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Jacob Bernoulli Deciphered

Elart von Collani

Abstract

In 1655, the theologian, natural scientist and mathematician Jakob Bernoulli was born in Basel, and passed away in 1705, again in his hometown. The 50 years of Jakob Bernoulli's life are full of outstanding achievements, which were crowned by the introduction of *Stochastics*. Unfortunately, his ideas were far ahead of his time and were not understood during his life. This contribution aims to demonstrate the significance of Jakob Bernoulli's achievements and amend some of the many misunderstandings and errors with respect to his life and work.

1 Jakob Bernoulli's Life

In 1582, Pope Gregor XIII released a decree, in which a new calendar was introduced because the mean year of the then used Julian calendar was too long and had caused the vernal equinox to drift backwards in the calendar year. In 1584, most of the Swiss cantons including the Canton Basel replaced the Julian calendar with the Gregorian calendar and 71 years later, on the 6th of January, 1655, Jakob Bernoulli was born as the fifth child of Margarethe Schönauer and the respectable Councilman of Basel, Nikolaus Bernoulli.

The date of birth is the first misunderstanding with respect to Jakob Bernoulli. In almost all biographies the "wrong" date of 27 December 1654 is stated[1], obtained by means of the obsolete Julian calendar, which was valid in the German protestant countries until 1700.

As reported in all his biographies, Jakob's father wanted him to become a protestant clergymen and thus, Jakob studied philosophy and theology at the University of Basel and was educated in Latin, Greek and as reported in [15] especially in Scholastic Philosophy. In 1671, he earned the degree of Magister Artium in philosophy at the age of sixteen, and in 1676, he obtained the degree of Licentiate in theology. In [1] it is reported that his sermons in the German and French language were met with approval. During these years, he autodidacticly dealt with mathematics and at the early age of eighteen, he successfully solved a difficult *problema chronologica* according to [15, 8].

After his graduation in 1676, Jakob Bernoulli set out on a four-year journey through Switzerland and France. He first settled in Geneva as a tutor [8], where he taught a blind girl how to write in a self-developed Braille and then went on to France, where among others he started to study the works of *Descartes.*

Returning to Basel in 1680, he continued to study some of the mathematical and philosophical works of Descartes and Malebranche. Subsequently, the 25 year old theologian argued emphatically against these superior authorities, as is reported in [15] and in [8].

In 1981, Jakob wrote his first scientific treatise. It deals with the Kirch comet[2], claiming that comets are eternal bodies, whose course can be calculated. The treatise was published in 1681 under the title[3] *Newly discovered Method of how the path of a Comet or Tailed Star can be reduced to certain fundamental laws, and its appearance predicted*, (Basel 1681), see [12]. The young theologian Jakob Bernoulli's first publication already shows his independent and critical way of thinking, as it contradicted the theological doctrine of his time that comets were used by God to give divine hints. The publication also proves Jakob Bernoulli's fearlessness, as publishing such ideas was not at all safe at those times. Jakob Bernoulli

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[1] Maybe all the biographers took the date from Bernard de Fontenelle's " Éloge de Jacques Bernoulli" already published in 1705 in *Histoire de l'Académie royale des sciences* in Paris. The reason why Fontenelle stated a wrong date, although France had adopted the Gregorian calendar in 1582, is unknown to the author.

[2] This comet was discovered 14 November 1680 by the astronomer Gottfried Kirch in Coburg. It remained visible until 19 March 1681 and had an extraordinarily long tail and was looked upon as a sign of divine anger [12].

[3] The treatise was written in German and the complete title is as follows: "Neu-erfundene Anleitung, wie man den Lauff des Comet- oder Schwantz-Sternen in gewisse grundmässige Gesätze einrichten und ihre Erscheinung vorhersagen könne auß Anlaß des jüngst-entstandenen Cometens im Jahr 1680 und 1681 alles mit geometrischen Gründen dargethan und bewiesen, sampt angehencktem Prognostico"

predicted[4] the return of the comet for 17 May 1719. The treatise also includes (see [12]) a paragraph about astrology, condemning it and asserting that astrologers are shufflers and cheats!

Immediately after the publication, he started his second journey to the Netherlands and England, which he used to complete and improve his mathematical skills. In Amsterdam, he met, among others, the mathematician Johann Hudde, a disciple of Frans van Schooten and Bernhard Fullenius, who was a leading expert in dioptrical theory, at Franeken University.

However, probably the most important encounter was the meeting with Pierre Bayle in 1681, which is mentioned in [15]. Bayle had been professor at the protestant University of Sedan until 1681. When the protestants were suppressed in France and the University of Sedan abolished, Bayle left for the Netherlands and was appointed professor of philosophy and history at the newly founded Ecole Illustre in Rotterdam. Just as Jakob Bernoulli in Basel, Bayle had written a manuscript [2] on the Kirch comet, which was published in March 1682 anonymously under the title *Lettre sur la comète de 1680*[5]. In his article, Bayle attacks superstition and argues that a society of atheists could endure, i.e., Christianity was not a necessary means for the survival of mankind, which was a shocking idea at the time and made him suspicious to both Catholics and Protestants.

