

STATISTICS Newsletter[®]

Outgoing Chair's Message

by Don Williams



My year as Chair has come to a close. I look back at our accomplishments and progress with great satisfaction. This is not due to anything that I have done, but to the contributions that many of my colleagues have made toward the mission of the Division. We have made great progress in many areas. Of course, there is still much to do. Fortunately, I leave with a great feeling of comfort that the Division is in the hands of very capable and competent leadership for the foreseeable future. **Bob Mitchell**, the current Chair, will do a great job of leading us, as he has already demonstrated during the past year when many organizational responsibilities were shifted from the Chair to the Chair-Elect. I cherish the time I have spent working with Bob and all that I have learned from him. Good luck Bob, and keep encouraging and recruiting those students. **Janice Shade, Jacob Van Bowen, and Greg Gruska** will continue their valuable work with the division. I have truly enjoyed my association and experiences with all of those involved in making your Division a better organization. We have worked hard together, played hard together, and laughed hard together. I feel that I have received much more than I have contributed from my association with each of you. Thanks to each of you for your support and for letting me be a part of this fine

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Incoming Chair's Message

by Bob Mitchell



"The purpose of life is a life of Purpose." This is a key philosophy of my personal mission statement. My passion is quality. I have been involved in quality engineering activities at some level for all 18 years of my professional career. For the record, I am not a degreed statistician; rather, a statistical practitioner with experience in quality control, quality assurance, and quality planning. My 3M experiences include Quality Engineer, Product Development, Process Engineer, Process Development, Supplier Relations, Statistical Consultant, Technical Project Leader, Technical Supervisor, and most recently as Quality Senior Specialist. I am honored to serve as the Statistics Division Chair for 1999-2000 and I look forward to working with the Division leadership to integrate its activities

and planning, and to face the opportunities and challenges that lie ahead as we brave the next millennium. I have been actively involved with the Statistics Division since 1990 – five years as Membership Chair, two years as Secretary, and last year as Chair-elect. Two Long-Range Planning Meetings, several Strategic Planning meetings, and numerous Tactical Planning sessions later, I feel competently grounded in the culture of the Statistics Division. One constant through the years has been the committed dedication of the Division leadership to advance our Mission, Vision, Principles, and Strategy in order to provide value to our members and the Society.

Our current Mission, Vision, Desired End-State, Principles, and Strategy were refined in Baltimore during 'Long-Range Planning V' (October 1997). They are printed on the inside front cover of every Newsletter. To protect the integrity of

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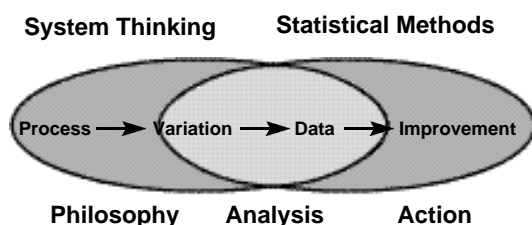
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MISSION

- 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

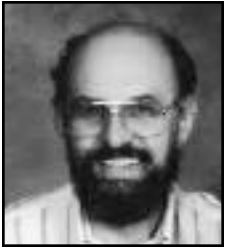
Authors should have a conceptual understanding of the topic and should be willing to answer questions relating to the article through the newsletter. Authors do not have to be members of the Statistics Division.

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.

MESSAGES FROM CO-EDITORS

by Ralph St. John



When we were in London recently, we made it a point to go see the changing of the guard at Buckingham Palace. They have a marching band, the guards neatly march in and march out, the tourists stand ten-deep and take pictures; in short, it's a big deal, but it lasts all of ten minutes. We are also having a

"changing of the guard". Sandy Capone is taking over as editor of the newsletter. But we're going to do it differently. No crowds, no photos, no applause, and most of all no "ten minutes and it's over". Sandy and I will serve as Co-Editors for the next year while I slowly ease out, Sandy slowly eases in, and, while we're easing by, Sandy will learn the ropes and I'll be around to answer questions and pass on suggestions. By the Spring, 2000 issue Sandy will be 'soloing' and I'll be a disappearing shadow.

Sandy Capone is a lifelong employee of Kodak in Rochester, NY. He brings over twenty years of industrial experience and an M.S. in Statistics from Rochester Institute of Technology. Sandy has been very active in the Rochester Section of ASQ, including a stint as the section newsletter editor. He has attended several Stat Division meetings over the past six months, including weekend meetings in Anaheim and Detroit. Obviously, he's willing, eager and able to serve Statistics Division members.

In colonial days every kitchen hearth included a "Stewpot", which was kept on the edge of the fire, constantly warm. After every meal leftovers were dumped into the stewpot, and every few days the stewpot served as the meal. What was in the stewpot? Well, the only way to tell what you were being fed was to "stir the pot". If you didn't "stir the pot", you ate what was served, didn't ask questions, couldn't tell why you got food poisoning, and couldn't suggest or make improvements. In statistics, if one is content to plug into formulas, do what you're told, and don't make waves, the same type of result occurs. I prefer to ask "WHY", to say "SHOW ME", and I love to hear people make provocative/challenging statements, IF they're willing to support their position and answer questions. In short, I STIR THE POT. I have tried to do this as newsletter editor, sometimes successfully, sometimes less effectively. I believe that improvements come as a result of new ideas and an open discussion of those new ideas. It's not about who wins the discussion. WE ALL WIN IF PROCESSES IMPROVE AS A RESULT OF NEW IDEAS.

Please welcome Sandy to his new post. Write him at scapone17@cs.com with suggestions for improvement, potential articles, offers to help, letters to the editor, etc. Editors love mail!!

by Sandy Capone



I look forward to working with Ralph St. John as coeditor of the Statistics Division Newsletter. My experience in ASQ, until now, has been at the section level where I have worked for several years on our annual conference committee. I have been at Eastman Kodak

Company since 1973 and have had several job titles: quality control inspector; chemical laboratory technician; analytical chemist; and consulting statistician. Looking back, my career change from analytical chemistry to statistics seems reasonable; both fields share similar concerns, not the least of which involves data quality.

Regardless of the statistical analysis employed, it is critical that data, upon which decisions are based, be of high quality. While I am interested in statistics in general, my professional "passion" is the application of statistical tools that characterize and quantify data quality. Since data do not really possess quality characteristics (i.e. a number such as 5.23 can not be deemed good or bad by inspection) I am most interested in those statistical tools, such as Shewhart control charts, that characterize the processes that generate the data.

I have enjoyed (so far) working with Ralph and the Statistics Division officers to learn about the Division's organization, policies, and expectations of myself as coeditor. And I appreciate the opportunity I have to learn more about applied statistics from the contributors to the Newsletter. Please feel free to contact me directly if you would like to share your ideas and passions about statistics, or, if you have any questions or suggestions concerning the newsletter. My email address is scapone17@cs.com and my mailing address is 23 Mapleview Circle, Penfield, NY 14526

STATISTICAL THINKING

Statistical Thinking is a philosophy of learning and action based on the following fundamental principles:

- All work occurs in a system of interconnected processes,
- Variation exists in all processes, and
- Understanding and reducing variation are keys to success.

Statistical Thinking is a way of thinking, a thought process, rather than a method for calculating. The Statistics Division Vision "Statistical Thinking Everywhere" incorporates the interaction and strong interdependence between the philosophy of Statistical Thinking and the body of knowledge called Statistical Methods.

OUTGOING CHAIR'S MESSAGE

Continued from page 1

group. I have enjoyed every minute of it, and I consider each of you a dear friend.

There are many contributors to the past, current, and future direction of this organization. Many have been involved in long-range planning over the past ten years that I have been involved with the Division. Each time I reflect on some meeting that we had, I end up laughing about some of the fun times that we had together. However, in each of those instances, we always did a lot of work and in some small way moved the Division closer to where we felt we should be going.

After it is too late to make any changes to this message, I know that I will remember many that I should have acknowledged. To them I apologize for the omission. However, I prefer to risk that rather than omit those that I can remember at the current moment. My first contact with the Division was **Beth Propst**, who became a friend, mentor, educator, and motivator to many of us by her passion, energy, and enthusiasm for the Division. Thanks Beth for all that you have done and are still doing to help the work along. **Rick Lewis**, serving as the Chair, asked me to serve as the Certification Chair for my first job. Rick has continued working with us long after he served as Chair. During this past year he served as the GTC Deputy Chair for us. Thanks Rick for all you are doing. However, I still don't understand why you don't wear that western hat that you got at the FTC in Scottsdale. On the other hand, I do understand why **Galen Britz** doesn't wear that motorcycle balloon that he was awarded there. Of course, I thank Galen for his help to me personally as well as his work as the Hunter Award Committee Chair and his additional service to the Division. Some day I hope to be able to compete with him on the golf course.

