

ASQ STATISTICS

D I V I S I O N

Newsletter ©

Outgoing Chair's Message

by Bob Mitchell



As I close out my term as Chair of the ASQ Statistics Division, I take you back to my personal mission statement from the Fall 1999 Newsletter (Vol. 18, No. 3): "The purpose of life is a life of purpose". One of my personal goals was to lead the Division to successful execution of our 1999 - 2000 Strategic Plan. I look back fondly, with great satisfaction and admiration, on the accomplishments of the Statistics Division officers, committee chairs, and tactical planning leaders of the past year. We made significant progress in the understanding and application of "Statistical Thinking Everywhere". One accomplishment of which I am particularly proud is the development and implementation of the Statistics Division Balanced ScoreCard. It will be a tremendous tool to help us monitor progress towards our Vision. Roles and responsibilities with respect to collecting, analyzing, reporting, and interpreting the leading indicators of the ScoreCard have been rolled into the various officer job descriptions to assure the results are fed into the strategic and tactical planning processes.

I have been actively involved in the ASQ Statistics Division since 1990, beginning as the Membership Chair then working through the officer rotation. Working in the Division has

been one of my most enjoyable and memorable professional experiences. Working in the Division has allowed me to nurture several old friendships, develop many new relationships, and provided me the opportunity for professional career development. I pass the gavel of Statistics Division chairmanship to the very capable leadership team of **Janice Shade, Jacob Van Bowen, Greg Gruska, and JL Madrigal** whom will continue to dedicate their energy and passion to our members.

Recognition of dedicated volunteer service and significant contributions has been a cornerstone of my chairmanship. For example, nine society Testimonial awards were handed out to Division leaders in May at the Indianapolis AQC: **Galen Britz, Don Emerling, Janice Shade, Roger Hoerl, and Stu Janis** each received a Testimonial award for development of the *Improving Performance Using Statistical Thinking* booklet; **Robert Perry** was recognized for his years of service as our Examining Chair;

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Incoming Chair's Message

by Janice Shade

A Special Thanks

"Thank you, Bob Mitchell" for your leadership in the 1999-2000 year. Your dedication and contribution to the Division will be difficult to emulate. Your work in the areas of identifying membership needs and assessing Division effectiveness will result in a more robust Division. Your passion for the Division is unsurpassed.

Activities for 2000-2001

Fall Technical Conference

The annual Fall Technical Conference will be held at the Marriott City Center Hotel, Minneapolis, MN on October 11-13. Bob Mitchell is the Program Chair and Bob Brill is the Short Course Chair. There will be two pre-conference and two post conference short courses offered. The Division will sponsor both a pre-con-

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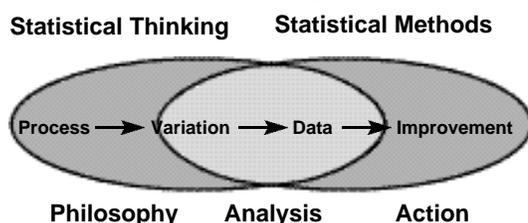
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MISSION

- Promote Statistical Thinking for Quality and Productivity Improvement.
- Serve ASQ, business, industry, academia and government as a resource for effective use of Statistical Thinking for quality and productivity improvement.
 1. Our primary customers are Statistics Division members.
 2. Other key customers are:
 - a. Management
 - b. Users and potential users of Statistical Thinking
 - c. Educators of the above customers
- Provide a focal point within ASQ for application-driven development and effective use of new statistical methods.
- Support the growth and development of ASQ Statistics Division members.

VISION

Statistical Thinking Everywhere



DESIRED DIVISION END-STATE

- Our members will be proud to be part of the Division.
- Our Division's operations will be a model for other organizations.
- We will be a widely influential authority on scientific approaches to quality and productivity improvement.

PRINCIPLES

- Our customers' needs will be continuously anticipated and met (i.e. customer focused rather than customer driven).
- Our market focus for products and services is weighted as follows:
 1. Greatest weight on intermediate level.
 2. Nearly as much weight on basic level.
 3. Much less weight on advanced level.
- Focus on a few key things.
- Balance short-term and long-term efforts.
- Value diversity (including geographical and occupational) of our membership.
- Be proactive.
- Recognize that we exist for our customers.
- View statistics from the broad view of quality management.
- Apply Statistical Thinking ourselves; that is, practice what we preach.
- Uphold professional ethics.
- Continuously improve.

STRATEGY

- Design and deliver selected useable products.
- Have a strong and vibrant Division infrastructure.
- Demonstrate the broad effectiveness of Statistical Thinking.
- Integrate Statistical Thinking into educational curricula.
- Develop a vibrant information communication system.
- Influence key decision makers.

Disclaimer

The technical content of material published in the ASQ Statistics Division Newsletter may not have been refereed to the same extent as the rigorous refereeing that is undergone for publication in **Technometrics** or **J.Q.T.** The objective of this newsletter is to be a forum for new ideas and to be open to differing points of view. The editor will strive to review all articles and to ask other statistics professionals to provide reviews of all content of this newsletter. We encourage readers with differing points of view to write to the editor and request an opportunity to present their views via a letter to the editor. The views expressed in material published in this newsletter represents the views of the author of the material, and may or may not represent the official views of the Statistics Division of ASQ.

Criteria for Basic Tools and Mini-Paper Columns

Basic Tools

Purpose: To inform/teach the "quality practitioner" about useful techniques that can be easily understood, applied and explained to others.

Criteria:

1. Application oriented/not theory
2. Non-technical in nature
3. Techniques that can be understood and applied by non-statisticians.
4. Approximately three to five pages or less in length (8 1/2" x 11" typewritten, single spaced.)
5. Should be presented in "how to use it" fashion.
6. Should include applicable examples.

Possible Topics:

New SPC techniques
Graphical techniques
Statistical thinking principles
"Rehash" established methods

Mini-Paper

Purpose: To provide insight into application-oriented techniques of significant value to quality professionals.

Criteria:

1. Application oriented.
2. More technical than Basic Tools, but contains no mathematical derivations.
3. Focus is on insight into why a technique is of value.
4. Approximately six to eight pages or less in length (8 1/2" x 11" typewritten, single spaced.)
Longer articles may be submitted and published in two parts.
5. Not overly controversial.
6. Should include applicable examples.

General Information

Authors should have a conceptual understanding of the topic and should be willing to answer questions relating to the article through the newsletter. Authors do not have to be members of the Statistics Division.

Submissions may be made at any time to the Statistics Division Newsletter Editor. All articles will be reviewed. The editor reserves discretionary right in determination of which articles are published.

Acceptance of articles does not imply any agreement that a given article will be published.

OUTGOING CHAIR'S MESSAGE

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Nancy Belunis for her years of dedicated service to the Division in a wide variety of roles including Membership Chair, Newsletter Editor, Secretary, Chair, FTC Students Grants Chair, and most recently as our Publications Committee Chair. **Beth Propst** received a Testimonial for her years of support as Newsletter Editor, Treasurer, Chair, and Special Publications Chair. **Greg Gruska** was recognized with a Testimonial for his many years of service in Region 10 since the birth of the Statistics Division. Last, but not least, is the Testimonial given to **Davis Balestracci**, author of the 'Data Sanity' Special Publication. Ten more Testimonial nominations are being written for the 2000 - 2001 fiscal year.

Congratulations to **Roger Hoerl** upon his recognition with the William G. Hunter Award, and to **Joe Voelkel** and **Bill Woodall** as our latest two division-sponsored ASQ Fellows!

My year as Chair of the Statistics Division has been a most memorable one for many reasons. Early in my chairmanship we saw much debate in the Letters to the Editor on whether our focus on Statistical Thinking was dumbing down statistics. I believe we have effectively answered our critics by reminding them that Statistical Thinking provides a philosophical framework for use of statistical methods. The framework focuses on processes, recognizing variation, and using data to understand the nature of the variation.

Another firestorm erupted when *Quality Progress* featured Mikel Harry in an article on "Cowboy Quality" in October. Calls of questionable judgment rolled across my desk demanding that ASQ disclose the financial arrangements of its alliance with Six Sigma Academy.