Pierre Bayle and Jakob Bernoulli, two of the most clear-sighted persons of the 17th century, came together to work on the same topic with similar aims. Unfortunately, there is no record of this meeting. Probably in reaction to the pressure exerted upon him, Jakob Bernoulli issued, while still in Holland, a second Latin edition of his treatise on the Kirch comet published [12, 15] under the title *Conamen novi systematis cometarum pro motu eorum sub calculum revocando de apparitionibus praecedendis adornatum*

(Amsterdam 1682). Maybe as a compromise to the church authorities, he states in this second issue that only the comet's body is eternal and, hence, cannot constitute a divine sign, but that the tail, as something fortuitous, may be left to the theologians as a sign of divine wrath [8, 12].

He left Holland for England, where he met the astronomer John Flamsteed in Greenwich. Moreover, he got to know the Natural Scientist Robert Boyle and the Natural Philosopher Robert Hooke and attended a meeting of the Royal Society [12].

In 1683, he returned to Basel and instead of accepting an appointment as clergyman in Strasbourg, he offered a course on *experimenta physico-mechanica* at the University of Basel. In 1684, he married Judith Stupanus. The couple had two children, a daughter who married the merchant Nikolaus Ryhinerus, and a son named Nikolaus who became a painter and a town-councillor [12]. Finally, in February 1687, he was appointed to a professorship in mathematics at Basel University.

Jakob Bernoulli was a disputatious person who did not mince his words. In 1691, he delivered a report to the local (political) authorities on various malpractices within the university[6]. Although or because the charge was well-founded, the university officials felt deeply offended, and in May 1691, they brought about a decision to deprive Jakob Bernoulli of the professorship. Only after he had apologized to the university rector, the decision was withdrawn in November 1691. In 1692, shortly after this incident, Jakob Bernoulli suffered from health problems which started with a dangerous cough, followed by gout, which finally resulted in a wasting fever, such that he passed away on 16 August 1705 [1]. It is possible that these health problems were accelerated by a fierce controversy between Jakob and his younger brother Johann, which started in 1692 and openly burst out in 1694 and probably reached a climax when Johann returned to Basel in 1705 in order to take the professorship in Greek [12]. At this occasion, Jakob wrote to Leibniz that Johann had not come for the Greek, but to take his own mathematical chair and, indeed, after Jakob had passed away in

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[4] Voltaire notes sarcastically in his Letters on England, Letter XV *On Attraction*: "The guessing the course of comets began then to be very much in vogue. The celebrated Bernoulli concluded by his system that the famous comet of 1680 would appear again the 17th of May, 1719. Not a single astronomer in Europe went to bed that night. However, they needed not to have broke their rest, for the famous comet never appeared."

[5] In 1683, an extended version was published under the title "Pensées diverses sur la comète de 1680."

[6] Among others he complained [12, 1] about the corrupt way of appointments to the better paid university chairs and proposed that all professorships should be paid alike.

August, Johann became the chair holder.

After returning from his second journey, he started to work on a topic of utmost importance, namely *uncertainty*. The reasons why he turned to this subject, although it seems to be farthest from mathematics, are unknown. However, it is very likely that the discussions with Bayle, Hudde and Hooke redirected his attention to the main and most difficult problem of mankind, namely uncertainty, and the young theologian, mathematician and scientist readily met the challenge to scientifically solving the related problems. The results of his endeavours are contained in Jakob Bernoulli's masterpiece, which was published eight years after he had passed away under the title *Ars conjectandi*.

2 The Title *Ars conjectandi*

Before we look closer at the contents of Jakob Bernoulli's masterpiece, it is worthwhile to discuss the title. Hauser [11] expresses his opinion that by choosing the programmatic title, Bernoulli aimed at putting the work in a series with the *artes liberals* of scholastic science[7], which had been studied by Jakob Bernoulli as propaedeutic instruction for his studies of theology.

Hauser argues that Jakob Bernoulli especially wants to address rhetoric or the *ars inveniendi* from which he freely took vocabulary and concepts. The original meaning of *ars inveniendi* or *heuristics* is the Art of Findings/Inventions (see [13]) by means of which not only problems can be solved, but which also leads to new knowledge. Presumably, Jakob Bernoulli wanted to indicate that his proposal represented a new scientific discipline to be applied to all levels of human society, in politics, morals and economics (*in civilibus, moralibus & oeconomicis*) for gaining new knowledge and solving problems.

Hauser also suggests another noteworthy reason for Jakob Bernoulli to choose the title *Ars conjectandi*. In 1662, the book *La Logique ou l'Art de Penser* was published

anonymously in Paris. The authors presumably are Antoine Arnauld and Pierre Nicole, two leading Jansenists, who worked together with Blaise Pascal. The Latin title of this book is *Ars cogitandi*, which according to Hacking [9] was "the most successful logic book of the time and cast the mould for generations of future treatises." The *Ars cogitandi* consists of four books, with the fourth one being of interest to us. Hacking calls the corresponding chapters the *probabilistic chapters* and explains how they deal with decision-making under uncertainty by considering the analogy to gambling and introducing explicitly the concept of a quantified probability.