I also wish to thank **Lynne Hare** and **Nancy Belunis** for the work that they have done for the Division over the years. Lynne has been working for the Division forever and is presently serving as Chair of the Awards Committee. Of course he is my partner on the undisputed, undefeated, and

unchallenged Bocci team in the Division. Thanks Lynne for being such a dedicated member of the Division and helping in so many areas. Also thanks for being my friend. Nancy has served long before I became involved, and she has been a great resource for getting things done. She has helped in more ways than she will ever know. Thanks for attending all of those meetings. We have finally decided to give you absolution for missing that one meeting in Scottsdale, when you chose to stay home to give birth to Amanda. Thanks for your contribution, support, and friendship.

Some results of our efforts to provide new and better service and products to our membership are beginning to surface. One of these is a very comprehensive website at <http://www.asq.org/statdiv/>, which has been expanded by **Marcey Abate** and **Jim Lenhart** after an initial start by **Mark Kiel**. Another is an upcoming new book on improving processes using statistical thinking by **Roger Hoerl, Lynne Hare, Janice Shade, Galen Britz, Stu Janis, and Ron Snee**. These are just two of the activities that have resulted from our long-range and tactical planning efforts. There are numerous other efforts underway. We think you will like the results. Thanks to each of the above for the many hours of work and for your dedication and help to the Division.

I wish to thank **Ralph St. John** for the tremendous job that he has done as our Newsletter Editor for the past several years. Ralph and **Sandy Capone** will be serving as Newsletter Co-Editors for a couple of issues. Ralph will be getting involved in other Division activities after he works with Sandy for awhile. Thanks Ralph for the excellent job that you have done and for the patience that you have always had with me when I was a little late with my message. But most of all thanks for being a great friend. We will miss your touch to the newsletter, but know that you will get Sandy up to speed quickly. I wish to welcome Sandy to his new job. Thanks for volunteering to help! We need lots of volunteers. Any of you who want to get involved in the Division, please check the openings listed elsewhere in this issue and let me know how you would like to help. Even if you don't know exactly where you would fit, tell me a little about your interests, and we will get you

started.

Our member nurturing and Section Liaison programs are progressing nice, thanks to membership chair **JL Madrigal**. Ole, JL ("nice work"). I haven't run out of people to thank, but I am running out of space. Thanks to **Nick Martino** for his continuing service as Certification Committee Chair. Nick is also serving on the committee that is developing the CQE examinations. Thanks to **Ed Schilling** for his many years of service as our Standards Committee Chair. Thanks to **Paula Sommer** for serving as our AQC Session Manager in Anaheim and as our Education Chair. Thanks to **Bob Perry** for his long and continuing service as the Examining Committee Chair. A very special thanks to **Bob Brill** for serving as our representative on the FTC Program Committee and serving as the Chair of that committee this year for the upcoming FTC in Houston. Bob has a great program lined up for the FTC. Be sure to check the information elsewhere in this issue. The FTC is one of the best meetings that I have attended throughout my entire career. I think you may find it very interesting.

Finally, I wish to express my appreciation and gratitude to my dear friend **Don Emerling**, who preceded me as Chair. I had the good fortune to follow Don through the officer positions of the Division where he taught me a lot and was extremely helpful in getting me oriented. Thanks Don for your support and guidance. We never were able to get the Division Golf Tournament started, but we will keep trying. I will always cherish the time we spent together to figure out where we were going and what we needed to be doing.

To the many volunteers that I didn't mention above, I apologize for your omission. There are many members who are working to help the Statistics Division accomplish our mission. To each of you, I offer my sincere thanks. I consider each, along with those mentioned above, to be a dear friend and colleague. Thanks again to all for making the Statistics Division such a great organization.

I plan to follow the example of most of the previous Chairs and stay involved in the Division, as soon as we can figure out what I can do. I am not over the hill yet, just on the back nine!

INCOMING CHAIR'S MESSAGE

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the term "Statistical Thinking," we have decided to include its official definition, per the Tables & Glossary of Statistical Terms in Quality Control, in every Newsletter along with our M,V,P,S. The Statistics Division strategy is aligned with ASQ strategic initiatives. The numbered items below are the five key strategies we identified at the 1997 Baltimore 'LRP V' towards achieving our Vision. The checked items are tactical plans that were completed in 1997 and 1998; the bulleted entries are tactical plans identified for this fiscal year.

- | Statistics Division Strategic and Tactical Plans | ASQ Strategy* |
|---|----------------------|
| 1. Demonstrate the Broad Application of Statistical Thinking | D1 |
| 3 Collect new case studies; Market Statistical Thinking | |
| 3 Expand the theory of Statistical Thinking | |
| 3 Assist in the discovery process for new applications | |
| 3 Maintain the integrity of Statistical Thinking (license and trademark) | |
| • Publish new booklet series, "Improving Performance Through..." | |
| 2. Integrate Statistical Thinking into Education & Training | B2 |
| 3 Pilot the "Pegasus" charter school project (Dallas, TX) | |
| 3 Develop a "Virtual Academy" on our website | |
| • PDCA the process; repeat with new school principals | |
| 3. Develop a Vibrant Information & Communication System | A2 |
| 3 Develop and implement a member nurturing process | |
| 3 Develop a WebPage policy and strategy | |
| • Develop an Internet e-commerce capability to deliver Special Publications | |
| 4. Design & Deliver Selected Useable Products | B5 |
| 3 Develop and disseminate Newsletter technical content | |
| 3 Create a Clearinghouse of Statistical Stuff | |
| • Beef-up our Short Course offerings; more variety; more regional | |
| • Identify and start no more than 3 new publications | |
| 5. Have a Strong and Vibrant Division Infrastructure | C3 |
| 3 Division organizational re-alignment; change By-Laws | |
| 3 Create and staff the Section Liaison position | |
| • Implement a Division "Balanced Scorecard | |

* "American Society for Quality's Strategic Plan" Objectives and Strategies, Item #B0999

Significant progress has been made to forward the understanding and application of "Statistical Thinking Everywhere." Numerous papers, seminars, and workshops have been presented the last couple of years at the Annual Quality Congress (AQC) and Fall Technical Conference (FTC). Two Special Publications (**Statistical Thinking** and **Data Sanity**) have been published, and a third Special Publication is due later this year. A new booklet series, "Improving Performance Through..." is in the works, with the first booklet **Improving Processes using Statistical Thinking** coming out this fall. Additional Short Courses are being developed; our goal is to reach more members through regional courses, seminars, and Section dinner-meeting presentations. An electronic commerce system is being developed to offer materials to our customers at a price significantly reduced from that offered through existing sources. Watch for announcements in the near future. Paula Sommer, our Education Committee Chair, is working with school principals and administrators of a charter school in the Dallas, TX, area to introduce Statistical Thinking into the educational curricula. Our website has been dramatically increased with a wide assortment of information and links. Finally, the Division leadership has

designed a Balanced ScoreCard with measures of key outcomes and drivers (lagging and leading indicators). Its purpose is to help implement our strategy and measure the effectiveness of our plans to increase customer-perceived value. Details on the development of our Balanced Scorecard appear elsewhere in this Newsletter.

Though progress has been made, there remains much to be done. Consider, for example, the American Customer Satisfaction Index (ACSI) that is produced through a partnership between ASQ and two other fine institutions. I find it rather embarrassing that the American Society for Quality - our parent organization - whose desire is to be "the recognized leader worldwide for advancing individual and organizational performance excellence" does not apply Statistical Thinking to monitor its business processes. Up until recently the ACSI quarterly results have been reported in the traditional 2-point comparison mode of looking at large percentage differences. Proclamations of improvement or decline are offered to explain even modest swings in the data, with little respect given to the natural variation of the measurement process. The ACSI results were finally plotted in time series order in the July issue of Quality ProgressNow if we can just convince the ACSI authors the value of adding natural process variation limits (I, MR chart) and to look for (and react to) special cause signals.

Far too many corporate Annual Reports still use pretty bar charts, some in elaborate and colorful 3D detail, to display their financial data in time series order instead of functional and effective process behavior charts. What is their message? Consider, too, the recent flood of "Letters to the Editor" in reaction to the 'Data Sanity' Special Publication. Debate still rages between the Ph.D./Academics and the M.S./industrial practitioners as to the value (and understanding) of Statistical Thinking.

