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MATHEMATICIANS' SELF-CONFIDENCE AND RESPONSIBILITY

F. Thomas Bruss (ULB)

Abstract: This article is an essay written for mathematicians. Its objective is to stimulate discussion. The essay deals with specific prejudices against Mathematics and mathematicians. Should mathematicians feel responsible to defend Mathematics against indifference or attacks? If so, when and why should we take our responsibility? Can we also speak of a mission for mathematicians? Further, are there suggestions how to assume the task of a mission? These are the questions which are the center of our discussion. Examples of rather typical situations in everyday life try to convince that such questions are important for us and our field.

1. Mathematicians and their reputation. Some people think that mathematicians are insecure, even very timid. Others, on the contrary, take them for condescending. Perhaps, as so often, the truth is somewhere in between, but I think it would be unfair to leave it like that without trying a better analysis. Can we say something more definite about shyness or self-assertion of mathematicians?

My former student Yvik Swan asked me not long ago to tell the difference between an introverted mathematician and a self-assured mathematician. I was not sure what to answer but I certainly enjoyed Yvik's description: "The latter would look on your shoes when he is talking to you."

We know that this is in general not true. Even more. As many independent statistical analyses show, good marks in Mathematics are the best statistical predictor of being good in all other school subjects. And if I look around among the bright Mathematics students of our University I typically see young open-minded and seemingly self-assured people. But isn't it most interesting? Even though we know that, as we have pointed out, the prejudice is in general not at all true we mathematicians still enjoy stereotype descriptions of our breed by others, as exemplified by the joke. Is it only because we really know better?

Perhaps. Still, many people, including mathematicians, do think we should be more open, should try to communicate more precisely what we are doing and defend adequately what we are doing. Communication of what a

mathematician is doing is sometimes difficult as we know best ourselves. Nevertheless, we probably should be more willing to point out what we think whenever we believe there is a good reason to do so. It seems worth discussing a few examples.

2. Confidence in Mathematics. When a medical doctor whom we meet for the first time tells us after two minutes that he or she was always a zero in Mathematics, I think we should not say that we have heard this from others. Still worse would be adding that we know others who were very bad in Mathematics and succeeded well in their life. I am sure that a better answer is “Oh, this is very sad! This is likely to impair all those of your decisions which involve elementary logic or a sound feeling for the order of magnitude of numbers.” Elementary logic is a must for medical doctors, and elementary logic is one of the typical and far-bearing failures of doctors who say that they were very bad in Mathematics. The immediate reaction of the surprised doctor on our alert is to respond that they are of course “very logical”, simply trying to say they could not do the other stuff with x ’s or $f(x)$ ’s and so on. Realizing that you doubt his or her “logical abilities”, he or she may be annoyed by now. However, we should firmly show how much we worry about what we just heard and should not compromise. As politely as we can, we should insist on our sadness by telling the further truth: “Unfortunately, the lack of knowing a minimum of how to handle x ’s or $f(x)$ ’s or so at the end of high school is known to be highly correlated throughout life with failures in elementary logic and a bad feeling for orders of magnitudes.”.

A physician who cannot negate correctly a statement containing one or two implications or one or two and/or attributes can do true harm to a patient. The same holds for the failure to see or to use (our beloved) equivalence of « A implies B » and « not- B implies not- A . » Mathematicians use the latter of course mostly in the convenient form « A and not- B implies a contradiction » for a proof by contradiction. This appealing form is however equally important for everyday decisions. Just as a test to clean up one’s mind. Indeed, many wrong statements, worldwide, and in many domains, could probably be avoided by applying this equivalence on a regular basis. There are several other examples of elementary reasoning of similar importance. Unfortunately, the importance of elementary logic is seemingly not that clear to everybody. Otherwise textbooks of general Mathematics for medicine, biology or pharmacy students for instance would all have a dominant introduction to elementary reasoning and its importance, but this is far from being the case.

Another typical and sometimes dangerous error lies is on the side of elementary probabilistic or statistical reasoning, in particular reasoning

involving conditional probabilities, the regression effect, Simpson's paradox, and so on. The example of 82 percent wrong answers of medical doctors and students in a test of Bayes' formula at Harvard Medical School – arguably one of the most prestigious medical schools in the world – shows how serious the problem can be (see [1]). The largest block of wrong answers were even drastically wrong with estimating the probability of the incidence of the tested disease to be 95 percent whereas the correct answer was close to 2 percent (see Casscells et al., [1], 1978). This is some time ago, but we should not be mistaken. Things have not necessarily improved (see for instance [2], 2009). According to my own modest experience, it is also linked with a lack of interest. When discussing more recently the results of a multi-targeted blood test I dared to remark that if a test goes over a sufficiently large number of factors which are seen as relatively independent of each other then it becomes “not-normal” to have everywhere “normal” values.