ASQ also launched a new professional certification, the Certified Quality Improvement Associate (CQIA), geared towards the practitioner in non-traditional markets such as the healthcare service industry. We of the

Statistics Division support the development of this Body of Knowledge and are participating in the generation of pertinent exam questions. However, we are uncertain as to how and whether we should support the proposed Six Sigma Black Belt certification. At issue is whether the SSBB has a substantially different Body of Knowledge from the CQE.

The success of the Statistics Division depends greatly on the efforts of its volunteer members. One of the truly remarkable things about working in the Statistics Division is the continuing involvement by many of its previous Chairs. People like **Lynne Hare**, **Joe Voelkel**, **Nancy Belunis**, **Galen Britz**, and **Don Emerling** continue to serve the Division in new capacities long after their chairmanship had expired. Their knowledge of ASQ and Division processes is extremely beneficial to the incoming leadership.

There are many other contributors to the success of the Division as well. At the risk of missing someone I offer my thanks to the following individuals whom have helped the Statistics Division this past year. Thanks to **Cliff McCormick** who served as our Program Rep to the Houston Fall Technical Conference (FTC) and to **Bob Brill** whom once again arranged for two very excellent FTC short courses. I found the short course by **Dr. Svante Wold** on "Principal Components Analysis and Projections to Latent Structures" very interesting and educational, and directly transferable to my efforts to champion the implementation of Real-Time Process Monitoring in my business unit on integrated manufacturing processes. The short course on "Measurements and Planned Experimentation in a Chemical Plant" by **Dr. Lloyd Provost** was also very good and entertaining. I also wish to thank **Galen Britz**, **Nancy Belunis**, and **Lynne Hare** whom all helped support our various Awards programs. Nancy is also our Publications Committee Chair, and Galen also participated on the team to author our newest booklet on Statistical Thinking, and led the tactical plan to develop an orientation packet for new active members.

An area of significant activity the past

couple of years has been to recruit and retain new members. **J.L. Madrigal** has done an excellent job as Membership Chair to recruit and train Section Liaisons whose job is to support our Regional Councilors and serve as Statistics Division ambassadors to the many ASQ Section meetings. JL developed and analyzed many new member surveys and coordinated a nurturing process designed to retain more of our new members. JL has been elected to serve as our newest Secretary, and **Robert Nash** has volunteered to serve as our newest Membership Chair.

I wish to thank **Marcey Abate**, **Jim Lenhart**, and **Sandy Capone** whom have done a tremendous job as our electronic and Newsletter Editors. Marcey and Jim did an outstanding job of providing uninterrupted service to our members while moving the Statistics Division website from the ASQ server to the University of Florida. Marcey is currently honing a new process to provide our members with a low cost alternative to the QIC for purchasing multiple copies of our Special Publications. Jim is working with **Ralph St. John**, our previous Newsletter Editor, to make past Statistics Division Newsletters available on the web. Sandy Capone has done a great job taking over for Ralph as our current Newsletter Editor.

Thanks to **Mark Kiel** whom handed over the reigns as our very first webmaster to Jim Lenhart, and then went on to serve as our AQC Division-sponsored session manager at the Indianapolis AQC. Mark worked with our Education Committee Chair, **Paula Sommer**, to present a session on the success of integrating Statistical Thinking into the Texas Women's University educational training for school administrators. A special thanks, too, to **Mike Thomas**, **John Vandenbenden**, **Babatunde Ayeni**, and **Ram Sitaraman** whom volunteered to serve as Technical Paper Reviewers for the Indianapolis AQC. And Mark Kiel keeps coming back for more...Mark has recently volunteered to serve as our 2-year FTC Program Rep! Thanks again Mark for your continuing service to the Statistics Division! Speaking of continuing ser-

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EDITOR'S CORNER

by Sandy Capone



Welcome to the post Annual Quality Congress (AQC) and pre-Fall Technical Conference (FTC) issue of the Statistics Division newsletter. And thank you to all of you who contributed to its contents. I would like to draw special attention to the information regarding the FTC and the registration form, which is included for your use.

If I may take a minute, I would like to offer a different opinion about the main idea expressed on the "Comments on Quality" page in the July, 2000 issue of *Quality Progress* by Gregory H. Watson. The statement, referenced by Watson as being from an article by G.J. Hahn, et.al., *The American Statistician*, August 1999, is in bold print, and centered on the page:

"It is acceptable to have a nonpurist approach to statistics that gets results quickly, if that is management's decision."

I do not think this is reasonable.

A very helpful course in consulting skills, that I attended several years ago, taught me several important concepts. An idea, that troubled me at first, was that as a consultant (and almost everyone acts as a consultant to some degree in their jobs) you are obligated to provide your client or customer with the best possible advice, based on your education, training, and experience. Then, if the client chooses to ignore your advice in running his business, it is completely within his rights to do so. After all, it is his business to run, and there are probably many factors, including your ideas, that need to be considered when making decisions.

Try substituting each of the following words for the word "statistics" in the above quote, and try to decide in each case, whether it is a reasonable statement to make: medicine; engineering; nuclear physics; day care; politics (O.K., a bad example, but you get the idea). For the most part, the statements do not ring true. Your doctor may recommend specific medication for you to take; you can certainly ignore his advice, but I doubt he will come up with a "nonpurist" alternative because you want faster results.

So, what is specifically meant by "...a nonpurist approach to sta-

tistics...?" Recommending a smaller sample size than is required? Underestimating alpha or beta risk? Running experiments in design order to save time? Using a PPM defective metric based on an estimated "process spread" that is too wide, on average, by plus or minus 1.5 sigma? Greg Watson's concern about controversy not being to the advantage of our profession is right on the mark. But, "nonpurist approaches" will not solve problems.

As a consulting statistician, reading the following quote always gives me goose bumps (*The American Statistician*, Vol. 44, No. 2, May 1990, p79):

"Statistics ... is the most important science in the whole world, for upon it depends the practical application of every other (science) and of every art: the one science essential to all political and social administration, all education, for it only gives exact results of our experience ... to understand God's thoughts, we must study statistics, for these are the measure of his purpose." Florence Nightingale (1820 - 1910)

Do you think Ms. Nightingale would have found it acceptable to have a nonpurist approach to statistics?

Outgoing Chair's Message

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vice, I cannot forget to thank **Nick Martino**, **Robert Perry**, and **Ed Schilling** for their many years of faithful service as the Statistics Division Certification, Examining, and Standards chairs, respectively. My job as Chair was made relatively easy because of the on-going support of experienced Statistics Division volunteers like Nick, Robert, and Ed.

Of course, the long-term viability and success of the Statistics Division requires participation of new members as well. I am happy to announce several new members to the Statistics

Division leadership team. **Mark Crossley** has volunteered to serve as our Short Course Development Chair, and to coordinate a Statistics Division-sponsored tutorial at the Charlotte AQC. **Todd Nelson** is our newest FTC Student Grants Chair. And **Harry Koval** whom is currently serving as the Local Host Committee Chair for the Minneapolis FTC (October 12-13), has recently volunteered to assume the duties of Certification Chair from Nick Martino. **Stu Janis** whom has helped edit several of our publications is currently serving as our Special Publications Editor. Our 3rd Special Publication, "Using the Power of Statistical Thinking" should be mailed to our members within the next

month. Finally, I wish to thank **Don Williams** our Past Chair for all his help in tutoring me through the administrative responsibilities that come with being the Division Chair.

The success of the Statistics Division requires the efforts of many volunteers. I extend an open invitation to all interested members to seek a greater role in planning and executing the Statistics Division tactical plans. This is an excellent organization to work with, and provides a unique opportunity to expand your network of fellow professionals all the while having a lot of fun. I have truly enjoyed my year as Chair. Thank-you.

THE STATISTICS DIVISION OFFICERS 2000/2001

Janice Shade, Chair

Janice Shade has worked for Nabisco for the past 17 years. She is currently the Manager of Continuous Improvement for the Nabisco Foods Company in Parsippany, New Jersey. Janice has Quality and Operations experience; providing leadership in the areas of Industrial Statistics, Process Improvement, Quality Systems, Process/Packaging Design, and Specifications Development. In her current position, Janice is responsible for process improvement initiatives, data interpretation and SPC training at the plant and Headquarters levels. Janice is a strong proponent of Statistical Thinking and the use of the appropriate statistical tools to minimize process variation.