Yes, our Vision is not yet realized. But we are gaining momentum. As our strategies and tactical plans mature we see opportunity: opportunity to partner with new organizations, opportunity to embrace new communications technologies, opportunity to demonstrate the broad effectiveness of Statistical Thinking and statistical methods in industry, academia, government, and personal wellness. As a volunteer organization, the Statistics Division's success depends on the efforts of its members. We are constantly looking for interested members to help implement our tactical plans and support our Standing Committees. Several key areas needing your participation are: a Short Course Chair for the 2000 FTC in Minneapolis; a Short Course Development Chair; assistance on the Publications Committee; a Virtual Academy Editor; a team of individuals to serve on the 2001 AQC Technical Program and more. And, of course, we're always in need of more Section Liaisons to support our Membership Chair and Regional Councilors towards fostering improved communications between the Statistics Division and the local sections. Our goal is one Section Liaison for each of the 200+ ASQ sections.

I invite you to help me increase member-perceived value of the Statistics Division. Please feel free to contact me with comments, concerns, and suggestions.

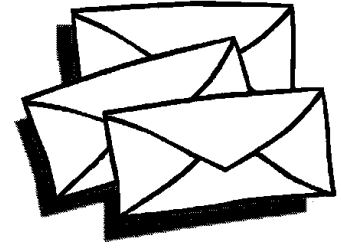
My email address is: rhmitchell@mmm.com, my surface mail address is Bldg. 230-3F-05, 3M Center, Maplewood, MN 55144, my fax number is (651) 733-8124, and office phone is (651) 736-8684.

OFFICERS' LETTER TO MEMBERS ON THE PURPOSE OF THE STATISTICS DIVISION NEWSLETTER

To Statistics Division Members:

With this issue of the Statistics Division Newsletter the Officers welcome Sandy Capone as co-editor. We also wish to take this opportunity to reiterate our philosophy on the purpose of the Newsletter, Special Publication, and our other products. The Statistics Division is a community of people from a broad spectrum of educational backgrounds and personal experiences who share a passion for quality and profound knowledge. Our membership is a diverse group that includes Ph.D. statisticians, MS statisticians, engineers, supervisors, team leaders, technicians, managers, directors, CEOs, consultants, and others. Our mission is to promote Statistical Thinking for quality and productivity improvement. Our principles (see front inside cover) include a customer-focus with the greatest market weighting of our products and services on "basic" and "intermediate" level of statistical methods, with much less emphasis on advanced statistical methods. The Newsletter and Special Publication are the major products of the Statistics Division. They serve as our principal communications tool. Since JQT and Technometrics, which we sponsor, address the more advanced level of statistical tools, the ASQ Statistics Division focuses its Newsletter and Special Publication on the basic and intermediate level. The intention of dialogue is exploration, discovery, and insight. Convergent thinking is not the primary purpose of dialogue.

As George Box said, "All models are wrong, but some are useful." We must rely on process knowledge at



least as much as on probability theory and mathematical reasoning. Walter Shewhart's Control of Economic Quality recommends use of 3s control limits not based on statistical rigor, but because it works. Statistical Thinking is a philosophy of learning and action based on the fundamental principles that all work is a process, all processes vary, and that management of variation is a key to success. Statistical Thinking and statistical methods are not in competition but are synergistic. Our hope is that once people first apply statistical thinking they will generally be motivated to apply additional statistical methods to understand and reduce variation. Only then can organizations engage in value-added activities using appropriate statistical methods, and only then can these advanced statistical techniques be applied strategically.

Education is a process of endangering the soul in a spirit of enlightened disclosure. We encourage continued open and honest discourse. The Statistics Division Newsletter should provide a "safe" and nurturing environment to explore and test new ideas, and share best practices, while upholding professional ethics (i.e. no hacks). We invite and need contributions of greater statistical rigor in concert with our focus.

Robert Mitchell, Chair
Janice Shade, Chair-Elect
Jacob Van Bowen, Secretary
Greg Gruska, Treasurer

LETTERS TO THE EDITOR

DATA SANITY

To the Editor:

You touched on a topic in your reply to Tribble's reply to Balestracci that I personally would like to see developed and amplified upon. You used the term "Statistical Ethics". I think that this is a branch of statistics that is assumed but rarely stated explicitly. As a professional group of practitioners of "Ethical" statistical methods I think that we should take the lead in this discussion.

I think that "Statistical Ethics" should be made very explicit and very public, in ordinary English. Give people a benchmark to distinguish between the "valid" attempts to use statistical analysis to help find the truth of a situation and the "Lies with numbers attached" which all too many people are throwing around today in the media, press and business.

I have become awfully tired of the often-repeated lie that "you can use statistics to prove anything that you want". Using ethical and valid statistical methods you can only point to the truth behind the data, you cannot "support any lie that advances your agenda", as many like to allege. We need a clear statement of the ethics of statistical methods to keep

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LETTERS TO THE EDITOR

Continued from page 6

our discipline from being further corrupted to serve the latest crop of demagogues.

Dave Withe
dwithecq@asqnet.org

Dave:

The Youden Address at next month's FTC will be presented by Prof. David Bacon of Queen's University. His topic: "Integrity in Statistics". The text of his presentation will be published in the Winter, 2000 Newsletter.

Ralph St.John
Co-Editor

To the Editor:

The spring 1999 issue certainly contained its share of controversy! I found it interesting that similar concerns arose in two discussion areas: the "Statistical Sanity" piece by Mr. Balestracci and the use of capability indices.

Before I proceed I must submit my disclaimer. I fall squarely into the camp of people called statistical problem solvers. My academic background in statistics is admittedly and blatantly inferior to those of Dr. Nelson and others. Still, I can defend my track record of positive outcomes due to my ardent practice of the "KISSING" approach: **Keep It Simple Statistically, Including Numerous Graphics** (1).

There seems to be a state of "violent agreement" in some aspects of the discussion. I think some of it originates from the fact that statistical problem solvers encounter a variety of situations, each of which alters slightly how we should respond. The situations might roughly be categorized as:

1. Presentation of unwanted "symptoms" from a process.
2. Being asked to analyze existing data.
3. Attempting to describe how a statistical tool works.
4. Communicating results.

Each situation described above contains its own challenges and opportunities, and therefore each demands unique responses. Let's disrupt the sequence briefly.

4. Communicating Results

The fourth situation is one in which most parties seem to agree: use pictures. I happen to find control charts, box plots, and Pareto charts to be clear and unambiguous, especially when they reflect the "before" and "after" process situation. Some highly respected colleagues have been equally effective with other kinds of graphics. Tables and lists of numbers may contain more rigor, but I have watched countless untrained observers take tables of numbers and steer previously productive meetings down ghastly rat holes. Enough said there, I hope.

Let us address now the challenges associated with the other three situations.

1. Presentation of "Symptoms"

I most enjoy responding to these problems, because they offer the most freedom to determine what kind of information will solve the problem, and how to get it. Process experts construct flow charts and fish-bone diagrams. From this information, we decide which sources of variation to control, which to regard for now as "noise", and which sources require further investigation. Also, we can decide what kind of data ought to be gathered, we can develop a repeatable process to do so, and often we can verify the accuracy and repeatability of the data.

Many times, such processes enjoy substantial improvement with quantitative tools no more complex than Pareto and control charts. This is good, because it establishes the credibility we need to get resources and support when more advanced statistical tools are warranted.

2. Analyzing Existing Data

Sadly, the first kind of problem-solving opportunity is quite rare. It is much more common for the situation to arise in which mountains of data have been held hostage in some computer. Finally the process pain is more than some manager can bear, and the data are released from their status as "write-only memory". Now the challenge is to determine whether any information is lurking inside the pile of numbers.

Many problem solvers - myself included - have succumbed to the temptation of treating existing data as a valid source of process information. Before running a single control chart, ANOVA, regression, or Pareto chart - and certainly before attempting to establish a capability index - we MUST understand when, how, and where the data came into existence. That again takes us to flow charts and fish-bone diagrams. Occasionally, a statistical tool helps detect and communicate flaws in existing data, but my experience says it's not where the smart money bets. There is no way to emphasize this point sufficiently:

There is no statistical procedure that will extract useful process information from useless process data.