It's no problem of course, that the physician does not see immediately what we mean. The problem begins when we see that he or she is not interested in understanding what we may have possibly meant. Similarly, pretending to analyze data of a test and proposing medication having no idea whether the order of magnitude of the standard deviation is 0.1, or rather 1, or even 5, and not being keen to look it up, this is more than a *faux pas*; it is a lack of responsibility. We should not accept this; we should react and take our responsibility. If we leave the doctor's cabinet politely on basis of such a conversation, he or she will remember, and possibly for good. This is probably a wise choice for us; in the same vein, it may be for the benefit of society and undoubtedly helpful for the appreciation or recognition of our field. In summary, I dare to affirm my conviction that no doctor who advertises his mathematical incompetence, however competent he/she may be for certain problems, should be trusted in medical decisions involving weighing alternatives, and that it is our and mainly our responsibility to point this out.

It would be inadequate and unfair to exemplify medical doctors without mentioning other examples. So I remember a round-table discussion in Germany with a member of the European Commission as the main speaker. This was shortly before the first introduction of the Euro-currency (around 2000). He spoke about the laws and recommended rules which would be implemented to make the European Central Bank an institution at least as reliable as the Deutsche Bundesbank, and hence, he argued, the Euro at least as strong as a currency as the Deutsche Mark. He reasoned “if you increase the size of an Institution by a factor c you must increase control by factor c to maintain the same level of safety” assuring everybody in the audience that the European Union has (of course) the financial means to do this. I was

not sure how an increase of control was supposed to be measured, quite apart from the important fact that now member states with national interests would all have their word to say in this new central bank. In particular I wondered why he could assume such a simple linear relationship between control and safety. I must admit that my question was hardly helpful for the later discussion but I am still glad that I had tried to draw attention to conclusions which seemed naive.

Why is it so that people have difficulties to listen to us even if we just try to say elementary and useful things? The problem seems to be rather widespread. Brian Vidakovic (Atlanta) commented “Doctors and lawyers are the typical bad guys but we get it also from the unlikely sources that should appreciate Mathematics better: engineers, biologists etc.” Is it some impression we may leave on others? Too modest, insecure, no humor, too proud, condescending? Let us have a short look at this.

3. Modesty, Condescendence and Contradictions. Can mathematicians be proud, even condescending? Well, we can imagine John Littlewood would have said there is “hope”. As far as I remember the following examples, among my preferred ones, can be found in Littlewood’s Miscellany [3]:

Two dons from the Mathematics Department of Oxford or Cambridge at high table: “Did you hear already that our colleague such and such is to become the new Minister of Defence?”

- “Really? Oh, what a come-down!”

“What did God do before creation?”

- “Thousand pages must have been written on this; but he was doing Pure Mathematics and thought it would be a nice change to do some Applied.”

There are certainly many mathematicians who have a superb humor. The eminent Carl Friedrich Gauss, known for so many wonderful things but hardly cited for his humor, makes no exception (see for instance the introduction in [4]). And as mathematicians we should be proud of this witty side of so many of us. A few mathematicians, like anybody else in any arbitrary field, may, of course, be condescending in some way or another. But I think we hardly see a problem which would be specific for mathematicians. In particular we do not know the notion of a “school” in Mathematics as understood in many other fields. This helps to keep standards of honesty and prevent what one may call artificial condescendence. Even the beloved picking order Pure Mathematics – Applied Mathematics is for us rather a cultivated recurrent amusement than a real problem.

Sometimes it is almost the contrary of pride or condescendence which can be a problem, however. Even the most brilliant of our breed, those who would have all reason to stand up in the world, to stand up for Mathematics, do not always do so in an inadequate form. I remember a reader of the Newsletter of the EMS of some years ago who complained in his letter that one of the awardees of one of our most distinguished prizes in Mathematics showed up at an official event dressed very “unconventionally”, if we may say so, and behaving accordingly. Fortunately I did not see this and don’t know to which extent it was true in the sense that many of our colleagues would have felt the same. However, if it was like that, we should be grateful for the complaint and encourage similar letters in similar cases. Perhaps these letters would imply second thoughts. Inadequate dress or behavior is likely to harm our field, I believe. If the celebrity cannot be suspected of the slightest bad intention then this is a different matter but the effect stays still the same.

We cannot prove mathematically that the lack of respect for conventions is likely to harm, but we may try an analogy. Let us visualize in our mind the portraits of Gauss, Euler, Newton, Leibniz, the Bernoullis, Laplace, Quetelet or others of our celebrities, just as we know them. They appear before us dressed in the style a person in their position would dress at his time for a portrait or an official event. Would we like to see them differently? Even if we are indifferent, would we expect our former heroes to not have been as brilliant as the new one to dare to break conventions? (NB: Heroes, like everybody else, are allowed to break conventions but should do the thinking before and then be consistent. - Respect for Perelman.)