Janice has a BS degree in biology from the College of New Jersey, an MBA degree in Quantitative Analysis from Fairleigh Dickinson University in New Jersey, and an MS degree in Applied Statistics from Rutgers University in New Jersey. She is a Senior Member of the American Society for Quality, a member of American Statistical Association and a Lifetime Member of Strathmore's Who's Who for Business Leaders.

Statistics Division activities include: Newsletter Editor, publications editor and core tactical team member for introducing Statistical Thinking as a broad based application. Janice participated in writing the Special Publication on Statistical Thinking and the book entitled "Improving Performance Through Statistical Thinking".

Van Bowen, Chair-Elect

Van is currently Professor of Mathematics and Computer Science at the University of Richmond, where he has been a faculty member since 1968. Van has published and consulted in the areas of applied statistics, quality applications, TQM, control charts, statistics and systems thinking.

Van received the Ph.D. in Statistics from V.P.I. & S.U. At Richmond Van has taught a variety of statistics courses to undergraduate and graduate students. He has also taught Systems Thinking in the Jepson School of Leadership. Van's secret passion is playing tuba for a faculty jazz band that has toured the world.

Van is President of Statistical Research Consultants, Inc. and CEO of Strategic Solutions. He is also a member of the American Statistical Association and the Systems Dynamics Society.

Most recently, Van has assumed the job of executive director of the Values Institute of America. That job has led to the development of partnerships with businesses to help rebuild the moral fiber of America-http://www.mathcs.richmond.edu/~bowen/Values_Inst/Test.html.

Gregory F. Gruska, Treasurer

Greg, a Fellow of the American Society for Quality (ASQ), is the principal consultant in performance excellence for the Third Generation, Inc. an Engineering and Management services firm.

He has been involved in the development of theory and software and co-authored over 50 books and papers in the areas of non-normal and multi-variate sampling and data analysis, quality management, measurement systems analysis, inspector effectiveness and statistical process control. Greg is the author of *Theory D* which discusses the teachings of Dr. W. Edwards Deming, the principal author of *Comprehensive Process Control Planning - (CP²)*, and co-author of *Malcolm Baldrige National Quality Award - The Yardstick for Quality Growth* available through Addison-Wesley.

JL Madrigal, Secretary

JL is currently a managing partner of Oxford Worldwide Group, LLC. This company provides consulting and training in the areas of quality management, six sigma, survey sampling, design of experiments, control charts, strategic decision making, and time series and forecasting. After being working at the department of statistics at Brigham Young University for 10 years, he decided to dedicate more time to his consulting activities. He is still associated to BYU as a part time Professor of statistics.

JL is a Chartered statistician and fellow of the Royal Statistical Society of Great Britain. He is also a Senior member of ASQ and National VicePresident of the Statistical Honor Society. He has refereed papers in *Technometrics*, *Journal of the Royal Statistical Society*, the *European Journal of Operations Research* among other journals.

JL has served as a program chair of the division. He was the membership chair from 1996-2000. During his tenure as a membership chair he was in charge of implementing the section liaison program. He also coordinated the development of the division member nurturing program.

Statistics Division AQC Council Minutes

May 6, 2000

Indianapolis Hyatt Regency Mt. Ranier Room

Attendees:

Marcey Abate	Electronic Commerce Committee Chair
Davis Balestracci	AQC Short Course instructor
Galen Britz	Past Chair (1993-1994)
Sandy Capone	Newsletter Editor
Greg Gruska	Treasurer
Mark Kiel	AQC Division-sponsored session manager
J. L. Madrigal	Membership Chair
Nick Martino	Certification Chair
Bob Mitchell	Chair
Ed Schilling	Standards Committee Chair
Janice Shade	Chair-Elect
Bill Wessels	Member (wwessels@iitri.org)
Don Williams	Immediate Past Chair

Bob Mitchell, Chair, called the meeting to order at 5:10 p.m.

- Agenda was accepted with no changes.
- Mission, Vision, Strategy, Principles – Reviewed by Mitchell
- '99 FTC Council Meeting Minutes – Minutes approved as written.
- Membership Report (Madrigal)
- Treasure's Introductions
- Report (Gruska) – Attached. Report accepted with changes in reporting of Ott Fund dividends.
- 2000 – 2001 Proposed Budget
- Recognition
 1. McDermond – Williams to accept Level 3/Top Achiever for 1998 – 1999 at ASQ Annual Business Meeting on May 7.
 2. Statistics Division Testimonial Awards for service to the division will be handed out at Statistics Division Open Business Meeting on May 8.
- Information Sharing
 - a. Certification Committee (Martino)
 - b. Examining Committee (Perry) – Statistics Division sponsored two Fellows this year; Bill Woodall and Joe Voelkel.
 - c. Standards Committee (Schilling) The following motion was made, seconded and passed:
Recognizing the special need for consideration of International standards, where appropriate in the standards review process, the Statistics Division relinquishes the Z1.4 and S2 standards to the Z-1 committee.
 - d. Awards Committee (Hare)
 - e. Membership Committee (Madrigal)
 - f. Publications Committee
 - Newsletter Editor (Capone)
 - Agreed to publish links to various Quality journals in the Newsletter rather than publish tables of contents for the Journal of Quality Technology as requested.
 - Agreed to publish information on the website of International Statistical Institute, Statistics in Business and Industry in the Newsletter.
 - Agreed to eliminate the extra 900 Newsletters that have been printed for recent Newsletters.
 - Special Publication Newsletter (Janis) – Author revisions due mid-May.

- g. Electronic Commerce Committee (Abate)
 - Distribution of multiple copies of Special Publication will be done through Applewood instead of QIC. Process will begin with the next Special Publication.
 - Active standard revisions will be put on the website so the working committee can review and comment.
- h. Education Committee (Sommer) – No report.
 - Indianapolis AQC Short Course (Janis) – 21 people registered for the May 7 course.
 - Minneapolis FTC Short Course (Brill) – Statistics Division will sponsor 2 of 4 short courses: Basics of Designed Experiments (Lynne Hare) on October 11; Multivariate Process Monitoring (Christina Mastrangelo) on October 14.
 - The new Short Course Development chair is Mark Crossley.
- i. Program Committee
 - Booth Activity (Madrigal) – Jeopardy game.
 - Statistics Division Session (Kiel) – School administration view of Statistical Thinking work done by Sommer and colleagues.
 - Networking (Gruska) – 70 people are registered for the May 9 session. Volunteer facilitators are needed.
 - Minneapolis FTC (Mitchell) – Planning is going well. Still need a few more session moderators.
- j. New Business – None
- k. Benefits and Concerns – Skipped

- Chair Bob Mitchell passed the gavel to Chair-Elect Janice Shade.
- Meeting adjourned at 7:32 p.m.
- Respectfully submitted by Galen Britz

HANS BAJARIA, STATISTICS DIVISION MEMBER, **RECEIVES EDWARDS MEDAL FROM** **THE AMERICAN SOCIETY FOR QUALITY**

MILWAUKEE – Hans Bajaria has been granted the Edwards Medal by the American Society for Quality. The medal is presented to the individual who has demonstrated the most outstanding leadership in the application of modern quality control methodology, especially through the organization and administration of such work.

Bajaria was awarded the 1999 Edwards Medal on May 8 at ASQ's Annual Quality Congress in Indianapolis, IN. He was cited for "25 years of dedication in developing pros and cons of popular quality movements, in teaching quality integration as a prerequisite to quality assurance, in training while solving, and in guiding technology application based on statistical methods."

Bajaria, president of Multiface, Inc., is responsible for establishing quality strategies for clients. Bajaria earned Bachelor of Science degrees in mechanical and electrical engineering, and master's and doctorate degrees in mechanical engineering. He is an ASQ Fellow and an ASQ-certified quality engineer, reliability engineer, quality auditor, and quality manager. Bajaria is a professional engineer in Michigan and California and was awarded the ASQ Grant Award in 1994, the ASQ Reliability Division Austin Bonis Award in 1994, the Engineering Society of Detroit Gold Award in 1982, and the Rockwell International Engineer of the Year Award in 1976.