The point seems so obvious, but we often get wrapped up in the wondrous procedures available with computer software without challenging the underlying validity of the data. Before we implore others to apply so-called

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MINI PAPER

Accounting for Measurement System Variability

by Sandy Capone

To properly estimate process variability, it is important to understand that variability in observed data is equal to the sum of the variances from both the manufacturing and the measurement processes. In equation (1), which represents this relationship, the variances from left to right are the total in the data, the process, and the measurement. Once an estimate of the measurement system variability is obtained, it is a simple matter to subtract it from the total data variance (2). The resulting variance for the manufacturing process is then used to calculate parts per million (PPM) defective, fraction defective, or capability indices.

$$\sigma^2 = \sigma_P^2 + \sigma_M^2 \quad (1)$$

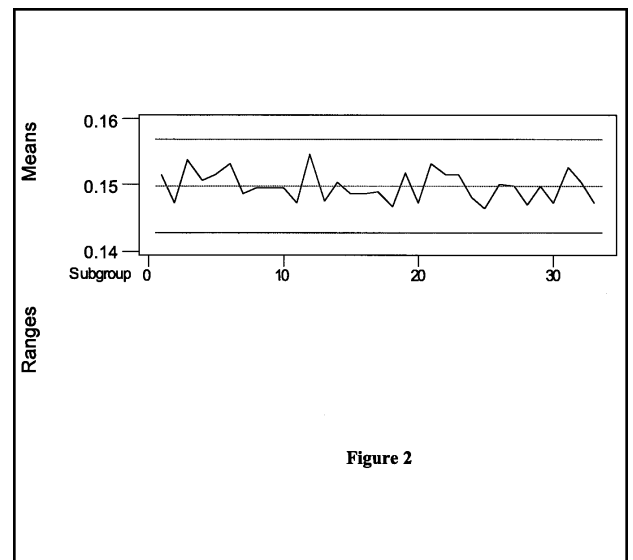
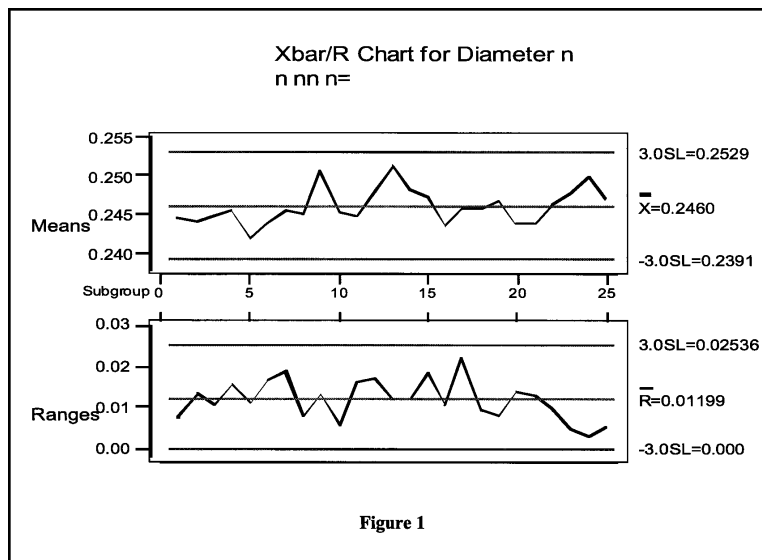
$$\sigma_P^2 = \sigma^2 - \sigma_M^2 \quad (2)$$

The same types of control charts, XBar and R, that are used to monitor manufacturing processes for stability, can be used to provide an estimate of measurement system variability. These charts, once generated, can then serve as stability monitors for the measurement system and as training tools for new operators. Data for the measurement control charts are generated by repeatedly measuring the same part. Care needs to be taken to properly subgroup the data, but then any variability in the data is attributed, wholly, to the measurement system.

For example, suppose there is interest in knowing the capability of a manufacturing process that generates shafts with diameter tolerances of 0.250 +/- 0.020 inches. The control charts (Figure 1 subgroup size n=5 and Figure 2 n=3) were respectively generated by measuring 125 consecutively manufactured shafts, and by measuring the same shaft 99 times. The following calculations were made using information from the control charts that, in this case, demonstrate both a stable manufacturing process and a stable measurement process.

Observed data:	$\sigma_T = R\bar{R}/d_2 = 0.01199/2.326 = 0.0052$
Measurement variability:	$\sigma_M = R\bar{R}/d_2 = 0.0071/1.693 = 0.0042$
Manufacturing variance:	$\sigma_P^2 = \sigma_T^2 - \sigma_M^2 = 0.000027 - 0.000018 = 0.0000094$
Manufacturing variability:	$\sigma_P = 0.0031$
Manufacturing mean level:	0.246
Specifications:	LSL = 0.230, USL = 0.270
Manufacturing process	
Capability:	$C_p = (USL - LSL)/(6*\sigma_P) = 2.15 \quad ** 1.28$
Cpk:	$C_{pk} = (\text{mean} - LSL)/(3*\sigma_P) = 1.72 \quad ** 1.03$

** Resulting erroneous capability if measurement variability is not subtracted



APPLIED STATISTICS IN THE 21ST CENTURY

HOUSTON, TEXAS OCTOBER 14-15, 1999

WYNDHAM GREENSPPOINT HOTEL

The "best value" technical conference is being held this year in the Energy City! The 43rd Annual Fall Technical Conference, with the theme of "Statistics in the 21st Century," will be held at the Wyndham Greenspoint Hotel in Houston Texas. Sessions will offer the latest in statistical methods as they relate to quality improvement and quality decision making. The chemical and process industries and the physical and engineering sciences are the application areas widely represented on the program. You'll have the opportunity to meet informally and exchange views with speakers and colleagues during breaks and the always-friendly hospitality suite. Four awards sponsored by ASQ divisions will be presented at the conference. The Shewell Award for the best presentation at the 1998 Fall Technical Conference, the Wilcoxon Prize for the best practical application paper, and the Youden Prize for the best expository paper published in the previous year's Technometrics will be presented at Thursday's lunch. On Thursday afternoon, at the W.J. Youden Memorial Address, the Hunter Award will be presented to a person who demonstrated creative development and application of statistical techniques to problem solving in the quality field.

PRE-CONFERENCE SHORT COURSES

Two short courses will be offered on Wednesday, October 13th and one on Saturday, October 16th from 8:30 a.m. to 5:30 p.m. The fee includes coffee breaks and lunch. Registration is limited.

Principal Components Analysis and Projections to Latent Structures by Nouna Kettaneh and Svante Wold (\$175) - Wednesday, October 13th. This course is for people who want to know more about process monitoring and early fault detection in the presence of many variables, correlated variables, noisy variables and incomplete data. Both univariate and multi-variate tools are described.

Chemical Industry and the Big 3 Auto's QS-9000 "Production Part Approval Process" presented by the Chemical Manufacturer's Association. (\$100) - Wednesday afternoon, October 13th. Learn how the 3rd edition of PPAP accommodates the special needs of the Chemical Industry.

Measurement and Planned Experimentation in a Chemical Plant by Lloyd Provost (\$175) - Saturday, October 16th. This course is for people who wish to benefit from case studies of planned experiments, including the description and use of computer simulations of a chemical plant.

COUNCIL MEETINGS

On Wednesday, October 13, the Chemical & Process Industries Division of ASQ, the Statistics Division of ASQ, and the ASA Section on Physical & Engineering Sciences will hold council meetings from 7:30 to 9:30 p.m. These open meetings are an opportunity for those wishing to become involved in activities of the societies to become better informed. Check your registration package for room locations.

HOSPITALITY SUITE

The Fall Technical Conference and the officers of the sponsoring organizations host a hospitality suite every year. This plays a vital role in the strategic operation of the divisions. We welcome new faces and new perspectives on division in a friendly, informal atmosphere. Please come to meet us in Houston!

NON-TECHNICAL PROGRAM

On Thursday, October 14, 1999, we will meet at 8:30 for continental breakfast. At 9:30 AM we will depart for downtown and the Houston Museum of Natural Science. There we will tour the Cockrell Butterfly Center where 1500 butterflies live in a lush rainforest. Then we will visit the Lillie & Roy Cullen Hall of Gems and Minerals, housing one of the world's foremost collections of crystallized minerals and gems. After "Tex-Mex" lunch, we will visit Bayou Bend for a guided tour of Miss Ima Hogg's extraordinary collection of American antiques. Time permitting, we will wander through the manicured gardens. Wear comfortable shoes. (Cost \$50).

On Friday, October 15, 1999, we will meet at 8:30 for continental breakfast before going to Mercer Arboretum where plants and flowers native to SE Texas grow in a natural setting. From there, we will go to Old Town Spring, with over a hundred shops with turn-of-the-century charm that display everything from antiques, crafts and collectibles, to fine imported items and clothing. After lunch we will return to the Wyndham by 2:00 PM. (Cost \$25)

ACCOMMODATIONS

Rooms are available at the Wyndham Greenspoint. Conference rates are: Single (\$125), Double (\$135), Suite (\$145). These rates apply for October 12 through 16 based on availability. The rooms will be held until September 17. Nearby overflow accommodations will be available. Complimentary self-parking is available. Valet parking is available (\$5 per day or \$10 per overnight day).

REGISTER EARLY!