Now to another problem, smaller but still of some concern. This is an exaggerated display of modesty. Mathematics is, I believe, no place for the strategy to “stoop to conquer”. If you name your textbook “Elements of ...” it is arguably not a good idea to turn off the reader by a first page which most people do not understand! Similarly, if you have excused yourself already twice in your Introduction that your presentation will lack mathematical rigor, how consistent is then to refer to Bourbaki twice on the first page? One should keep in mind that the reader of a book may have bought this book of yours just because you named it “Elements of ...” and because he saw no alternative to beginning with “Elements”. He will now feel badly served.

Eminent mathematicians should take particular care if they want to serve our field, or help others to serve our field. Exaggerated modesty “thrown” towards the public seems awkward. If a Fields medalist, say, expresses amazement that he or she is invited to speak on aspects of Mathematics at a most prestigious occasion, underlining repeatedly that many others would be

more competent to do so, then this has two sides of the coin. It may be alienating rather than polite. Come on, Professor, the audience may think, you got the Fields Medals in Mathematics, you are not invited because you won the second prize in raising white rabbits. Don't you mathematicians say yourself that this medal is the highest distinction for young Mathematicians and comparable to the Nobel Prize? - Hic Rhodos, hic salta!.

Also, all of us, eminent or not eminent, make errors in judgment, errors in prediction. This needs no explanation. But we try to do our best saying things we can prove, and if not, in which we believe. Is it then suitable to advertise that one probably will change one's point of view in five years completely? With all respect, one should see the implication: A listener may think, this means that my decision to come here today was probably a completely bad investment.

To summarize, Mathematics is for many people a mysterious subject, possibly a suspicious subject. However, it is undoubtedly seen as a difficult discipline and not a ridiculous one. Any public with self-respect and a minimum of interest in our field expects to be treated correspondingly. In accordance with this awareness the audience has a right: Entitled to admire but equally entitled to be treated with respect. This is why mathematicians, whatever their level, whatever their fame, have a responsibility towards the field of Mathematics, be it in front of an audience, or somewhere else.

If the situation requires, the feeling for responsibility should turn into a mission.

4. Responsibility and Mission. The challenge of responsibility may arise everywhere and any day. The last example is intended to show that the charge or challenge of a mission may have to be assumed already on a very basic level.

You happen to sit with four lawyers, or lobbyists having studied law, on the same reception table (such a constellation is, by the way, not unlikely in certain towns as for instance Brussels). It is sad enough if two of these not only praise their complete incompetence in Mathematics but also try to ridicule our subject. We are put on test, but things can become worse. The third man of Law says he cannot imagine that Mathematics has any impact on real life decisions. The fourth shows no support either. Grateful enough, you sense a hint of wit in his only remark "ius non calculat."

The evening threatens to become rather short, but the mission begins. We may try to change the subject. Why not Law? We show interest. No need to faint it, we mathematicians are interested, so we ask questions. With four

layers on your table we are likely to hear from one of them, early enough, that lawyers are superior in logical thinking to anybody else, simply by the great importance the study of Law attaches to consistency and the frequent use of logical arguments in general. But we may confidently take the risk: “Why do you believe this? I am convinced that nobody of you would have a chance to compete in logic with an average colleague of mine, simply by the permanent requirement of all this in Mathematics”. (It is true that some people in law are really very good, and I beg their pardon.)

Sure enough we can live for half an hour with two miffed faces at our table annoyed by our unexpected arrogance. Of course we were not arrogant at all, we told the truth. Moreover, there is a good chance that we have made a point for Mathematics. We may win over one of the lawyers on the table, perhaps almost two, at least in the sense they admit that we also may have a point, somewhere..., somehow.... Now, having a lawyer half on our side, things become easier. Another one may follow to some extent, and the evening may turn out not too bad after all.

Clearly, I have presented here bad-case or worst-case situations, though no invented scenarios. Good doctors, competent economists and well-educated lawyers will forgive me because they know that we know that there are many really good ones of them. Some others may go so far to say: no need to excuse. Other readers may have again experiences of a different kind. Whatever they may be, if they challenge Mathematics, if they require to take our responsibility, let us stand up!

5. Conclusion. The reader may find that I am somewhat too sensitive with respect to the outside world view of Mathematics, and its implications. He may be right. It may also have become stronger over the years, possibly favored by challenges of the entourage of a town like Brussels. Am I opinionated? I am, and I am afraid I should be as much as those respected colleagues who confidently play on the other side, that is, who assume the role of apostles preaching that Mathematics in all its supremacy simply does not have to care, that no one in Mathematics should be obliged to show interest in public image, or even to show “courage civil” to defend it.

I respect their feelings, but it is clear from what I said that I think they are wrong.

This does not imply that I am right. But would you write such an article if you are not convinced that you are most probably right? Hence it may be a good idea to discuss. And those of us who are engaged in some work of public awareness may want to examine whether our efforts to raise the public awareness and the image of Mathematics are sufficiently effective.