Treasurer's Report

Statistics Division

5/1/00 YTD 1999/2000 Fiscal Year Financials

Revenue	YTD Actual	Budget
Dues	\$63,075.00	\$79,000.00
Interest/Royalties	3470.21	2,000.00
AQC Short Course	NA	0.00
FTC	1,397.07	8,000.00
Retail Sales	1,826.50	7,000.00
Total	\$69,768.78	\$96,000.00

Expenses	YTD Actual	Budget
Stat Thinking	1,509.26	4,000.00
Education	NR	1,000.00
Stat Clearinghouse	490.00	3,500.00
Web	1012.99	0.00
Tactical Plans	\$3,012.25	\$8,500.00

Expenses	YTD Actual	Budget
New Member Mailings	1,248.00	3,000.00
Teleconferences	837.03	2,500.00
Labels	NR	2,500.00
Metagraphix	15.04	500.00
General Fund	\$2,100.07	\$8,500.00

Hunter Award	192.80	2,000.00
FTC Student Grants	1,252.50	1,500.00
FTC Honorarium	93.72	1,000.00
Recognition	200.53	0.00
Awards	\$1,739.55	\$4,500.00
Misc/postage	45.96	0.00
Misc/travel	831.43	0.00
Misc/other	750.92	0.00
Misc-Total	1,628.31	0.00

Tactical Plan Mtg	2,518.85	11,000.00
AQC Mtg	430.00	4,000.00
AQC Travel	NR	2,000.00
FTC Mtg	1,609.65	3,000.00
FTC Travel	479.20	2,000.00
Long Range Plan Mtg	NR	0.00
Officers Planning Mtg	2,277.14	3,000.00
Strategic Planning	\$4,795.99	\$14,000.00

1998-1999 carry-over expenses		
ASQ Div Ballot Billing	2333.25	
AQC Expenses	3281.79	
Metagraphix	67.89	
1998-1999 Total	5682.93	

Total	\$49,374.99	\$95,400.00
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Ott Scholarship

Assets	YTD Actual	Budget
Scholarship Fund	\$278,027.31	\$260,000.00

Expenses	YTD Actual	Budget
Scholarship (2)	\$10,000.00	\$20,000.00

Ending Balances		
Checking	\$29,810.00	
Money Market	\$61,511.00	
Accounts Receivable	\$5,028.00	
ASQ	5,028.00	
Dividends	24,388.11	
Current Assets	\$96,349.00	
Capital Assets	\$5,811.00	
depreciated to	\$0.00	
Long Term Assets	\$52,773.84	
	\$278,027.31	

Total Assets	\$427,150.15
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Auditing	NA	0.00
Bylaws	NA	0.00
Certification	NA	0.00
Examining	NA	0.00
Membership	3,845.03	8,000.00
Exhibitor Fees	1,047.05	4,000.00
Phone Survey	NR	1,000.00
Promotional Items	2,797.98	3,000.00
Newsletter	26,570.86	46,900.00
Printing	22,472.97	22,500.00
Postage/Misc	4,097.89	7,800.00
Sp Pub Printing	NR	10,000.00
Sp Pub Postage	NR	2,100.00
Sp Pub Reprints	NR	4,000.00
Sp Pub Honorarium	NR	500.00
Nominating	NA	0.00
Programs	NA	0.00
Publications	NR	2,000.00
Standards	NR	3,000.00
Committees	\$30,415.89	\$59,900.00

Grant Address

The 1999 Eugene L. Grant Award was presented to Dr. Edward G. Schilling, the Standards Chair of the Statistics Division, at the ASQ Awards Luncheon at the Quality Congress in Indianapolis. The citation was, "in recognition of his outstanding and lasting contributions to quality education as a teacher, program developer, statistician, author, editor, member of international standards committees, mentor, and researcher with special appreciation for his work in acceptance sampling and statistical methods."

His Grant Award acceptance address concerned the importance of statistics in quality:

"Probably no other text has done as much to mold our understanding of quality, from a statistical point of view, than has the book authored by Eugene L. Grant. Written in 1946, it still survives after introducing a host of quality practitioners to the beauty of the statistical approach to problem solving. Next time you see a copy, look at the title, "Statistical Quality Control." It has the word "quality" flanked on one side by the word "Statistical" and on the other by the word "Control". The betterment of quality has, indeed, two synergistic aspects, statistical methods on the one hand and control of the quality system by management on the other. Without both, acting together, we cannot achieve the ultimate excellence of quality we all strive for.

Without an integrated quality system, there is lack of direction, consistency, and control so that efforts to improve quality are lost or overridden by other concerns. That is what ISO 9000 is all about. But quality is more than a system, it is and must be driven by results in a world plagued by variation. That is where statistics comes in, because quality problems are by nature empirical.

If you have an electrical problem you call an electrician. If you have a chemical problem you call a chemist. But if you have a quality problem, you don't know who to call. It is here that the empirical analysis inherent in statistics can direct us as to the nature and extent of the problem and, more importantly, who to call.

The objective use of statistical methods, as with the quality management system, is to achieve consistency and to prevent and solve quality problems. It is vital that quality education and training programs touch on both aspects in a way that is most meaningful. We have tried to do that at RIT and I am sure that other programs are attempting to do the same.

Properly integrated, then, these two aspects can achieve spectacular results by combining sound managerial practices with the power of statistics. Hopefully these programs will excite the imagination of management to the potential for the use of ever more sophisticated statistical methods within a continually improving quality system.

Surely, Eugene L. Grant and other pioneers of his generation would challenge us to take up both these quality tools and build a better world."

ASQ Standards Group on QEDS

Press Release

For Immediate Release

April 26, 2000

ASQ Statistics Committee Calls for Participation in Z 1.9 Review

The Statistics Division of the American Society for Quality (ASQ) is in the process of reviewing and updating the ANSI (American National Standards Institute)/ASQ Z 1.9 (1993) standard on *Sampling Procedures and Tables for Inspection by Variables for Percent Nonconforming*. The standard establishes sampling plans for inspection by variables for use in procurement, supply and storage, and maintenance operations. It is the principal variables acceptance sampling standard used throughout the United States, and is referenced extensively in procurement contracts and in statistical quality control literature.

Knowledgeable users and other interested parties are asked to become involved with the review process. You should be experienced in the use of the standard and capable of understanding how the proposed changes might affect the standard and its use. The standard allows sampling with reduced sample size over its attributes counterpart (Z 1.4 *Sampling Procedures and Tables for Inspection by Attributes*). This standard is used to achieve efficiency and economy of variables sampling.

ANSI standards must be reviewed every five years and either revised or dropped. Projected completion dates are: availability of Working Draft by June 2000; first public review June through July 2000; second public review August through October 2000. By participating in the review process, you will learn about the changes as they occur as well as be directly involved in a standard that relates to your business.

If you are interested in taking part in the review process, contact Herbert C. Monnich, Jr. at his e-mail address: canink@hal-pc.org. The review process will take place primarily by way of e-mail and web-based communication.

For more information, contact:

Robin Gildersleeve

ASQ Standards Group Communications Coordinator

703 - 680-1436

e-mail: INFORMINTL@erols.com

ANSI Z1.4 Transferred to ASC Z.1

Responsibility for maintenance of the ANSI/ASQC Z-1.4 standard entitled, "Sampling Procedures and Tables for Inspection by Attributes" has been transferred from the Statistics Division to the ASQ Accredited Standards Committee (ASC) Z-1 on Quality, Environment, Dependability and Statistics at the request of the ASQ Standards Committee. Under current Standards Committee guidelines, this will now allow consideration of the possibility of adopting ISO 2859-1, the ISO version of ANSI/ASQC 1.4, for the upcoming revision of the Z 1.4 standard, due in 2001.

Transferring the standard will not exclude the Division, through its members, from participating in the adoption process. Anyone interested in representing his or her company, government agency, or academic institution is welcome to join ASC Z1. In addition, the opinions of interested Statistics Division members will be solicited during the balloting process on this (or other) standards.

Incoming Chair's Message

continued from page 1

ference and a post-conference course. Additional information is in this newsletter, or on our web site at <http://www.asqstatdiv.org>.

Long Range Planning

Long Range Planning will be conducted immediately after the FTC on October 13-15 at the Marriott City Center Hotel, Minneapolis, MN. Long Range Planning, which is conducted every 3 years, ensures alignment of committees and tactical plans to the long term growth and success of the Division. The intended outcome of the meeting is to:

- Confirm the Mission and Vision,
- Generate a new 5-year plan and
- Develop a specific action plan for at least one tactical plan.