Hotel reservations can be made using the form on page 12, or by calling the hotel directly at (281) 875-2222. Mention the ASQ Fall Technical Conference to receive the special rate. Reservations must be guaranteed with a valid credit card or one night's deposit, and are subject to a 48-hour cancellation policy. Check-in time is 3:00 p.m. and check out time is noon.

CANCELLATIONS AND REFUNDS

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

Continued on page 19

Thursday, October 14, 1999

7:30	Registration Desk Opens		
8:00-9:00	WELCOME / PLENARY SESSION Topic: Changing the Quality Control Paradigm Speaker: Dr. J. Stuart Hunter, Professor Emeritus, Princeton University Welcome: Stephen Coffrey, Eastman Kodak		
9:15-10:00	A. Multivariate Process Monitoring	B. Multiple Stream Processes	C. Food Industry Case Studies
1	Multivariate Process Monitoring Using Digitized Spectra, Orthogonal Signal Correction, Wavelet Compression and PLS Svante Wold and Nouna Kettaneh, Umeterics Inc. Moderator: Bob Brill, Solutia, Inc.	Adaptive Methods for Monitoring Fractionally Sampled Multiple Stream Processes Jeffery Lanning, Air Force Institute of Technology Moderator: Connie Borrer, Arizona State University	The Use of Experimental Design Methodology and Multivariate Analysis in Product Development in the Food Industry Narinder Singh Sahni Moderator: Dan Rand, Winona State University
10:00-10:30	BREAK		
10:30-12:00	A. Multivariate Process Monitoring Control	B. New Issues in Control Charts	C. Graphical Approaches
2	Monitoring Dynamic Systems with the MEMMA Christina Mastrangelo, University of Virginia A Multivariate Monitoring & Control of Batch Process Startup Robin Wurl, Rutgers University Moderator: Susan Albin, Rutgers University	Control Charts for Low Rates of Process Nonconformance Connie Borrer, Arizona State University Control Charts for Calibration Equations Rick Lewis, Solutia Inc. Moderator: Julia Holmes O'Neill, Rohm-Hass, Inc.	Using Graphical Hypothesis Testing for Assessing Capability with C_{pm} N. E. Hubels, Arizona State University Analyzing Constrained Experimental Designs Using Prediction Traces Sharad Prabhu, SAS Institute Moderator: Greg Piepel, Pacific Northwest National Laboratories
12:45-1:15	LUNCHEON Topic: Quality 2000: New Challenges, Food for Opportunities Speaker: Charles R. (Boo) Asbery, Tesco Incorporated, Retired; President ASQ Presiding: Dorothy Szapocznik, Corning Inc.		
2:00-3:30	A. Neural Networks	B. JCT	C. Handling Messy Data
3	Artificial Neural Networks: A Little Theory and Some Applications Paul Luebbers, Solutia Inc. A Message of Neural Network Applications Glenn Mertz, Solutia Inc. Moderator: Bob Brill, Solutia, Inc.	Title: Optimization Problems and Methods in Quality Control and Improvement, with discussion Speaker: W. Matthew Carlyle, Arizona State University Moderator: G. Geoffrey Vining, University of Florida	New Methods for Robust Regression James Simpson, Florida State University Predicting the Standard Deviation with Sparse Data Joseph Conklin, U.S. Bureau of Census Moderator: Russell Dillow, Chevron Chemical Company
4:00-5:00	W. J. YOUDEN ADDRESS Topic: Integrity in Statistics Speaker: Prof. David Boas, Queen's University, Kingston, Ontario, Canada Presiding: Robert Mitchell, 3M Corp.		

Friday, October 15, 1999

Registration Desk Opens

0:00

A. Chemometrics

Neural Networks for Chemometrics: An Evaluation

Dick De Veaux, Williams College
Williamstown, MA

Analysis of a Large Structure-Activity Data Set Using Recursive Partitioning

Andrew Rusinko, III
Alcon Laboratories, FortWorth, TX

Moderator: TBD

B. Quality Management

Commercial Quality: The Next Wave in Statistical Thinking?

Rehika Agrawal, GE Corporate Research and Development

Computer Decision Support Systems for Quality Planning

Souraya Yacout, Université de Moncton, Moncton, New Brunswick, Canada

Moderator: Connie Borror, Arizona State University

C. How to Handle Non-Completely Randomized Designs

Comparing Randomization and a Random Run Order in Experimental Design

James Lucas, J.M. Lucas and Associates

Cross-Fractional Problem Solving, Using Properly Run Experiments in the Food Industry

Malcolm Hazel, Campbell's Soup Co.

Moderator: Stephen J. Caffrey, Eastman Kodak

0:30

BREAK

2:00

A. Technometrics

Minimum Aberration Two-Level Fractional Factorial Split-Plot Designs

Derek Bingham, U. of Michigan

Title Bootstrapping in Controlled Calibration Experiments

David Rodde, U. of California, Davis

Moderator: Karen Kafadar, U. of Colorado, Denver

B. Laboratory QC

A Consistent Approach to Inter-laboratory Precision

Russell Dillow, Chevron Chemical Company

Gage R&R Studies for Two-Dimensional Data

Joseph Weltel, Rochester Institute of Technology

Moderator: Malcolm Hazel, Campbell Soup, Inc.

C. New Tools

Application of PLS to the Set-up and Control of Thermoplastic Forming

Robert Launsby, Launsby Consulting

The Analysis of Designed Experiments Using Generalized Linear Models

Sharon Lewis, Arizona State University

Moderator: Randy Tobias, SAS Institute, Inc.

1:45

LUNCHEON

Topic: Who Counts? Statistics and the Census
Speaker: Roy A. Walker, Executive Director of ASA
Presiding: Janet P. Breckington, ASA-SPES Chair

3:00

A. Outlier Detection

A Comparative Analysis of Multiple Outlier Detection Procedures in the Linear Regression Model

James Wisnowski, Arizona State University

Outliers and the Use of the Rank Transformation to Detect Active Effects in Unreplicated Experiments

Victor Aguirre, Instituto Tecnológico Autónomo de México

Moderator: Jeff Luner, The Boeing Co.

B. Issues in Quality

TTF vs. TBF Reliability Analysis: Removing Doubt and Confusion

J. Bert Keate, Arizona State University

A Likelihood Approach to SPC

Moshe Pollak, Hebrew University of Jerusalem

Moderator: Suat Tansyidin, Hewlett-Packard

C. Response Surfaces

Are You Getting All the Essential Information from Your Experimental Results?

Herman Sahrman, Effective Process Investigations

Modeling and Experimentation for Multi-Response Optimization

David Rand, Winona State University

Moderator: Jim Stuart, Eastman Chemical Co.

CONFERENCE REGISTRATION
43rd Annual Fall Technical Conference

PLEASE MAIL TO:
 Herb Monnich
 PMB 281
 6942 FM 1960 East
 Humble, TX 77346-2706

Please circle the sessions you are likely attend:

Thurs, October 14: 1A 1B 1C 2A 2B 2C 3A 3B 3C
 Friday, October 15: 1A 1B 1C 2A 2B 2C 3A 3B 3C

Name: _____

Badge Name: _____

Company: _____

Address: _____

State: _____ Zip: _____

Telephone: _____

Please circle whichever categories apply:

- I am a: Member / Senior / Fellow of ASQ
- I am a: Member / Senior / Fellow of ASA
- I belong to: C&PID / STAT / ASA-SPES
- I am NOT a member of ASQ or ASA

Registration Fees (Circle applicable fees):
Please submit one form for each person attending.

- Two Days.....\$ 190
- Thursday, October 22 only.....\$ 150
- Friday, October 23 only.....\$ 150
- Student (ID Required).....\$ 75
- Late Registration Fee **(after September 15)** \$ 10

- Pre-conference Short Courses:
- Principal Components Analysis and Proj.....\$ 175
 - Production Part Approval Process.....\$ 100
 - Measurement and Planned Experimentation.....\$ 175
- Non-technical Program:
- Thursday, October 14 only.....\$ 50
 - Friday, October 15 only.....\$ 25
 - Total\$ _____

MAKE CHECKS PAYABLE TO FTC-1999
 No credit cards/purchase orders accepted.
 All fees payable in U.S. dollars only.
 Federal Tax ID #: 390912502 DETACH HERE

HOTEL RESERVATION
43rd Annual Fall Technical Conference

PLEASE MAIL TO, OR TELEPHONE:
 Wyndham Greenspoint Hotel, Reservation Dept
 12400 Greenspoint Drive,
 Houston, TX 77060-1998
(281) 875-2222

Name: _____

Company: _____

Address: _____

City/State: Zip: _____

Telephone: _____

Please reserve (# of rooms) for (# of people)
 Will arrive on and depart on
 Name(s) of person(s) sharing accommodations:

Check or money order enclosed.....\$ _____

Credit Card #

Expires: /

Circle one: AMEX MasterCard VISA Other (specify):

I authorize the Wyndham Greenspoint Hotel to
 charge my credit card account for one night's
 deposit and all applicable taxes.

