 2.624; Education, 2.941; Engineering, 15.204; Liberal Arts, 18.100; Management, 3.801; Pharmacy, Nursing, and Health Sciences, 4.570; Science, 15.068; Technology, 8.552; Veterinary Medicine, 4.661. In order to achieve the desired 89; Pharmacy, Nursing and Health Sciences and Technology were closest to being below 0.500 and thus they were assigned values of 4 and 8 representatives, respectively. The remaining eight units were rounded to the nearest integer.

<b>No. Voting Fac. Members November 6, 2008</b>	<b>Number of Senators 2009-2010</b>	<b>No. Voting Fac. Members November 3, 2009</b>	<b>Number of Senators 2010-2011</b>
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**Areas Represented**

1. President	1		1
2. Chief Academic Officer	1		1
3. Chief Fiscal Officer	1		1
4. Chairperson of the Senate	1		1
5. Vice-Chairperson of the Senate	1		1
6. Calumet Campus	1		1
7. Fort Wayne Campus	1		1
8. North Central Campus	1		1
9. IUPUI Campus	1		1
10. Undergraduate Student	1		1
11. Graduate Student	1		1
12. Faculty Units			
<i>Agriculture</i>	305	14	300
<i>Consumer &amp; Family Sci.</i>	58	2	58
<i>Education</i>	67	3	65
<i>Engineering</i>	331	15	336
<i>Liberal Arts</i>	415	18	400
<i>Libraries</i>	44	2	41
<i>Management</i>	85	4	84
<i>Pharm, Nurs, &amp; Health Sci.</i>	111	5	101
<i>Science</i>	336	15	333
<i>Technology</i>	181	8	189
<i>Veterinary Medicine</i>	<u>105</u>	<u>5</u>	<u>103</u>
	2038	102	2010
			102

Approving 09-1 via email:

Natalie Carroll  
Michael Dobberstein  
Joan Fulton  
Alyssa Panitch  
J. Paul Robinson  
Mara Wasburn  
Howard Zelaznik

**Memorial Resolution**  
**Robert Arnold Gambill**  
1927 - 2009

Professor Emeritus Robert Arnold Gambill was born in Indianapolis, Indiana on February 20, 1927 and passed away at his home in West Lafayette, Indiana on May 14, 2009.

Bob Gambill received his elementary and high school education in the Indianapolis public schools. Upon graduation from high school in 1945, he served in the U.S. Navy. After completing his naval service, he attended Butler University, receiving the bachelor's degree in 1950. Bob then entered the graduate program in mathematics at Purdue and received his Ph.D. degree in 1954.

His thesis adviser was Lamberto Cesari and his thesis was in the area of differential equations, as was his subsequent research. From 1954 to 1960, Bob worked in industry, first at the U.S. Naval Avionics Facility and then at the Theoretical Analysis Branch of the General Motors Corporation, both in Indianapolis. There he authored a variety of technical reports, some of which were classified.

In 1960, Bob returned to Purdue as an Associate Professor of Mathematics and was promoted to Professor in 1967. He co-authored two calculus texts with Merrill Shanks and supervised the Ph.D. theses of three students.

From 1965 to 1981, Bob served as Associate Department Head. In this capacity, he was responsible for assigning over 2500 teaching assistants to teaching and grading duties in first and second year courses and subsequently monitoring their performance. Bob also coordinated the preparation of all NSF and other research proposals. He carried out these tasks, which are core departmental responsibilities, in an exemplary fashion. These activities ran smoothly and effectively under Bob's watch. His service as Associate Head helped the three Department Heads under whom he served in many unrecorded ways. One former Head said, "I was about to do something really stupid, until Bob simply commented, 'Do you really want to do that?'" This was typical of Bob, low key and to the point.

Bob retired in 1992. During his tenure in the department, he served on various committees that keep the department functioning. Here again his contributions were effective and were made in a low-key non-confrontational way. Bob also served several terms on the faculty senate.

Bob was an excellent classroom teacher and lecturer in the large calculus classes. In some of the calculus classes, the student preparation is heterogeneous. Some of the students have had portions of the material, and to some all the material is new. Bob would allay the anxieties of the latter group with the comment, "The students who had this material in high school will soon catch up with you."

Bob was an early user of the computer in mathematics courses. In the junior level differential equations course for engineers and other non-majors, he developed programs to do away with repetitive calculations needed to solve some of the exercises in the text. These programs also helped the students visualize phase diagrams. A side effect was to impress the student with the need to understand the underlying theory, since a computer based solution often differed from the "answer in the back of the book," and both are "always correct."