There will be two facilitators at this year's meeting: Tom Swails and Bill Rolfes.

Publications - Improving Performance Series

We have a new series of books that complement our established "How To" Booklet Series. Unlike the earlier series that discuss tools and techniques, the Improving Performance Series focuses on the conceptual topics identified in the legendary "House of Education". The first in the series entitled "**Improving Performance Through Statistics Thinking**", was completed in late 1999. Nancy Belunis, Publications Chair, and Don Emerling, Improving Performance Editor, are diligently working to secure future authors for this series. (For more information on the House of Education, please see our website at <http://www.asqstatdiv.org>. Click on **Procedures**, then click on **7.14 "House Of Education" File**.)

Web Site

Just think. Less than a decade ago, access to the Internet was very limited. Today it is a powerful resource for information, training and networking. Electronic Commerce Committee Chair Marcey Abate and Web Master Jim Lenhart are diligently working to assure past editions of the newsletters, Division activities and other statistics information are accessible to everyone. They are also busy building the

physical and philosophical environment for the next generation of our web site.

Membership

This is an exciting, yet challenging time for the Membership Committee. In the 1994-1995 year, the Division had over 13,000 members. The 1999-2000 membership was estimated at 8,500. This dramatic drop can be contributed to many factors, some of which include:

- ASQ membership has dropped.
- Companies support only the core organization - no support is given for Divisions.
- The portfolio of products does not attract/keep members.

The good news is that the declining numbers have stabilized. Membership Chair, Bob Nash, will lead the effort to understand the factors that result in membership enrollment and retention. Other actives will include refining the role of the Regional Councilor and establishing the structure for timely and effective communication at the section level.

Education/Web - Virtual Academy

Although still part of our site, the virtual academy is in trouble. Designed to be a virtual learning site for grades K-12, the academy received much attention in 1997. Then, the main contributor to the development of the page changed jobs, and no longer had the time to be an active member. Since then, no further work has been done. This year the fate of the virtual academy will be determined. Either we move forward with additional modules, or remove it from the web site. Personally, I feel it is great idea. We should partner with academia and graduate students to write very basic modules that will generate interest and understanding of statistics for young students.

Standards

For many years, the Division is responsible for the development, review and revision of ANSI/ASQ standards. This year, the Division will relinquish, where appropriate in the standards review process, Z1.4 and S2 standards to the Z-1 committee. The recommendation, made by Standards Chair Ed Schilling, recognizes consideration for International standards,

and demonstrates our commitment to continuous improvement.

Volunteers

The Division has one major constraint - volunteers. If anyone is interested in working on the Publications, Web, Education, Membership or other committees, please complete the volunteer interest Form in the newsletter. As an alternative, Email links to all committee chairs are on the web site.

Annual Quality Congress

The 55th Annual Quality Congress will be held in the Charlotte Convention Center, Charlotte, NC on May 7-9, 2001. The conference theme is "**Strengthen Your Competitive Position: Use Quality Resources to Drive Excellence**". Mark Crossley is the Short Course Chair. Galen Britz is the Division Topic Session Manager.

Deming Conference on Applied Statistics

The 56th Deming Conference on Applied Statistics will be held on December 4-8 at the Holiday Inn North Hotel at Newark Airport, Newark New Jersey. This year, four tracks will provide basic to advanced tutorials. "Statistics for Quality" and "Management" tracks will provide tutorials at the basic level while "Biopharmaceutical" and "Applied Statistics" tracks will emphasize more advanced topics. Short courses will also be presented. More information is available on <http://www.metro-asq.org>.

The Challenge for 2000-2001

Since its inception in 1979, the Statistics Division has seen many changes. With the Long Range Planning Meeting scheduled for October in Minneapolis, MN, the decisions made this year will impact the next 3-5 years of activities. For this reason, it will be another pivotal year for the Division and its members.

A great deal of time was spent on developing surveys for new members and members leaving the Division. Data from ASQ were analyzed to understand the demographics and external interests of members who leave the Division. We seem to be very good at attracting members; how-

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Incoming Chair's Message

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ever, many leave within the 2-3 year time frame. The Division needs to figure out why.

Demographics indicate that member education and experience is very diverse: From no formal statistical education to a PhD degree; shop floor to academia. Each segment has their own perceptions of the portfolio of products and information the Division should deliver. Unfortunately, these needs are as diverse as the membership base.

Our mission has evolved over the years from promoting the effective use of statistical methods in the field of quality, to promoting Statistical Thinking for quality and productivity improvement. As a result, newsletter articles and special publications may discuss basic concepts for data interpretation, rather than traditional methodologies. The Division has been criticized for "dumbing down" statistics. However, the same articles that are so heavily criticized are of most value to our members.

Graphics, descriptive statistics and quality tools are new to many of the members. They are perceptible and easily understood. More importantly, the concepts can be immediately applied in the workplace. Isn't that what it's all about! On the other hand, anyone with formal education could certainly be offended because articles that discuss these applications sometimes do not strictly adhere to the theorems and lemmas that we are taught in any formalized program. The members who feel this way have every right!

I've noticed a tremendous drop in the amount of submissions for the newsletter, and can't help to think that this reoccurring problem is the root cause. For the coming year, I propose we find a solution that benefits the practitioner at the basic level, but fulfills the expectations of the advanced practitioner. I'm not sure how to do this - the problem is certainly not new. Possible solutions may include:

Encourage case studies instead of the traditional tutorial.

Develop a template for article submissions. (We currently have no resources for this initiate, but if someone....)

Develop an advisory panel that the editors can contact. The panel might also solicit articles.

I look forward to this year, the first full year in the new millennium. Hopefully, you will find that the Statistics Division meets your expectations and needs.

CONFERENCE REGISTRATION FORM

MAIL YOUR REGISTRATION TO:

Fall Technical Conference
3500 Vicksburg Ln N, #246
Minneapolis, MN 55447-1333

Please circle the sessions that you will most likely attend:

Thursday, October 12: 1A 1B 1C 2A 2B 2C 3A 3B 3C

Friday, October 13: 4A 4B 4C 5A 5B 5C 6A 6B 6C

Name: _____

Company: _____

Address: _____

City/State: _____ Zip: _____

Telephone: _____

e-mail: _____

Check here to receive the 2001 FTC Call for Papers by email

Please circle all membership categories that apply:

I am a: Member Senior Fellow of ASQ

I am a: Member Fellow of ASA

I belong to: C&PID STAT ASA-SPEs

Registration Fees: (Please submit one form for EACH person attending - either technical or non-technical program)

Two Days\$195__

Thursday, October 12 only\$160__

Friday, October 13 only\$160__

Student (ID required)\$ 80__

Late Registration Fee (after September 15)\$ 10__

Pre Conference Short Courses (Wed, Oct 11)

Failure Time and Accelerated Test Data\$175__

Basics of Designed Experiments\$175__

Post Conference Short Courses (Sat, Oct 14)

Multivariate Process Monitoring\$175__

6 Sigma in Chemical and Process Industries\$175__

Non-Technical Program

Thursday, October 12 (day-time)\$ 50__

Thursday, October 12 (6PM - 10PM)\$ 7__

Friday, October 13\$ 20__

Total\$_____

MAKE CHECKS PAYABLE TO FTC-2000

No credit cards or purchase orders accepted.

All fees payable in U.S. dollars only.

Federal Tax ID #: 390912502

You will receive a confirmation letter.

For other registration questions, contact the Registrar:

Karen Hulting, karen.hulting@medtronic.com or (763) 514-1247

MAKE HOTEL RESERVATIONS BY SEPTEMBER 18TH

44th Annual Fall Technical Conference

Statistical Thinking, Statistical Methods, and Quality Standards: Decision Making in the New Millennium

PROGRAM

The "best value" technical conference is being held this year in Minnesota's Twin Cities! The 44th Annual Fall Technical Conference will be held at the Marriott City Center in Minneapolis. Presentations range from statistical theory and methods to quality control to case studies. Application focuses on the chemical and process industries and the physical and engineering sciences. Speakers from NIST will kick-off the conference Thursday morning, followed by a celebration of W. Edwards Deming by Ron Snee on Friday morning. ASQ and ASA divisions will present awards: Shewell Award for best conference presentation, Wilcoxon and Youden Prizes for best Technometrics papers and the Hunter Award for creative application of statistics to problem solving.