Self-assertion, whenever justified, respect for the public, whenever expected, and courage civil, whenever needed, might, as I argue, add a lot to their effectiveness.

In contrast to the style presented here many colleagues may agree with the essence of what is said in this article. Hence it may offer nothing really new to them. If so, it would be no surprise if they advised me to do more Mathematics and not to spend time with such an article. -- I must admit I should really try my very best to follow their first advice.

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**19TH ANNUAL MEETING OF THE BELGIAN
STATISTICAL SOCIETY**

Hasselt (Belgium), 12-14 October 2011

The program of the next meeting of the Belgian Statistical Society (BSS 2011) is now available on the conference web-site:
<http://www.uhasselt.be/bss2011>.

Wednesday 12th October (Young Statisticians Afternoon)

13.30-14.00 Registration Young Statisticians afternoon

14.00-15.40 Contributed talks

Candida Geerdens, Gerda Claeskens, Paul Janssen
Goodness-of-fit tests for the frailty distribution in an proportional hazards model with shared frailty

Marco Munda, Catherine Legrand
Impact of centre effects in the analysis of multicentre clinical trials

Carine Bartholmé, Pierre Patie
A new factorization for the exponential functional of Lévy processes

Majda Talamakrouni
Guided censored regression

Amin Azmon, Christel Faes, Niel Hens
Estimating the case reproduction number and the generation interval parameters based on epidemic tree data

15.40-16.10 Break

16.10-17.10 Contributed talks

Leen Prenen, Roel Braekers, Luc Duchateau
Modelling unbalanced clustered survival data through Archimedean copula models

Daniel Koch, Sébastien Van Belleghem
Large portfolio optimization by wavelet thresholding

Mehreteab Aregay, Ziv Shkedy, Geert Molenberghs
Non-linear fractional polynomial for estimates of long-term persistence of induced HPV antibodies: a hierarchical Bayesian approach

17.10-17.50 Presentations by Quetelet Prize Winners

Machteld Varewyck, Els Goetghebeur
Multiple imputation for missing and delayed event type data in a competing risks survival setting: time to ph.d.-attainment

Kim Van Kerckhove, Niel Hens, John W. Edmunds, Peter J. White, Ken Eames
Quantifying the impact of illness on contact patterns

19.00 Dinner

Thursday, 13th October

8.30-9.30 Registration

9.30-9.40 Welcome and opening by Marcel Rémon, President of the BVS/SBS

9.40-10.30 Invited talk by Oliver Linton, London School of Economics, UK
Nonparametric estimation of polarization measures

10.30-10.50 Break and Posters

10.50-12.30 Contributed talks

Session 1: Statistical Modeling

Geert Molenberghs, Michael G. Kenward, Marc Aerts, Geert Verbeke,
Anastasios A. Tsiatis, Marie Davidian, Dimitris Rizopoulos
*On cluster size, ignorability, ancillarity, completeness, separability, and
degeneracy: sequential trials, random sample sizes, and missing data*

Elasma Milanzi, Ariel Alonso, Geert Molenberghs
*Quantifying expert opinion for drug discovery with high dimensional
data*

Nicolas Depraetere, Martina Vandebroek
Order selection in finite mixtures of linear regressions

Vishva Danthurebandara, Martina Vandebroek
*Estimation of integrated choice and latent variable models taking the
respondent heterogeneity into account*

Maarten Bekaert, Stijn Vansteelandt
Estimation of natural direct and indirect effects

Session 2: Methodology

Gordon Gudendorf, Johan Segers
Nonparametric estimation of multivariate extreme value copulas

Yves Grouwels, Roel Braekers
*Zero-inflated semi-parametric Cox's regression model for left-censored
survival data*

Abdel Alj, Guy Mélard
*Asymptotic properties of quasi-maximum likelihood estimators for time-
dependent VARMA models*

Christophe Ley, Yvik Swan
*Univariate and multivariate Chen-Stein characterizations – a statistical
approach*

Christophe Ley, Yvik Swan
Information functional and probability metrics

12.30-14.00 Lunch and Posters

14.00-14.50 Invited talk by Bart Deketelaere, K.U.Leuven
Statistical process control for time varying processes

14.50-15.50 Contributed talks

Session 1: Statistical Modeling

Achmad Efendi, Geert Molenberghs
A multilevel combined model for repeated, overdispersed time-to-event outcomes and its estimation strategies

Edmund Njeru Njagi, Geert Molenberghs, Geert Verbeke, Michael G. Kenward, Paul Dendale, Koen Willekens
A flexible joint-modelling framework for longitudinal and time-to-event data with overdispersion

Aklilu Ghebretinsae Habteab, Christel Faes, Geert Molenberghs
Gaussian variational approximation for some generalized linear mixed models

Session 2: Applications

Nele Goeyvaerts, Elke Leuridan, Niel Hens
Multivariate decay models for longitudinal censored maternal antibody levels against measles, mumps, rubella and varicella