Surviving with his wife of 59 years, Phyllis, are his daughter Chandra Hronchek, his son Robert Gambill II, his sister Carol Graham, six grandchildren, and two great-grandchildren.

Leonard Berkovitz

**Memorial Resolution**  
**Richard A. Hunt**  
1937 - 2009

**Richard A. Hunt**, 71, Professor Emeritus of Mathematics, died at his West Lafayette residence on March 22, 2009 from acute myeloid leukemia. He is survived by his wife of 51 years, Ann, their children, John Hunt and Julie Wolf, and four grandchildren.

Dick was born in St. Louis, Missouri on June 16, 1937. He attended Washington University in St. Louis to play football. He soon found that he liked and was good at mathematics, and he continued there as a graduate student. He received his Ph.D. in 1965 under the direction of Mitchell Taibleson and Guido Weiss. He had a post-doctoral position (1965-67) at the University of Chicago where Antoni Zygmund headed the leading group in the country in harmonic analysis. This was followed by an assistant professor position at Princeton, where he remained until 1969. At that time, he accepted a tenured position at Purdue, declining tenured offers from Yale and the University of Chicago because he and Ann felt that West Lafayette was more conducive to the life they wanted for themselves and for their two young children. He was promoted to full professor in 1971, only six years after receiving his Ph.D. He retired comparatively young in 2000 to pursue other interests.

Dick Hunt made many fundamental contributions in harmonic analysis. Several of these have become landmarks that have had an important impact in other areas of mathematics. These included the celebrated Carleson-Hunt Theorem on the almost everywhere convergence of Fourier series, his ground breaking work with Benjamin Muckenhoupt and Richard Wheeden on the boundedness of the Hilbert transform on weighted  $L^p$ -spaces, and his work with Wheeden on the boundary behavior of positive solutions of Laplace's equation in regions in Euclidean spaces enclosed by non-smooth Lipschitz boundaries.

Although the proof of the Carleson-Hunt Theorem remains to this day one of the most difficult results in harmonic analysis, the result itself is simple to state. The French mathematician and physicist, Joseph Fourier, in his mathematical description of heat and sound around 1800, discovered that arbitrary sound waves can be decomposed into their basic harmonics, now known as Fourier Series, and that this decomposition could be a powerful mathematical tool in analyzing many physical situations. In particular, solutions of the heat and wave equations describing various physical phenomena could be constructed and understood from these more basic objects. But as is often the case in mathematics, the devil was in the details. This process of building general solutions from these basic quantities, or more precisely of associating with a function its Fourier series, was only formal. One of the most fundamental problems in analysis since Fourier introduced this concept was to prove that the Fourier series actually represents the function—that is, that the Fourier series converges to the function.

This problem occupied the minds of many great mathematicians of the 19<sup>th</sup> and 20<sup>th</sup> centuries. Over the years, the desired result was proved for functions with various degrees of regularity. On the other hand, the Fourier series of a continuous function need not converge pointwise to the function. Thus, some care needs to be given to state the desired convergence result precisely. The Russian mathematician Nikolai Luzin conjectured in the 1920s that the convergence should

hold for any square integrable Lebesgue function and that this should happen at all points except perhaps for those belonging to a set of Lebesgue measure zero. A set of Lebesgue measure zero in the real line is one that can be covered by the union of a countable collection of intervals with the total sum of their lengths as small as one wishes. Such sets are small enough that they are negligible for many purposes. Removing sets of measure zero from the interval  $[0, 2\pi]$ , where the convergence is to take place, leaves the length of the remaining set equal to  $2\pi$ .

In 1966, the Swedish mathematician Lennart Carleson proved the Luzin conjecture. The Carleson Theorem was hailed as one of the great results in analysis of the 20<sup>th</sup> century. Given that Andrei Kolmogorov had produced an example of an  $L^1$  Lebesgue integrable function whose Fourier series does not converge at any point, the question remained: Does the Carleson Theorem continue to hold for  $L^p$  integrable functions for all  $p > 1$ ? In a remarkable paper written in 1968 (completed just three years after his Ph.D.), Dick Hunt proved that this is indeed the case. This result caught the mathematical community by surprise and made Dick into a young superstar in harmonic analysis. The year after, in 1969, he was awarded the Salem Prize, a worldwide prize whose list of recipients reads like a “Who’s Who” of harmonic analysis. In 1970 (again just five years after his Ph.D.), Dick was invited to address the quadrennial International Congress of Mathematicians in Nice, France, one of the most prestigious invitations that a mathematician, of any age, can aspire to have in his or her career. The same year he received a Sloan Foundation Fellowship.