SHORT COURSES

Pre-Conference Wednesday, October 11 8:00 to 5:00

Statistical Methods for Failure Time and Accelerated Test Data by William Meeker and Luis Escobar. This course will describe and illustrate the use of a mix of proven traditional techniques, enhanced and brought up-to-date with modern computer-based methodology. Topics include censored data, nonparametric estimation, probability plotting, maximum likelihood estimation, likelihood-based confidence intervals, acceleration models, accelerated life testing, and accelerated degradation testing.

Basics of Design of Experiments by Lynne Hare. This course will introduce the fundamental statistical thinking required for effective experimentation, including necessary iteration between deductive and inductive reasoning, knowledge building, requirements for effective designs, randomization and blocking and the sequential approach to problem solving. Covers introductions to factorial, fractional factorial and mixture designs.

Post-Conference Saturday, October 14 8:00 to 5:00

Multivariate Process Monitoring by Christina Mastrangelo. This course is for people who want to know more about multivariate quality and process control methods. Some knowledge of basic statistics and univariate control charts is assumed. The advantages of using a multivariate approach instead of many univariate charts will be discussed. Covers useful multivariate methods, dimensional reduction approaches, and diagnostics. Software use and interpretation will also be demonstrated.

6-Sigma in Chemical and Process Industries by Steven Bailey, John Miller and Kymm Hockman. Learn the essentials of 6-Sigma necessary to communicate effectively and credibly with 6-Sigma implementers in any industry. This includes 6-Sigma: organization, roles and deployment; "Breakthrough Strategy"; metrics and cost-benefit of quality; statistics, quality and problem solving tools; experiences; references; and issues and beyond. Translations, tools and twists specific to the Chemical and Process Industries will be presented and practiced.

The cost is \$175 per course. Fees include coffee breaks and lunch. Registration is limited, so register early.

NON-TECHNICAL PROGRAM

Thursday morning will start with a continental breakfast and departure on a customized driving tour of two distinct cities – Minneapolis, the City of Lakes and Saint Paul, the Capital City. The driving tour ends in downtown St. Paul. After lunch on your own, spend the afternoon at the newly opened Science Museum of Minnesota (www.smm.org). Explore 8 acres of indoor exhibits, 10 acres of Mississippi riverfront parks, a 3D laser show, and Omnitheater. Return to Marriott by 5:00pm. \$50

Thursday evening we provide round trip transportation to Mall of America for a night of fun on your own (all are welcome). \$7

On Friday morning, begin with a light café breakfast and a glimpse of the downtown skyway system. By late morning, set out on a "mega" shopping experience at the Mall of America (www.mallofamerica.com). After a brief orientation, set your own pace for experiencing the nation's largest retail and entertainment complex. Receive a transportation voucher and return to the Marriott/downtown at the time of your choice. Information will be available for those that want to visit museums or galleries in downtown Minneapolis. \$20

COUNCIL MEETINGS

On Wednesday, October 11, the Chemical & Process Industries and Statistics Divisions of ASQ, and the ASA Section on Physical & Engineering Sciences will hold council meetings from 7:30 to 9:30 p.m. We invite you to attend to learn about the activities of the societies and become involved in them.

TRAVEL

By Plane: The closest airport is the Minneapolis-St. Paul International Airport located approximately 10 miles from the hotel. The Marriott City Center is located in downtown Minneapolis and is accessible via a paid shuttle service from the airport on a regular schedule. Taxis are also readily available.

By Car: The Minneapolis Marriott City Center is located at 30 South Seventh Street in downtown Minneapolis accessible from exits on Interstate 35W and Interstate 94.

Northwest/KLM Airlines (the official airline of the FTC) is offering **special fares**. To take advantage of these discounts and make reservations call 1-800-328-1111. Refer to WorldFile NYMEQ.

ACCOMMODATIONS

A block of rooms has been made available at the Marriott City Center in Minneapolis. Conference rates are:

<u>Single</u>	<u>Double</u>	<u>Triple</u>	<u>Quads</u>
\$125	\$125	\$135	\$145

These rates apply for October 10th - 14th based on availability. The guest room block will be held until September 18. Make reservations by calling Marriott reservations at 1-800-228-9290, or calling the hotel directly at 612-349-4000. Mention the ASQ Fall Technical Conference to receive the special conference rate. Parking is available for an additional fee.

CANCELLATIONS AND REFUNDS

To encourage early registration, we will refund your entire registration fee if you cancel before September 15. After that date, we will deduct luncheon costs and refund the difference.

44th Annual Fall Technical Conference

Thursday, October 12

7:30	Registration Desk Opens		
8:00 - 9:00	Patrick P. Donnelly Memorial W. J. Youden Introduction — James Filliben, NIST Youden's Legacy in Metrology — Mark Vangel, NIST		
9:15 - 10:00	Statistics	Quality Control	Case Study
	NIST Session 1A	Measurement Error 1B	Power and Sample Size 1C
	Chemometrics in the Spirit of Jack Youden Cliff Spiegelmam Texas A&M University Moderator: Jim Filliben, NIST	Comparison of Test Methods Using A Selectivity Ratio Approach Arved Harding, Jr. Eastman Chemical Company Stan Deming Statistical Design Moderator: John Buschette, 3M	A Unified Approach to Power Calculations for Designed Experiments Gary W. Oehlert University of Minnesota Moderator: Stephanie Saxby, 3M
10:30 - 12:00	Technometrics Session 2A	Process Capability 2B	Bootstrapping 2C
	Development of Robust Multivariate Calibration Methods Edward V. Thomas Sandia National Laboratories Nanxiang Ge, Bristol-Myers Squibb Statistical Process Control Using Two Measurement Systems Stefan Steiner University of Waterloo Moderator: Karen Kafadar, University of Colorado-Denver	Dual Roles of Specifications and Process Capability Indices Richard Post Intel Corporation Statistical Decision Making through Capability Indexes in a Six Sigma Environment John S. Ramberg University of Arizona Moderator: Fred Spiring, University of Manitoba	Bootstrap-Based Truncation Procedure for the Sequential Probability Ratio Test J. Bert Keats Alejandro Heredia-Langner Arizona State University Variable Selection for Contaminated Data Sets James W. Wisnowski US Air Force Academy Moderator: Bob Brill, Solutia
12:15 - 1:45	LUNCHEON - Speaker: Gary Floss, Vice-President, Customer-Focused Quality, Medtronic Topic: Are You Data-driven or Driven Out-of-date? Presiding: Harry Koval, Local Conference Chair		
2:00 - 3:30	Multivariate SPC 3A	Detecting OOC Events 3B	Pharmaceutical Applications 3C
	An Algorithm to Decrease Batch Startup Time that Combines Multivariate Statistical Modeling and Mathematical Optimization Susan L. Albin Rutgers University Issues of Implementation of a Real-Time Process Monitoring Scheme on an Industrial Process Jennifer Hellrung 3M Moderator: Bob Mitchell, 3M	The Effects of User Perception on the Identification of the Out-of-Control Events in Statistical Process Control Charts Craig M. Harvey Wright State University Detecting Quality Improvement When The Lower Shewhart Level is Negative James M. Lucas J.M. Lucas and Associates Moderator: Julie O'Neill, Rohm & Haas	On the Use of Stability Data to Determine Release Limits by Allen's Formula - A Case Study Juergen Iwerson Novo Nordisk A/S Distribution-Free Statistical Intervals for Random Effects Models Bryan D. Olin LifeScan, Inc. Moderator: Sandy Capone, Kodak
4:00 - 5:00	YOUDEN ADDRESS - Speaker: G. Geoffrey Vining, Virginia Tech Topic: A Call to Action Presiding: Janice Shade, Chair, ASQ-STAT		

Want more information on the Fall Technical Conference? Local Conference Chair, Harry Koval, (651) 776-9503, hkoval@aol.com
Program Chair, Malcolm Hazel, (856) 661-7178, malcolm_hazel@mortgage.ge.com Short Course Chair, Bob Brill (314) 674-1684, RVBRIL@solutia.com