Ghada Abo-Zaid, Richard Riley
Individual patient data meta-analysis of a continuous prognostic factor using fractional polynomials

Emanuele Del Fava, Ziv Shkedy, Mehreteab Fantahun Aregay, Geert Molenberghs
Modeling multivariate, clustered and overdispersed binary data with additive and multiplicative overdispersion parameters

15.50-16.20 Break and Posters

16.20-17.00 Contributed talks

Session 1: Bioinformatics

Joke Durnez, Beatrijs Moerkerke

Improving selection stability of multiple testing procedures for fMRI

Peter Pipelers, Olivier Thas, Lieven Clement, Jean-Pierre Ottoy

Censored regression models for the analysis of differential gene expression in qPCR experiments

Jürgen Claesen, Tomasz Burzykowski

Statistical analysis of selected yeast segregants

Session 2: Applications

Wim Coucke, Adelin Albert

Comparison of different Z-score estimation methods for external quality assessment programs

David Magis, Gilles Raïche

A modified item response model to detect and correct for cheating

Bart Ampe, Luc Duchateau

Modeling hierarchical interval censored time to intra-mammary infection data through Gibbs sampling

17.00-17.50 Quetelet invited talk by Jeff Wu, Georgia Tech College of Engineering, USA

Post-Fisherian experimentation: from physical to virtual

18.00-19.00 General Assembly of the Belgian Statistical Society

19.00 Dinner

Friday, 14th October

9.00-9.50 Invited talk by Geurt Jongbloed, T.U.Delft
Testing monotonicity of a hazard rate

9.50-10.50 Contributed talks

Session 1: Bioinformatics

Jérôme Ambroise, Bertrand Bearzatto, Annie Robert, Benoit Macq, Jean-Luc Gala
A hybrid method for spotted microarray transformation

Anyiawung Chiara Forcheh, Lieven Clement, Adetayo Kasim, Dan Lin, Ziv Shkedy, Geert Verbeke, Willem Talloen, Hinrich Göhlmann
A mixed effects model for the analysis of paired illumina microarray experiments

Antoon Lievens, Stefan Van Aelst, M. Van den Bulcke, Els Goetghebeur
Enhanced analysis of real time PCR data by using a variable efficiency model: FPK-PCR

Session 2: Methodology

Davy Paindaveine, Pauliina Ilmonen
Rank-based ICA

Christophe Ley, Yvik Swan, Baba Thiam, Thomas Verdebout
Optimal rank-based estimation for spherical location

Catherine Timmermans, Laurent Delsol, Rainer Von Sachs
Bases giving distances (bagidis): a new semimetric and its use for nonparametric functional data analysis

10.50-11.20 Break and Posters

11.20-12.00 Contributed talks

Session 1: Applications

Dean S. Barron, Joe Brown

Analysis with causal inference using propensity scores

Joris Menten, Temmy Sunyuoto, Emmanuel Lesaffre, Marleen Boelaert

Bayesian meta-analysis of diagnostic tests allowing for imperfect reference standards

Session 2: Methodology

Stijn Vansteelandt

Estimation of direct effects for survival data using the Aalen additive hazards model

Jonathan Jaeger, Philippe Lambert

Bayesian ODE-penalized B-spline model with Gaussian mixture as error distribution

12.00-12.50 Biostatistics section invited talk by Stefan Michiels, Institut Jules Bordet, Brussels

Prediction models for breast cancer outcome: what do your genes tell you ?

12.50-13.00 Closing

13.00 Lunch

Posters

Anne Benoit, Walthère Dewé, Catherine Legrand
Challenges in assessing efficacy of seasonal influenza vaccine

Amparo Castro-Sánchez, Ziv Shkedy, Marc Aerts, Peter Vickerman, Niel Hens
Assessing a joint mathematical model for HIV and HVC from a statistical perspective

Marjolein Crabbe, Martina Vandebroek
Improving the efficiency of individualized designs for the mixed logit model by including covariates

Chellafe Ensoy, Christel Faes, Marc Aerts
A dynamic spatio-temporal model to investigate the effect of movements of animals on the spreading of Bluetongue BTV-8 in Belgium

Guy Mélard
On accuracy when using spreadsheets in statistics: an update

Chenjerai Mutambanengwe, Christel Faes, Marc Aerts
Spatial regression of quantiles based on flexible parametric distributions

Diane Pierret
New risk measures in energy markets

Federico Rotolo, Catherine Legrand, Ingrid Van Keilegom
A copula-based simulation method for clustered multi-state survival data

Jan Johannes, Maik Schwarz
Adaptive nonparametric instrumental regression

Jan Johannes, Rudolf Schenk
Adaptive local functional linear regression

Nadia Verbruggen, William Malbecq
Projection of study termination for endpoint driven trials – overview of available methods using a case study

INTRODUCTORY COURSE ON THE OPTIMAL DESIGN OF EXPERIMENTS

Antwerp (Belgium), 19-21 September 2011

The target audience for the course is starting Ph.D. students and anyone else who would like a primer on optimal design. Prerequisites for the course are knowledge of basic statistics and regression analysis. Familiarity with classical design of experiments is not required. The course is not highly mathematical and therefore accessible to a broad audience.