While the Carleson-Hunt Theorem remains to this day one of the “crown jewels” of harmonic analysis, Dick’s papers with close friends and collaborators Benjamin Muckenhoupt and Richard Wheeden also had a profound influence on the development of harmonic analysis and its applications to other areas of mathematics. His work with Muckenhoupt and Wheeden in 1973 giving a characterization of the weighted  $L^p$ -spaces where the basic Calderón-Zygmund singular integral, the Hilbert transform, is bounded began an area of research in harmonic analysis that has produced a very large number of papers with wide applications in many fields of mathematics. Even today, researchers are investigating some basic questions that arise from this seminal paper, such as the sharp dependence of the norm of the operator on the weight function. In the context of more general singular integrals, the solution of this problem has applications to linear and nonlinear partial differential equations arising in the study of quasiconformal mappings and their geometry. The Hunt-Muckenhoupt-Wheeden result shed new light into the celebrated Helon-Szegő Theorem which characterizes the case  $p = 2$  in terms of the geometry of certain Hilbert spaces of polynomials and their Hilbert transforms.

Equally important in the development of analysis, partial differential equations, probabilistic and analytic potential theory, and other areas of mathematics are Dick’s 1968 and 1970 papers with Wheeden describing the behavior of positive solutions to Laplace’s equation in regions of Euclidean spaces with Lipschitz boundaries. This work, which built on earlier work of Alberto Calderón and Lennart Carleson, played an important role in the solution of a long-standing problem concerning the distribution of the exit points from Lipschitz regions for Brownian motion—that is, the absolute continuity of the so-called harmonic measure with respect to surface measure in a Lipschitz domain. This last problem was solved by another Swedish mathematician, Björn Dahlberg, in 1977. For this work, Dahlberg received the Salem Prize in 1978.

Through the 1970s and into the 1980s, in addition to pursuing his own research, Dick supervised nine Ph.D. students, some of whom went on to successful academic careers. His office door was always open to his students, postdocs, and visitors.

In the 1980s, Dick's focus shifted to the teaching of calculus. He repeatedly taught large lectures of freshman calculus, trying to understand the best way to communicate the material to undergraduates. During the period, his office often overflowed with eager calculus students. This effort culminated in his calculus book, published in 1988 by Harper Row, with a second edition following in 1994. Year after year, Dick was voted one of the 10 best teachers in the College of Science. The voting is by juniors and seniors, so one can measure the impact of his teaching from the fact that two or three years after taking his freshman course, many students still voted him as the "best teacher" they had had at Purdue. He received the Harold T. Amrine Visionary Award from the Purdue chapter of the National Society of Black Engineers.

Athletics were an important part of Dick's life. He earned four varsity letters in football at Washington University and played competitive handball from 1956 until 2008. He competed in the Circle City Handball tournament for many years; his last competition was in 2008. His opponents knew him as a scrupulously fair but very determined competitor.

Dick had a long-standing interest in landscape design. Prior to his retirement he took a number of courses in landscape design, and after retirement he worked as a landscape designer with colleagues at GardenArt in West Lafayette.

Dick Hunt was deeply devoted to his family. He was respected and admired by friends and colleagues not only for his profound and enduring contributions to harmonic analysis, but also for his calm confidence that he could do anything he set his mind to, his total lack of pretense, and his acute sense of fair play.

Rodrigo Bañuelos  
Leonard Lipshitz

**Memorial Resolution**  
**Samuel Perlis**  
1913 - 2009

Professor Emeritus Sam Perlis, 96, died June 22, 2009 in Takoma Park, Maryland.

He was born April 18, 1913 in Maywood, Illinois. He attended the University of Chicago, earning bachelor's and master's degrees, and in 1938 a Ph.D., in mathematics. During graduate school, he worked as a science teacher at Sunrise, an experimental collective farm in Michigan.

In 1937, he married Esther Rockoff, and she preceded him in death in April 2009.

After graduate school, he taught math for one year at the University of Michigan and for two years at Illinois Institute of Technology. During World War II, he moved to Los Angeles and was employed by Lockheed Aircraft. In 1946, he moved to West Lafayette, where he worked in the Purdue University Mathematics Department until his retirement in 1983.

Perlis was responsible for algebra courses for many years, and he directed three doctoral dissertations at Purdue. He is known for his 1942 discovery of a mathematical technique now called the Perlis-Jacobson radical, for the 1950 Perlis-Walker Theorem, and for his book *Theory of Matrices*, published in 1952. He twice spent an academic year in Rome.

He was very active in the West Lafayette food Co-op and in Save the Dunes, and ice-skated regularly with the Indianapolis Winter Club. He enjoyed landscaping and art.

Surviving are two sons, Donald and Robert. As did Esther before him, Sam donated his body to medical science.

Mathematics Department