Please visit the Fall Technical Conference web site: www.cpid.net/conferences/ftc/

44th Annual Fall Technical Conference

Friday, October 13

7:30	Registration Desk Opens		
8:00 - 8:20	100 Years With Dr. Deming - The Legacy Goes On Ron Snee - Sigma Breakthrough Technologies, Inc.		
8:30 - 10:00	Statistics	Quality Control	Case Study
	Robust Designs 4A	Optimization & Control 4B 6	Sigma and Statistical Thinking 4C
	<p>Experimental Designs for Estimating Both a Response Surface and Variance Components</p> <p>Ana Ivelisse Aviles Northwestern University</p> <p>Constructing Optimal-Exact Designs</p> <p>William Li Juran Center, University of Minnesota</p> <p>Moderator: Dorothy Sempolinski, Corning</p>	<p>Experimental Designs of Unknown Models for Finding the Optimal Performance Region</p> <p>Linda Wisner Trocin University of Central Florida</p> <p>Going Beyond DOE: Process Improvement Using Cuscos for Joint Adjustment and Monitoring</p> <p>Harriet Black Nembhard Univ. of Wisconsin-Madison</p> <p>Moderator: Louis Asher, 3M</p>	<p>"Who Wants To Be a 3.4 Defects Per Millionaire?" ... Implementing Six Sigma in the Chemical and Process Industry</p> <p>Steven P. Bailey DuPont QM&T</p> <p>Statistical Thinking: Applying SPC to Prevent Long-term Affects of Type I and II Diabetes</p> <p>John W. Jennings III Marconi Communications</p> <p>Moderator: Kymm Hockman, DuPont</p>
10:30 - 12:00	Saturated Designs 5A	JQT Session 5B	Data Evaluation 5C
	<p>Supersaturated Designs: The Promise and the Payoff</p> <p>Don Holcomb Honeywell International</p> <p>Column-Embedding Methods for Constructing Certain Fractional-Factorial Designs</p> <p>Joseph O. Voelkel Rochester Institute of Technology</p> <p>Moderator: Janice Shade, Nabsico</p>	<p>Controversies and Contradictions in Statistical Process Control</p> <p>William Woodall Virginia Tech</p> <p>Discussants: Donald Wheeler Statistical Process Controls Roger Hoerl General Electric</p> <p>Moderator: G. Geoffrey Vining, Virginia Tech</p>	<p>A Simple Effective Method for Fitting Ratios of Polynomials to Data</p> <p>Mitch Toland Weyerhaeuser Company</p> <p>A Detection Method of an Active Factor by Linear Regression and its Robustness Against Correlation of Collected Data</p> <p>Shu Yamada Science University of Tokyo</p> <p>Moderator: Jon Burton, Drexel University</p>
12:15 - 1:45	LUNCHEON - Speaker: Michael O'Fallon, Mayo Clinic, and President of the ASA Topic: Statistical Meetings: View of Past, Vision of Future Presiding: Fred Hulting, Chair, ASA-SPES		
2:00 - 3:30	Issues in Design 6A	Handling Distributions of Count Data 6B	Experimentation in Process Industries 6C
	<p>Curvature and Interaction in Mixture Experiments</p> <p>Greg Piepel Pacific Northwest National Laboratory</p> <p>Two-Level Fractional Expandable Experiments Designed with Vague Prior Information</p> <p>Arthur G. Holms Response Surfaces Consultant</p> <p>Moderator: Greg Gruska, Third Generation Consultants</p>	<p>Filtering and Smoothing Methods for Mixed Particle Count Distributions</p> <p>Steve Somerville TRW Occupant Safety</p> <p>Mixture Distributions in Statistical Process Control</p> <p>Henrik Melgaard Novo Nordisk A/S</p> <p>Moderator: David Stevens, Eastman Chemical Company</p>	<p>Optimal Assignment of Treatments to Samples for Robust Design</p> <p>Julia C. O'Neill Rohm and Haas Co.</p> <p>Experimental Designs for Constrained Regions</p> <p>Douglas C. Montgomery Arizona State University</p> <p>Moderator: Stu Janis, 3M</p>

EXHIBITS

Selected suppliers of statistical software will be available to demonstrate their products and answer your questions.

HOSPITALITY SUITE

The Fall Technical Conference and the officers of the sponsoring organizations invite you to join us in our hospitality suite. Please come and give your perspective on division operations and share technical insights with colleagues, in a friendly, informal atmosphere.

2000 FTC Short Courses

by **Bob Brill, Short Course Chair**

This year there will be two major changes in the short course offerings for the Fall Technical Conference (FTC) being held on October 12-13. First, four courses will be held instead of the usual two. This will allow us to offer a greater variety of topics that reflect the diverse backgrounds and interests of our members.

The Statistics Division will continue to facilitate the short course program and be directly responsible for setting up two of the courses. In addition, CPID and SPES will each be responsible for selecting and organizing one course each. This year the respective CPID and SPES short course people are Jim Stuart and Shane Reese.

Second, the courses will be held on the Wednesday before the conference (10/11) and the Saturday after the conference (10/14). Two courses will be offered each day. Both of these changes were incorporated into the new FTC Sponsorship Agreement for 2000-2004. We believe that this will increase the value of the short course program and improve the quality of the conference. These are top-notch courses and instructors offered at a tremendous value: the cost is \$175.00 per course, and includes a set of course notes and lunch. Information on each of the courses is shown below. Think about attending one, or two .

Hope to see you at the FTC.

Statistical Methods for Failure Time and Accelerated Test Data

Wednesday, October 11, 8:00 am - 5:00 pm

William Q. Meeker
Professor, Department of Statistics
Iowa State University

Luis A. Escobar Professor, Department of Experimental Statistics Louisiana State University

This course will describe and illustrate the use of a mix of proven traditional techniques, enhanced and brought up-to-date with modern computer-based methodology. Topics to be covered include censored data, nonparametric estimation, probability plotting, maximum likelihood estimation, likelihood-based confidence intervals, acceleration models, accelerated life testing, and accelerated degradation testing. Most of the examples in the course will come from applications of product reliability, but some biological examples will be presented to illustrate the breadth of application.

continued on next page

The Basics of Designed Experiments

Wednesday, October 11, 8:00 am - 5:00 pm

Lynne B. Hare, Ph.D.
Director, Applied Statistics
Nabisco Research

This Course will introduce the fundamental statistical thinking required for effective experimentation, including necessary iteration between deductive and inductive reasoning, knowledge building, requirements for effective designs, randomization and blocking and the sequential approach to problem solving. Concepts are illustrated with examples taken from industrial applications. The course covers introductions to factorial, fractional factorial, and mixture designs. Some understanding of basic statistical concepts is required.

Multivariate Process Monitoring: From Data to Control Charts

Saturday, October 14, 8:00 am - 5:00 pm

Christina Mastrangelo
Dept. of Systems Engineering
University of Virginia

This course is intended for people who would like to know more about multivariate quality and process control methods. Some knowledge of basic statistics and univariate control charts is assumed. The advantages of using a multivariate approach instead of many univariate charts will be discussed. The course will cover useful multivariate methods, dimensional reduction approaches, and diagnostics. Software use and interpretation will also be demonstrated.

6-Sigma in Chemical and Process Industries:

What you need to know to effectively participate in 6-sigma for the C&PI.

Saturday, October 14, 8:00 am - 5:00 pm

Steven P. Bailey - Lead instructor and Master Black Belt in the C&PI (DuPont Company)

John E. Miller - Lead course developer and Master Black Belt in the C&PI (DuPont Company)

Kymm K. Hockman - Course Coordinator and Master Black Belt in the C&PI (DuPont Company)

You will learn the essentials of 6-Sigma necessary for you to communicate effectively and credibly with 6-Sigma implementers in any industry. This includes 6-Sigma: organization, roles and deployment; "Breakthrough Strategy"; metrics and cost-benefit of quality; statistics, quality and problem solving tools; experiences; references; and issues and beyond. The course will offer a mix of explanation, practice and discussion aiming for 50% group interaction. Translations, tools and twists specific to the Chemical and Process Industries will be presented and practiced.