The course will start with an intuitive introduction of the topic and gradually builds up to more complicated situations. Examples for the course will be taken from industry, marketing, chemistry, medicine, ... to show the wide applicability of the optimal design techniques. The attention will not be restricted to optimal design for linear regression models, but Bayesian optimal design and minimax designs for nonlinear regression models will also be discussed. The strengths and weaknesses of optimal design will be illustrated, and some remedies to overcome some of the problems will be given.

The venue for the course is in the Antwerp city center, Prinsstraat 10, room P011. Registration for the course costs 150 euro for academics and 750 euro for others. This fee includes course material and lunches on September 19 and 20. Registrants can arrange cheap accomodation in nearby hotels. The Antwerp city center is easy to reach by train, and there is an hourly bus service from and to Brussels National Airport.

For further information, please contact Peter Goos at peter.goos@ua.ac.be

SEMINAR ON BIOMARKERS AND SURROGATE ENDPOINTS

Bruxelles (Belgium), 22-23 September 2011

A biomarker is a characteristic that is objectively measured and evaluated as an indicator of normal biological processes, pathogenic processes, or pharmacologic responses to a therapeutic intervention. Biomarkers can be contrasted with clinical endpoints, which capture information on how a patient feels, functions or survives

Outline

Day 1

1. Overview of biomarkers and surrogate endpoints
2. Prognostic biomarkers
3. Predictive biomarkers
4. Surrogate biomarkers and endpoints
5. Wrap-up Day 1

Day 2

6. Biomarker-based clinical trial designs
7. Complex modelling and systems biology for biomarker development
8. Companion diagnostic tests and regulatory issues
9. Wrap-up Day 2

Registration by E-mail to: domitille.tricou@lyoningenieirie.fr

Registration is mandatory before September, 12th 2011 Registration will be limited to 70 participants.

Website <http://www.eudipharm.net/claroline141/BIO/>

**EUROPEAN STATISTICAL MEETING
ADVANCES IN THE TREATMENT OF MISSING DATA**

Bruxelles (Belgium), 18 November 2011

The treatment of missing data continues to be a challenge in the analysis of clinical trials, potentially affecting the integrity and validity of trial results if not handled appropriately. This meeting aims to bring together statisticians from regulatory agencies, academia and the pharmaceutical industry, to gain an insight into recent advances in methodology and guidelines. It also provides the opportunity to review recent case studies. There will be an opportunity for questions throughout the meeting and a panel discussion at the end.

Advances in the Treatment of Missing Data

Prof. Mike Kenward (London School of Hygiene and Tropical Medicine)

The Prevention and Treatment of Missing Data: An Author's Perspective

Prof. Geert Molenberghs (University of Hasselt)

Key Messages from CHMP Guideline and NAS report on Missing Data

Dr. David Wright (MHRA)

Pattern Mixture Models: An Introduction

Dr. James Roger (GSK)

Implementing Current Regulatory Guidance: An Industry Perspective

Dr. Mouna Akacha (Novartis)

Planning for Missing Data: Case Studies

Dr. Michael O'Kelly (Quintiles)

Practical Approaches to Minimising Missing Data

Dr. Axel Krebs-Brown (Astellas)

More information: efspi@kingstonsmith.co.uk

**4TH INTERNATIONAL CONFERENCE OF THE ERCIM WG
ON COMPUTING AND STATISTICS (ERCIM'11)**

London (UK), 17-19 December 2011

The 4th International Conference of the ERCIM Working Group on Computing & Statistics will take place at the Senate House, University of London, UK, 17-19 December 2011. You can find all the details of the conference at <http://www.cfe-csda.org/ercim11/>

All topics within the Aims and Scope of the ERCIM Working Group Computing & Statistics will be considered for oral and poster presentation. Please, find below the list of tracks and organized sessions for this edition. If you are interested in suggesting possible sessions within the framework of the Working Group, please, contact us.

Suitable papers will be considered for publication in special or regular issues of the journal Computational Statistics and Data analysis.

Important dates:

- Abstract submission for invited and organized sessions: 15 July 2011.
- Contributed abstract submission: 30 September 2011.
- Conference: 17-19 December 2011.
- Submission of full papers (optional): 15 February 2012.

Best regards,

Ana

On behalf of the International Organizing Committee and the Co-chairs

International Organizing Committee: S. Azen, A. Colubi, E.J. Kontoghiorghes, G. Loizou and I. Moustaki.

Co-Chairs: Christophe Croux, Roland Fried, Steve Gilmour, Domingo Morales and Tommaso Proietti.