Signature _____

MAKE RESERVATIONS BY:
SEPTEMBER 15 TH OR BEFORE!!!

LETTERS TO THE EDITOR

Continued from page 7

“statistical thinking”, we as a community have to eliminate this pervasive blind spot - truly the mote in our collective eyes. Neither purists nor pragmatists are immune from this malady.

3. Describing a Statistical Tool

The desire to promote statistical thinking leads us to the third situation, in which we try to use “real” data to demonstrate how certain statistical tools work. The underlying purpose of this activity is to propagate statistical thinking among those whom we might influence. Truly a worthy objective, and one which all contributors to the dialogue appear to support with gusto. However, achieving the objective is quite difficult in two ways.

First, people have individual learning needs. Some will demand to see how formulae are derived, and how they build upon one another. The academic environment is one - but not the only - place where such needs can be met. Others will get bored and/or intimidated by the derivations and ask in effect: “Where’s the beef?”

I assure you from experience, both types of individuals can develop into highly effective statistical problem solvers. It may be that effective teachers of subsequent problem solvers ought to venture into the former territory to be successful. However, there simply is no place in this world for a “one size fits all” approach to teaching statistical topics, any more than we can go back to the days when every Model T was painted black.

The second issue is that “real” data are not as readily available as we would like. It is nobody’s fault that problem solving starts with the data, and (hopefully) selects the statistical approach that yields useful information. Nor is it anybody’s fault that the writing and teaching process starts with a statistical tool and finds some

data that allows us to demonstrate the tool. The latter is as unnatural a state as trying to turn a newborn baby into a zygote, and none of us can do anything about it.

I have seen some excellent materials in which data were manipulated in a less than optimal way, in order to demonstrate how a specific, useful tool works. While some people in this discussion are outraged at such a practice, I think the potential “damage” can be mitigated quite simply.

All I suggest is that the drawbacks be disclosed in some way. The student probably won’t comprehend the subtleties of the disclosure while he/she is in the middle of learning a new tool. However, it protects the author’s credibility when dealing with the unnatural sequence of events inherent in writing about statistical methods.

Conclusion

I believe that there is ample room for the rigor of the academic environment, and for the highly pragmatic problem solving methods embodied in the KISSING approach. Rather than deepening the chasm between the two communities, we ought to be working to optimize how the two communities contribute to the larger communities in which we participate.

For example, my former engineering school tolerates but does not encourage statistics courses as electives, specifically because graduates consistently rate them as virtually useless in their careers. As one who has benefited enormously from my statistical training, this cold, hard fact is most unpleasant to acknowledge.

On the other hand, only a few engineers have been exposed to or trained in the problem-solving aspects of statistical tools, because finding and attending the right offerings is not

easy. I owe my exposure as much to luck as to personal determination.

It would be beneficial to expose virtually all graduates to material that would rate as highly “value-added”. This outcome demands that universities be where the exposure occurs, but that the course content better reflect the needs of the impending graduates. I am sure that the same problem (and solution) could be found in other curricula, like sciences, business, etc. Who knows - there may even be some budding professors whose careers of rigor will germinate only because these tools really achieve something useful.

Surely the two camps can lay down their arms and work together to establish a workable compromise. There really is something at stake here. Perhaps Dr. Deming put it best: “Can anyone demonstrate a single instance where cooperation has led to failure?”

Jonathon Andell

Email: jandell@hotmail.com

Reference:

Kiemele, M. J., Schmidt, S. R., and Berdine, R. J.: Basic Statistics: Tools For Continuous Improvement 4th Ed., Air Academy Press, Colorado Springs, CO, 1997.

CAPABILITY INDICES

To the Editor:

Some advice to “Name withheld on request” on Capability Indices in the Spring 1999 Newsletter. This advice is based on my experience controlling a multicavity molding process.

Multicavity molds typically have two inherent sources of variation: shot-to-shot variation and cavity-to-cavity variation. Shot-to-shot variation is usually caused by variables in the

Continued on page 14

LETTERS TO THE EDITOR

Continued from page 13

filling process (e.g. temperature and pressure control) which affect all of the cavities in the mold equally.

Cavity-to-cavity variation is caused by mold "geography" which makes different cavities behave differently in the same shot. The Ppk for a mold line will be the sum of all these variations.

A useful analysis technique I have used is to develop a performance map of each mold. I do capability studies on individual cavities to see what effect the mold "Geography" has on the output. I actually plot histograms on a map of the mold for each cavity, from the measurements in a series of shots.

After you have the data you can use a classical ANOVA to break out the separate components of variation, and to see if any of the cavities stand out from the pooled variation of the mold. For Process Improvement studies this may be enough to tell the tale. This will give you the individual variance and the pooled variance for Cpk and Ppk calculation.

For ongoing control purposes some additional steps may be useful. By looking at each cavity's individual variation and the total mold output variation you can break out the different components of variation within the mold process. After identifying the extremes and making some quick improvement gains, I was able to use control charts on the few cavities which were pushing the boundaries of the process envelope to control the process adequately. For control purposes you also have to do periodic checks across mold to assure that your original cavity-to-cavity results still hold. Small Sample t tests are usually adequate for this.

In my experience the Ppk from the entire mold grossly overestimates the

true measured output from the mold process in the process capability estimates. (Remember Cpk or Ppk is a prediction of future output assuming that Statistical Control of the process is maintained.) This is due to confounding Special causes of variation (consistent differences between cavities) with Common causes (the normal shot-to-shot variation). The consistent cavity-to-cavity variation inflates the estimate of the total variation in the process.

A more accurate estimate of process capability is achieved by only considering the variation of the individual cavities that consistently run closest to the process tolerance limits. I call these the "Edge Threat Factors" in the mold. When you are driving on a mountain road the only set of wheels you really worry about are the ones closest to the cliff edge; the other wheels will take care of themselves if you manage the Edge Threat Factors. The actual Cpk of the output would be the Cpk of the worst cavity(s) since Cpk, Ppk calculation only considers the Edge Threat Factors.

I hope this is some help.

Dave Withe
dwithecq@asqnet.org

CORRECTION

In the Spring '99 Newsletter a letter from Alson Look was included with other letters under the label "Capability Indices". The letter was intended as a comment on the Youden Address by Douglas Montgomery. Please reread Alton's letter with this in mind.

Ralph St.John,
Co-Editor

To the Editor:

My suggestion to statisticians and users of statistics is that they carefully review with an open mind the following articles in order to understand the Shewhart Control Chart and the topic known as Process Capability Indices.

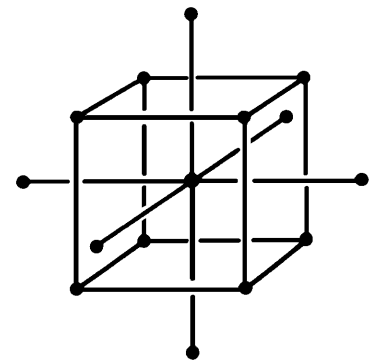
(You may also want to spend some time carefully considering what is said in these articles.)

1. Discussion: Integrating SPC and APC by Roger Hoerl and Andrew Palm, *Technometrics*, August 1992, pp 268-272.

2. Notes on the Shewhart Control Chart by Lloyd Nelson, *Journal of Quality Technology*, January, 1999, pp124-126.

3. The Calculation of Process Capability Indices by Lloyd Nelson, *Journal of Quality Technology*, April, 1999, pp 249-250.

Alson C H Look
Engineer/Statistician



CALL FOR INTERESTED MEMBER VOLUNTEERS

The Statistics Division has several open key positions. Filling them is essential to achieve our Strategy and Vision. These positions are:

2000 FTC Short Course Chair (Minneapolis).

In conjunction with the C&PID and ASA SPES short course chairs, this person will coordinate the selection of up to four short course presenters.

2001 AQC Technical Committee (Charlotte).

We seek volunteers to serve as Topic Session Managers (2), a Division-sponsored Session Manager (1), and Technical Paper Reviewers (6) for the 2001 AQC in Charlotte, NC.

Short Course Development Chair.

One of our tactical plans is to develop and provide more regional short courses, workshops, seminars, and Section dinner presentations. The objective is to reach members who cannot attend AQC or FTC short courses. This person will network with Regional Councilors and Section Liaisons to select the right instructors to deliver Statistical Thinking and statistical methods training.