MINI PAPER

Statistics and Medicine

David and Sarah Kerridge

Introduction

Statistics and Medicine have a long history of partnership. That is why Florence Nightingale was a strong supporter of the Royal Statistical Society in the UK. She was also one of those who pressed for the teaching of statistics in universities. As she knew, it is not enough to use statistics, it must be used correctly. Until it became an academic subject, with established rules, no one was sure what to trust and what not to trust.

Even today, statistics must be the most misunderstood subject in the world. Well, perhaps everyone says that of his or her own subject. But read this article, and see if you agree.

A Basic Misunderstanding

There is a false idea that statistics is part of mathematics. Mathematics is exact, and so therefore is statistics. But let us look at the kind of problem which I was taught to solve, many years ago, when I was learning mathematics:

"It takes two men ten days to dig a hole. How long will it take five men?"

In those days women did not dig holes. But that is the only thing about this piece of mathematics that was correct. We were supposed to answer "Four days", reasoning that digging the hole is 20 man-days of work. But is that true? Perhaps five men will be faster, because they can work as a team. Or they may be slower, because they get in each other's way. It depends on the shape of the hole. And why should we suppose that the different men would all work at the same rate?

But that is mathematics for you. It deals very exactly with one part of the problem, and ignores everything else. It ignores the connection between the calculation and the real world.

Statistics is concerned above all with the real world. It deals with the difficulties of getting and interpreting evidence. In other words, it is part of scientific method, rather than mathematics. Mathematics is quick. Science is slow but sure. Scientists reach a kind of certainty in the long run, but only by testing every theory as severely as possible.

Pure science, like physics or chemistry, is rather easy in one way. It may take great skill to do experiments, but they can be done in the laboratory, under very carefully controlled conditions. That makes the evidence easy to interpret.

Statisticians, on the other hand, specialize in problems where interpretation is difficult, because the information we can get is inexact, and possibly misleading.

This is an important concept in medicine, because we often have to work with very indirect evidence. We cannot check on whether a chemical causes cancer by testing it on people. We must find things out by slow, and often devious, ways of working round the problem.

An Example from History

Scientific method involves many different activities. All of them have their counterpart in statistics. To see how this has led to the gradual understanding of what statistics can and cannot do, let us look at some examples from the history of medicine. The answers seem obvious to us now, but at the time there was no easy way to see the right answer. No one knew the rules of good statistics.

Back in the 1840's, a Hungarian obstetrician called Ignaz

Semmelweis made a suggestion that shocked the medical authorities of his day. He said that it was a good idea to clean your hands before you deliver a baby. He got the idea by studying hospital records, though the idea was not new. He tested it by introducing a system of washing the hands in dilute bleach, and showed that the death rate among mothers fell dramatically.

No one believed him. That seems strange now, but this was before Pasteur had demonstrated that microorganisms could cause disease. When the germ theory was established, the use of antiseptics became routine. But the extraordinary thing about the argument between Semmelweis and his opponents is that both sides were right.

Semmelweis had been very careful in his statistical reasoning, because he knew how much opposition there would be. Be he was not right in thinking that he had proved his case scientifically. Science works by being extremely critical of every new idea. At that time there were no known rules by which his critics could tell good statistical work from bad.

There is another point. Science demands that we know why something works, as well as that it does work. Otherwise we have no way to test the theory under laboratory conditions, no way to extend the theory, and no way to see when it will not work. Above all, the security of scientific progress depends on using different kinds of evidence, and showing that they all lead to the same conclusion. Statistics, however well done, is only one kind of evidence.

But however right his opponents were in this way, they were wrong in another. What Semmelweis said completely contradicted the medical science of his time. Caution was reasonable. But they could have tried his methods, even if only to disprove them. If we see a possible risk or a possible gain to patients, we should try it, without waiting for absolute proof. What is there to lose?

Scientific Caution

A scientific approach is based on extreme caution. But there are two ways to be cautious. We must take great care not to accept a wrong theory, because it might set back scientific advance by a generation. On the other hand we may act on suspicion, whether of good or of harm, provided the action seems free from risk. In other words, deciding what theory to believe, and what actions to take, are not at all the same things. And therefore the strict standards of proof required in the one case do not apply in the other.

In the same way, we might stop using a drug, if there was a suspicion that it had serious side effects, provided there was a good alternative. We might still believe that the drug was based on good science. In other words, we play safe.

A Second Example

Scientific thinking did advance, but slowly. In 1865, while Semmelweis was still struggling to get his ideas accepted, Claude Bernard wrote a very important book called "An Introduction to the Study of Experimental Medicine." It was not translated into English until 1927, and remained influential for a long time. One of his beliefs was that statistics was *not* science. Statistical evidence could be used to suggest a theory, but not to prove it.

But other influences were at work. Karl Pearson was

chairman of the first university Statistics department in the world - the one that Florence Nightingale helped to get established. He was already a noted writer on scientific method. In fact, his book "The Grammar of Science" was one of the influences on the young Albert Einstein.

Karl Pearson saw the need to apply statistics to medicine in a more rigorous way. During this time vaccines against Typhoid were in great demand. So he explained how to perform a properly designed experiment to test such vaccines in actual use. This was the key point. At that time vaccines were developed and tested by laboratory science. If they caused a rise in antibody levels, it was "obvious" that they must work.

Sometimes a vaccine could be tested, as Louis Pasteur did, in animals. This was, of course, only possible if the disease affected animals as well as people. But to Karl Pearson this was not enough. He asked whether a vaccine would protect people if the test were carried out under precisely the same conditions, as it would be used in practice. Soldiers, for example, were routinely vaccinated against typhoid before leaving England. Then they would be exposed to risk of infection while on active service, possibly with a different strain of the disease. Would it still work?

Such was the feeling that the laboratory tests were the only "scientific" test, that Karl Pearson's method was completely ignored. Many years later the tests were done, and several of the vaccines then in use were found to be useless in practice, however impressive in theory.

Now the theory is fully understood, "clinical trials" - developed from Karl Pearson's original ideas - are routine. No new drug goes on the market, whatever the laboratory tests say, unless it has been tested in actual use. How many lives would have been saved if the ideas had not been resisted so long?

Conclusion

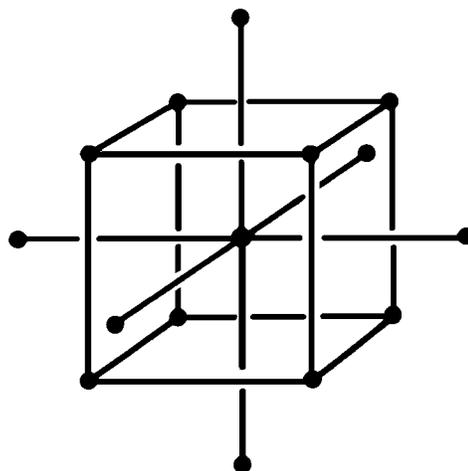
This sounds like ancient history. But we have chosen historical examples only because they are so controversial. The lessons still apply. Not all accepted treatments have been properly tested. Some will surely turn out to be useless when the testing is at last done. And statistical evidence is regularly misused. Sometimes weak evidence is put forward as "proof", at other times evidence which requires action is ignored.

The basic problem is illustrated by the "hole digging" example with which we started. It is easy to get the calculations right. It is difficult to see how they apply to the real world. This relies on knowledge, experience, and ultimately good judgement - a feel for scientific method.

Little of this is taught, even in the best statistics courses. Statisticians are expected to learn it by experience. What is taught is that statistical methods depend on a list of "assumptions", which must be true if the method is to be "valid". But the assumptions are rarely exactly true, and they relate only to what was true at the time and place at which the observations we collected. The really important question is that implied by Karl Pearson: "Will the conclusions still apply when the treatment is actually used?"

In spite of these concerns, we must not imagine that medicine is lagging behind other subjects. As far as we can judge, it is a long way ahead. Each new subject, as it realized (rather late) what it could gain from statistics, seems to make the same old mistakes. You should see what is happening in management.

David Kerridge started his career in medical research, and combined this with research in statistical theory. He was chairman of the Statistics Department at Aberdeen University in Scotland. He now does research in management. Sarah, his daughter, studied Economics and Management, and is a full time writer.



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Sandy Capone, *Editor*
ASQ Statistics Division Newsletter
23 Mapleview Circle
Penfield, NY 14526
Phone: (716) 722-3389
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