AGROSTAT 2012

Paris (France), 28 February – 2 March 2012

The AGROSTAT conference aims at drawing an overview of the use of statistical methods in the food industry and at evaluating practical benefits given by new techniques. It offers an ideal opportunity to statisticians and industrial users to meet, exchange experiences, keep in touch with the state-of-art of statistical methods in the food industry and evaluate their impact upon food quality and industrial competitiveness.

The conference focuses strongly on applications. It should be of particular interest for professionals using statistics in the food industry, i.e., people in charge of quality control, production engineering, research and development. The aim is to highlight the power of statistical analysis as a decision tool and as a help for defining locally optimal competitive industrial strategies. This event is an initiative of the Agro-Industry Group of the French Statistical Society (SFdS).

Agrostat 2012 follows the last Agrostat conferences held in Benevento (Italy, 2010), Louvain-la-Neuve (Belgium, 2008), Montpellier (France, 2006) and Rennes (France, 2004). For the previous editions see the SFdS website (<http://www.sfds.asso.fr/>). Agrostat 2012 is organized in 2012 at the Institut des sciences et industries du vivant et de l'environnement - AgroParisTech (Paris, France).

The conference will consist of invited lectures, organized and contributed sessions and poster presentations.

Topics

- **Sensometrics:** Statistical methods for sensory analysis. Planning of sensorial evaluations, analysis of expert panel or consumer data, analysing relationships between instrumental and sensorial measurements, relating consumer preferences to sensorial data.
- **Chemometrics:** Extraction of useful information from data collected in analytical chemistry, from physical measurement data, etc. Exploration and prediction in a supervised or an unsupervised framework with linear or nonlinear procedures. Analysis of multi-way data tables.
- **Process control:** Use of statistical or artificial intelligence methods to develop and better control a process and to enhance product quality:

quantitative and qualitative modelling, experimental design, validation of fast measurement methods, control charts, neuronal nets, fuzzy logic, etc.

- **Risk analysis:** Better understanding and control of the evolution of micro-organisms and of their effects upon human health. Prevention of the risks linked with their development in food industries. Epidemiology, predictive microbiology, dose-effect model, shelf-life testing, etc.

Instructions for authors

A one page abstract should be submitted by October 17, 2011 through the conference website (<http://www.chimiometrie.fr/agrostat2012.html>). The Scientific Committee will notify to authors the acceptance of the paper by December 2nd, 2011. After acceptance, a short paper of at most 10 pages should be submitted through the conference website by January 6th, 2012. These texts will be published in the Proceedings and distributed to the conference participants.

Deadlines

- October 17, 2011: abstract submission deadline;
- December 2, 2011: notification of acceptance;
- January 6, 2012: short paper submission.

Best regards,

Isabelle Albert and Douglas Rutledge
Chairmen of the Organizing Committee

More information: <http://www.chimiometrie.fr/agrostat2012.html>

TRICAP 2012

Bruges (Belgium), 2-7 June 2012

TRICAP-2012, the 7th edition of the multidisciplinary conference on ThRee-way methods In Chemistry And Psychology (and other areas) will take place on June 2 - 7, 2012 in Bruges (Belgium). The conference will be organized starting from the following three principles:

- The main topic will be the analysis of multiway data; in addition, the analysis of multiset data will be dealt with as a side topic. We will focus on analyses based on dimensional and categorical reduction models, with attention for the models in themselves (including their mathematical basis), algorithmics, and applications in various areas.
- Special emphasis will be put on the bridge between modeling/numerical aspects on the one hand and substantive applications on the other hand.
- We will pay much attention to didactics and to stimulating the dialogue between different types of attendants (statistical modelers; tensor algebrists; numerical analysts and computer scientists; chemometricians, engineers, and psychometricians); we would therefore like all talks to be well understandable for the entire audience.

Researchers, who are interested in participating, may contact the chair of the Organizing Committee at Iven.VanMechelen@psy.kuleuven.be.

FORTHCOMING STATISTICAL EVENTS

September 12-13, 2011 –Bruxelles (ULB), Belgium, Conference on New Developments in Econometrics and **Time Series**.

More information: http://www.ecares.org/conf_new_developments.html

September 19-21, 2011 –Antwerp, Belgium, Introductory course on the optimal design of experiments.

More information: peter.goos@ua.ac.be

September 22-23, 2011 –Bruxelles, Belgium, Seminar on biomarkers and surrogate endpoints.

More information: <http://www.eudipharm.net/claroline141/BIO/>

October 10-16, 2011 –Svetlogorsk, Russia, XXIX International Seminar on Stability problems for Stochastic Models.

More information: <http://www.ipiran.ru/conference/stabil2011/>

October 12-14, 2011 –Hasselt, Belgium, 19th annual meeting of the Belgian Statistical Society.