Virtual Academy Editor.

The VA Editor is responsible for finding authors to develop web-based training sessions in basic statistical methods, geared for K-12 students, for our VA site. These materials need not be developed from scratch if existing materials can be found and linked.

Support Existing Committees.

Our Publications, Program, Education, and Membership committees are always looking for volunteers to support ongoing activities and help implement tactical plans. Examples include Section Liaisons, Glossary Editor, Short Course Chairs, Deming Applied Statistics Conference representative, and ASA Q&P liaison.

For more information about these open positions please see the respective job descriptions available in the STAT Operating Manual posted on our website. If you are interested in active membership in the Statistics Division please complete the "Interested Member" form available on the website (or see below), and mail to Past Chair Don Williams (address provided on the form).

ASQ STAT DIVISION VOLUNTEER INTEREST FORM

If you wish to volunteer for any of the positions described, or included in the listing below, please complete this form and return it to:

Don Williams, 2515 Jamestown Lane, Denton, TX 76201
Tel: (940) 243-1147 Email: d.r.williams@asqnet.org

Name: _____ Date: _____

Title: _____ Member No: _____

Address: _____

Phone: _____ Fax: _____

Email: _____ Membership: __ Reg. __ Sr. __ Fellow

Education / Certifications / Experience: _____

Time Availability / Company Support: _____

Please check all committees of interest:

Education Publication Electronic Membership
 Standards Awards Examining Certification
 Program

Other Open Positions Are (please circle those of interest):

AQC Session Manager, AQC Technical Paper Reviewer, AQC Short Course Chair, AQC Topic Session Manager, FTC Technical Program Chair, FTC Short Course Chair, Internet/Electronic Communications, Volunteer Placement Coordinator, Committee Reports Editor, Conference Reports Editor, Special Publications Editor, Mini-Paper Editor, How To...Editor, Understanding...Editor, Improving...Editor, Electronic Publications Editor, Short Course Development Chair, Virtual Academy Chair, Student Grants Chair, and Section Liaisons.

Other areas of interest: _____

In addition, proposals for Newsletter Mini-Papers and Basic Tools articles are always welcome, and should be sent directly to the newsletter editor.

BALANCED SCORECARD

By Bob Mitchell

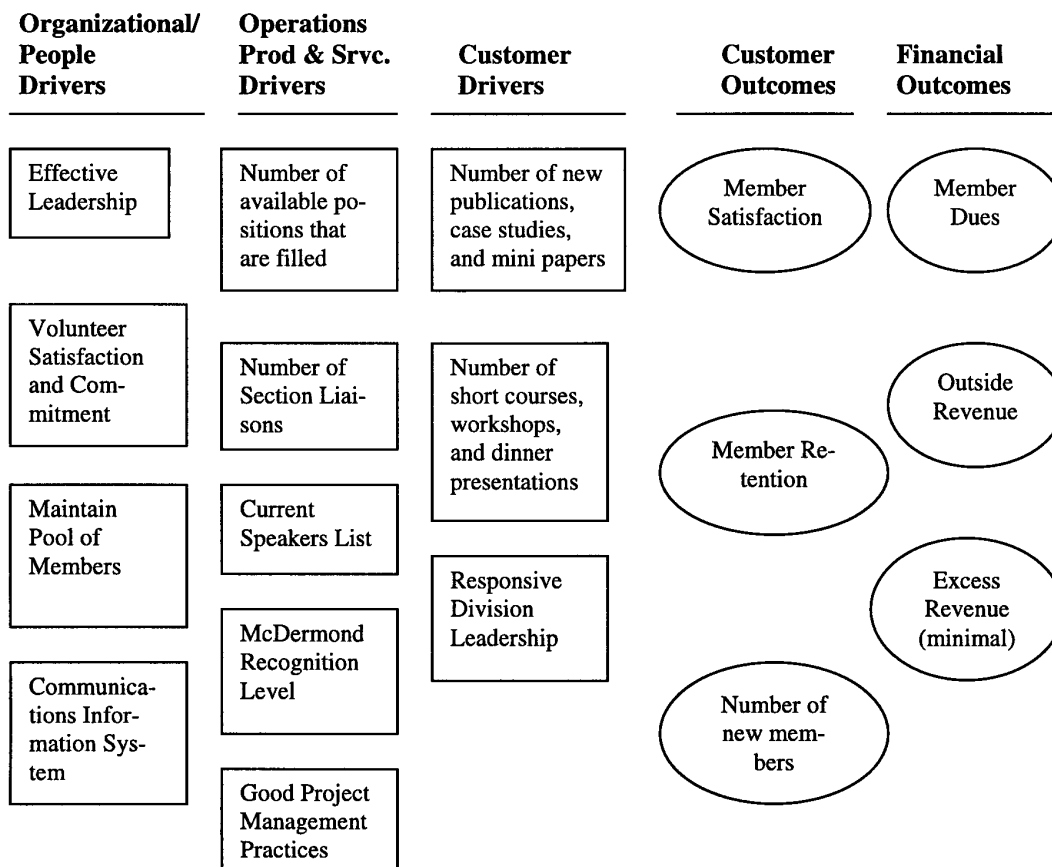
The Statistics Division initiated a tactical plan in 1998 to design and implement a strategic performance measurement system that links our key strategies with organizational results. A balanced measurement system examines both traditional accounting-based measures (i.e. “lagging” indicators) and their drivers or “leading” indicators of key performance measures. A balanced measurement system begins with a review of our basic strategy and an analysis of our critical success factors.

Key steps to developing a strategic performance measurement process are

- Define the critical success factors.
- Design appropriate measures of key outcomes and drivers; establish target values.
- Link organizational measures to our strategies; perform gap analysis.
- Communicate the measures and performance gaps throughout the organization; develop action plans.

Listed on the inside front cover of the Newsletter is the Statistics Division’s key strategies identified at the 1997 Baltimore “Long Range Planning” (LRP V). The following Strategy Map was constructed to link the critical success factors – the key Outcomes and Drivers – of our strategic plan.

From the above Strategy Map below, nineteen potential strategic measures have been identified. Several measures are available today; others will require measurement process development. “Experts” in performance measurement generally recommend 12 - 18 key measures of leading and lagging indicators for effective implementation of business strategy. As a volunteer organization, the Statistics Division lacks resources to monitor and report very many measures; however, we do not want our limited infrastructure to dilute the selection of appropriate measures. The Division leadership has prioritized the critical success factors for our initial Balanced ScoreCard. As new performance measurement systems are developed the Balanced ScoreCard will be continuously updated. Our goal is to report the Balanced ScoreCard with every issue of the regular Newsletter, and also, to make it available on the Statistics Division website. We invite your feedback on the appropriateness of the selected measures.



ASQ STATISTICS DIVISION

1999-2000 Division & Technical Committees Roster

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Jacob Van Bowen (Division Secretary, 2nd year)

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Gordon Booth (2000 AQC Topic Session Mgr.)

George Marrah (2000 AQC Topic Session Mgr.)

Marcey Abate (2000 AQC Technical Paper Reviewer)

John Vandembenden (2000 AQC Tech Paper Rev)

Nancy Belunis (2000 AQC Technical Paper Reviewer)

Babatunde Ayeni (2000 AQC Tech Paper Reviewer)

Mike Thomas (2000 AQC Technical Paper Reviewer)

Ram Sitaraman (2000 AQC Tech Paper Reviewer)

Bob Brill ('98-'99 FTC Program Committee Rep)

OPEN (Deming Applied Statistics Conference)

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OPEN (McDermond Chair)

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Chair - Nick Martino

Publications Committee

Chair - Nancy Belunis

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Sandy Capone (Newsletter Co-Editor)

OPEN (Committee Reports Editor)
OPEN (Conference Reports Editor)
Beth Propst (Special Publications Editor)
Walter Liggett (How To...Editor)
OPEN (Understanding...Editor)
OPEN (Improving...Editor)
OPEN (Glossary Editor)
OPEN (Electronics Publications Editor)

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Chair - Ed Schilling

Members:

Education Committee

Chair - Paula Sommer

Members:

Stu Janis (2000 AQC Short Course Chair)

Cliff McCormic (1999 FTC Short Course Chair)

OPEN (Short Course Development Chair)

OPEN (Virtual Academy Editor)

Electronic Commerce Committee

Chair - Marcey Abate

Members:

Jim Lenhart (Web Page Administrator)

OPEN (Internet Communications Coord)

Membership Committee

Chair - J.L. Madrigal (Membership Chair)

Regional Councilors:

George Zeliger (Region 1)

Mary Garfield (Region 2)

OPEN (Region 3)

Michael Cohen (Region 4)

Robert Nash (Region 5)

Gordon Booth (Region 6)

Tom Vaden (Region 7)

Bill Bleau (Region 8)

Ha Dao (Region 9)

Greg Gruska (Region 10)

George Marrah (Region 11)

Bob Dovich (Region 12)

Rick Schleusener (Region 13)

John Jennings III (Region 14)

Dan Dankovic (Region 15)

Section Liaisons - OPEN

(48 Sections have been filled)

Charles Margolis (Division Marketer)

OPEN (Volunteer Placement Coord.)