More information: <http://www.uhasselt.be/bss2011>

October 18, 2011 –Boston, United States, 2011 Non-clinical biostatistics conference.

More information: www.ncb2011.org

October 20-21, 2011 –Rotterdam, The Netherlands, Short course: Missing data in Longitudinal studies: strategies fro Bayesian modeling, sensitivity analysis, and causal inference, Pr. Mike Daniels, University of Florida

More information: d.wijnen@erasmusmc.nl

November 18, 2011 –Bruxelles, Belgium, European statistical meeting: Advances in the treatment of missing data.

More information: efspi@kingstonsmith.co.uk

December 17-19, 2011 –London, UK, 4th international conference of the ERCIM working group on computing and statistics (ERCIM'11).
More information: <http://www.cfe-csda.org/ercim11/>

January 30 - February 3, 2012 –Heindoven, The Netherlands, Studiegroep Wiskunde met de Industrie (SWI 2012) and the 84th EUROPEAN Study Group Mathematics with Industry
More information: http://www.eurandom.nl/events/workshops/2012/SWI_2012/index.html

February 28 – March 2, 2012 –Paris, France, AGROSTAT 2012.
More information: <http://www.chimiometrie.fr/agrostat2012.html>

June 2-7, 2012 –Bruges, Belgium, TRICAP 2012.
More information: Iven.VanMechelen@psy.kuleuven.be

RECENT PhD THESIS

Katholieke Universiteit Leuven (KUL)

Kukatharmini Tharmaratnam. *Robust estimation and model selection in semiparametric regression models (2011)* – Promotor. Pr. Dr. Gerda Claeskens. Co promotor. Prof. Dr. Irène Gijbels

In the first part of this dissertation, we propose a robust estimation method for penalized regression splines based on S-estimators that can be used in the presence of outliers in the response variable. Second we study and propose a robust version of the model selection criterion AIC, Akaike's information criterion, for regression models where S- and MM-estimators are used for estimation. The last part of this dissertation presents the robust S-estimation method and a robust version of AIC for use in linear mixed models and in particular for additive semiparametric regression models.

Penalized regression splines are one of the popular methods for smoothing noisy data. The estimation methods used for fitting such a penalized regression spline model are usually based on least squares methods, which are known to be sensitive to outlying observations. The main objective of the second chapter is to extend the estimation method for penalized regression splines to that of S-estimation. We used the Tukey's biweight family of loss functions to estimate the S-estimates. We propose a computationally fast procedure for estimating penalized regression spline models via S-estimators. Simulated data and real data examples are used to illustrate the effectiveness of the procedure. The results of these examples indicate that S-estimates for penalized regression splines are more appropriate for data with outliers.

The third chapter is about robust model selection strategies for regression models. Model selection is a key component in any statistical analysis. We derive a model selection strategy in the style of Akaike's information criterion (AIC) based on S- and MM-estimators. We compare different robust AIC methods based on M-, S- and MM- estimators to the classical AIC method, that uses maximum likelihood estimators. In a simulation study we observe that the proposed AIC with S- and MM- estimators selects more

appropriate models for data sets with a large contamination level of outliers in the response variables.

In the fourth chapter we study model selection strategies for semiparametric additive models fit with penalized regression splines. This estimation method is attractive because of its link to mixed models. We work specifically with outlier robust versions. In the context of mixed models there exist two different forms of AIC. The marginal AIC (MAIC) is used for selecting covariates in the model, and is based on the marginal likelihood. The conditional AIC (CAIC) is based on the conditional likelihood given the random effects. Our proposal leads to robust versions of the MAIC and CAIC that are based on S -estimators. We consider the robustness with respect to the outliers in the individual level and in the cluster level of the variables in the mixed models. Simulated data and real data examples are used to illustrate the effectiveness of the proposed method.

We discuss the computational issues using R software in the fifth chapter. We present and briefly illustrate the R-code for all statistical methods which we used in this dissertation. Finally, we discuss some general conclusions and perspectives for future research in the last chapter.

JOB MARKET

There is an extensive list with new job offers which would be time and space consuming to publish here. Please note that the complete list with further details is shown at our website:

<http://www.sbs-bvs.be/>

EDITORIAL NOTE

We would like to publish in this Newsletter any statistical matter such as :

- information about universities, institutes (1 to 3 pages);
- lists of recent publications and technical reports;
- abstracts of recent PhD theses;
- news of members;
- forthcoming statistical events and announcements;
- short papers about teaching methods in statistics, statistics in the industry, official statistics, etc.

Suggestions are welcome: please, contact us.

Suitable information for the next issue, prepared as **(LA)TEX or WORD FILES**, should reach the editors of the Newsletter **BEFORE December 15, 2011**, preferable by e-mail to:

sophie.vanbelle@maastrichtuniversity.nl or herbert.thijs@uhasselt.be

Any change of job, address, phone number,... ?

Please notify the Secretary of the Society:

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