OPEN (ASA Q&P Liaison)

STATISTICS DIVISION OFFICERS JULY 1999 TO JUNE 2000



Robert H. Mitchell...Chair

Robert H. Mitchell has been an employee of 3M Company for 18 years. He is currently a Quality Senior Specialist for 3M's Personal Care & Related Products Division located at 3M's worldwide headquarters in St. Paul, Minnesota. Bob has previously held positions in Quality Assurance, New Product Development, Process Development, Supplier Management, Statistical Consulting, Technical Supervision, and Project Manager all within 3M. In his community he is active as a quality management consultant.

Bob is a Senior Member of ASQ, a Certified Quality Engineer and a Certified Quality Manager. He has served the Statistics Division over the last eight years, five years as Membership Chair, two years as Secretary, last year as Chair-Elect, and is currently the Chair. During his term as Membership Chair, Bob initiated and led several tactical plans aimed at improving service to our members, including "Assessing Membership Needs" (a detailed membership survey) and "Improving Local Involvement" at the section level.

Bob has a BS degree in Chemistry from the University of Minnesota-Morris, and is an inaugural member of 3M's Statistical Practitioners' Forum. He is also active on the 3M Quality Management Council.



Janice Shade...Chair-Elect

Janice Shade has worked for Nabisco for the past 15 years. She is currently Manager of Continuous Improvement for the US Foods Group in Parsippany, New Jersey. Janice has experience in several areas of Quality, including Vendor Quality, Specification Development, Packaging Design, Quality Systems Analysis and Statistical Process Control.

Janice has a B.S. in Biology from the College of New Jersey, an MBA in Quantitative Analysis from Fairleigh Dickinson University in New Jersey, and is currently enrolled at Rutgers University in the M.S. in Applied Statistics Program.

Janice is a Senior Member of ASQ. She has previously served the Statistics Division as Newsletter Editor, as a co-author of the Special Publication on Statistical Thinking, and most recently she completed a two-year term as treasurer. She is also co-author of the forthcoming Statistics Division publication "Improving Processes using Statistical Thinking". This will be the first booklet in a new series titled "Improving Processes...".

She is also listed in Strathmore's 'Who's Who for Business Leaders'.



Jacob Van Bowen...Secretary

Van is currently Professor of Mathematics and Computer Science at the University of Richmond, where he has been a faculty member since 1968. He has served as department chair during part of that time.

Van has published and consulted in the areas of applied statistics, quality applications, TQM, control charts, statistics and the legal profession, and catalyzing change with data.

Van is President of Statistical Research Consultants, Inc. and CEO of Strategic Solutions.

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, and to non-degree students through continuing education courses.

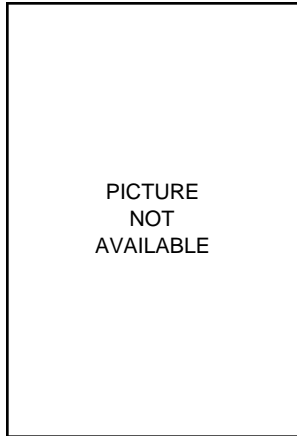
Van's no-longer-secret passion is that he plays tuba for a faculty jazz band that has toured the world.

Van recently served the Statistics Division as program chair for the Fall Technical Conference. He is now serving the second year of a two-year term as secretary.

He is also a member of the American Statistical Association and the Systems Dynamics Society.

OFFICERS

Continued from page 18



Greg Gruska...Treasurer

Gregory F. Gruska, a Fellow of ASQ, is president of The Third Generation, Inc., an Engineering and Management services firm which provides professional services to various industries, with emphasis on assisting organizations in using the MBNQA Criteria and QS-9000 for self-assessment and improvement.

Greg has worked on the development of theory and software (and co-authored over 50 books/papers) in the areas of non-normal and multivariate sampling and data analysis, quality management, measurement systems analysis, inspector effectiveness and SPC. He is author of Theory D (which discusses the teachings of W. Edwards Deming), editor and principal author of Comprehensive Process Control Planning -(CP)², and co-author of Malcolm Baldrige National Quality Award - The Yardstick for Quality Growth.

Greg has advanced degrees in math/engineering from the Univ. of Detroit, Michigan State Univ. and Wayne State Univ.

Greg is a charter member, Greater Detroit Deming Study Group and the W. E. Deming Institute. He is an ASQ Certified Quality Engineer, a licensed Professional Engineer (CA - Quality), and member, Board of Examiners-Michigan Quality Leadership Award (1994-9). He has been Region 10 Statistics Division Councilor since the inception of the division.

FTC PROGRAM

Continued from page 9

TRAVEL INFORMATION

By Plane: The closest airport is Bush Intercontinental Airport, located about 5 miles from the hotel. The Wyndham Greenspoint offers an hourly shuttle bus from Bush. Hobby Airport is about 25 miles from the hotel. Taxis are readily available.

By Car: The Wyndham Greenspoint is located at 12400 Greenspoint Drive, near the intersection of Interstate 45 and Beltway 8.

For further information: Jim Bigelow, Local Conference Chair, (281) 870-0025, fax (281)589-1292, or email to TQM_JimBig@compuserve.com.

1999 FTC COMMITTEE:

General Conf. Chair: Stephen Caffrey, Eastman Kodak

Local Conf. Chair: Jim Bigelow, TQM Consulting

Treasurer: Bradford S. Brown, Consultant

Registrar: Herb Monnich, H Monnich & Assoc.

Program Committee:

Bob Brill, Solutia, Inc. (ASQ-STAT)

Malcolm Hazel, Campbell Soup (ASQ-C&PID)

Connie Borrer, Arizona State Univ (ASA-SPES)

Cliff McCormick, McCormick Syst. (Short Courses)

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ASQ - C&PID

Chair: Dorothy Sempolinski, Corning Inc.

Chair-Elect: Jeffery Luner, Boeing Corp.

Secretary: Jim Stuart, Eastman Chem. Co.

Treasurer: Sharon Fronheiser, Eastman Kodak

ASQ - STAT

Chair: Robert H. Mitchell, 3M

Chair-Elect: Janice Shade, Nabisco

Secretary: Jacob Van Bowen, Univ. Richmond

Treasurer: Greg Gruska, The Third Gen. Inc.

ASA - SPES

Chair: Janet Buckingham, SWRI

Chair-Elect: Fred Hulting, Pillsbury

Secretary/ Treasurer: Perry Haaland, Becton Dickinson Research Center

CALL FOR PAPERS

44th Annual Fall Technical Conference

ASQ Statistics Division, along with the ASQ Chemical & Process Industries Division and the ASA Section on Physical and Engineering Sciences, will co-sponsor the 44th Annual Fall Technical Conference in Minneapolis, MN in October 2000. We encourage those interested in making a presentation to submit an abstract. The Fall Technical Conference is an excellent opportunity to meet informally and exchange views with speakers and colleagues during breaks and the always-friendly hospitality suite! Sessions offer the latest developments in statistical methods as they relate to quality improvement and quality deci-

sion making. And, for the first time, NIST will be contributing to the program with a session, or possibly an entire track, in honor of Jack Youden. If you are interested in presenting an applied or expository paper in any of three parallel sessions (Statistics, Quality Control, or Tutorial/Case Studies), please refer to the Statistics Division website at <http://www.asq.org/statdiv> for further information about the 2000 FTC Program and Call for Papers. Or, alternatively, you may contact Malcolm Hazel at Campbell Soup (tel: 609-342-6463). The deadline for submitting abstracts will be late January, 2000.



**STATISTICS DIVISION
AMERICAN SOCIETY FOR
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B.G.S.U.
Bowling Green, OH 43403-0267

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Communications regarding **change of address** should be sent to ASQ at:

American Society for Quality
P.O. Box 3005
Milwaukee, WI 53201-3005

This will change the address for all publications you receive from ASQ including the newsletter. You can also handle this by phone (414) 272-8575 or (800) 248-1946.

UPCOMING NEWSLETTER DEADLINES

Issue	Vol.	No.	Due Date
Winter 2000	19	1	Dec. 15, 1999
Spring 2000	19	2	March 30, 2000



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