Of course, Jakob Bernoulli knew this influential book and he even cites it in his masterpiece. Thus, it is an obvious conclusion that by choosing the title *Ars conjectandi*, Jakob Bernoulli wanted to express that his book is a continuation and a fulfilment of what had been started in the fourth book of the *Ars cogitandi*.

There is another hint about Jakob Bernoulli's visions and ambitions. During his first journey, he already started to write a diary about the advances in his research, which nowadays is a most valuable source in reconstructing the development of stochastics. Its title *Meditationes* might be chosen as an allusion on Descartes's masterpiece *Meditationes de prima philosophia*, which was published in 1641 and became one of the most influential books in Europe. In fact, after his return from from France he adopted a rather critical attitude towards Descartes. Maybe, Jakob Bernoulli had already resolved at that time to develop something which would make Descartes's ideas obsolete and wanted to express his purpose by choosing a programmatic title.

In summary, we conclude that the title *Ars conjectandi* has a more symbolic meaning and should not be taken literally. It shows the closeness to the liberal arts and it announces something very new and groundbreaking. Moreover, it recalls the *L'Art de Penser* because it is advocating a novel way of thinking itself, which becomes necessary if the handling of uncertainty proposed by Jakob Bernoulli is adopted. The true meaning of the title can only be assessed by looking at the results presented in the *Ars conjectandi*.

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[7] The seven liberal arts comprised two groups, namely the trivium and the quadrivium. The trivium involved grammar, dialectic (logic), and rhetoric, while the quadrivium involved arithmetic, music, geometry, and astronomy. There were four faculties in medieval universities and the liberal arts were taught in the first one *Facultas Artium*. The other faculties (law, medicine and theology) were considered the scientific ones and had a higher status. The liberal arts originally represented the kinds of skills and general knowledge needed by the elite echelon of society.

3 Significance of the *Ars conjectandi*

Jakob Bernoulli was a great mathematician. A list and an appraisal of his numerous important achievements in these fields can be found in almost any of his biographies and, therefore, is omitted here. We will concentrate on that part of Jakob Bernoulli's scientific work which he himself judged as something much more outstanding than anything which could be derived in mathematics, namely his masterpiece *Ars conjectandi*, which nowadays is generally regarded as an important step in the development of the mathematical branch known as probability theory.

Bernoulli's progress over time can be pursued by means of the *Meditationes*. According to [3], three working periods with respect to his "discovery" can be distinguished by aims and times. The first period, which lasts from 1684 to 1685, is devoted to the study of the problems regarding the games of chance posed by Christiaan Huygens; during the second period (1685-1686) the investigations are extended to cover processes where the probabilities are not known *a priori*, but have to be determined *a posteriori*. Finally, in the last period (1687-1689), the problem of measuring the probabilities is solved.

The above timetable shows that Jakob Bernoulli started his work on this new field almost immediately after the return from his second journey, during which he had met many mathematicians, in addition to Pierre Bayle, with his fundamental criticism of religion, postulates and dogma.

Although the *Ars conjectandi* had been more or less completed by 1690, he left it unfinished when he passed away 15 years later in 1705. This is a remarkable fact because Jakob Bernoulli was convinced that the *Ars conjectandi* was by far the most important of his works, with the importance not referring to the mathematical content, but rather to the foundation of science. It dealt with uncertainty and contained the key for the quantification of uncertainty. His findings would enable science to get rid of dogma and postulates and, thus, would lead to a better world. Probably, Jakob Bernoulli knew that his contemporaries were not able to follow his ideas and, therefore, he did not want to take the risk of publishing his discoveries without presenting a convincing example. To this end, he needed quantitative information in form of data. It is known (see [3]) that two years before his death, he desperately tried to get relevant data from Leibniz. In a letter dated 3 October 1703, he asked Leibniz to let him have a treatise of Johan de Witt about the calculation of annuities, which contained the desired data. Leibniz responded with a short description of de Witt's paper, but did not send it. In the following two years up until 1705, when he passed away, Jakob pleaded repeatedly to Leibniz (for details see [4, 7]), however, Leibniz did not satisfy his request.

Jakob Bernoulli's "discovery" refers to the revolutionary idea to develop a method to describe and handle uncertainty scientifically. In fact as will be shown later, Bernoulli's ideas – if accepted – could have changed not only science, but humanity. Unfortunately, his ideas, which he presented in his masterpiece *Ars conjectandi*, were and are not understood until our times.

He notes [4]:

For me this discovery counts more than if I had completely found the quadrature of the circle; because even if the latter could be found, it would be of very little use.

Jakob's widow and his children knew about the significance of the *Ars conjectandi* and feared that someone may steal Jakob's intellectual property. Therefore, they did not dare to let anybody have it. Finally, in 1713 eight years after Jakob Bernoulli had passed away, the *Ars conjectandi* was published by Jakob's nephew Nikolaus Bernoulli, after having taken parts word by word out of it for his own dissertation entitled *De Usu Artis Conjectandi in Jure* which was published already in 1709.

4 Content of the *Ars conjectandi*

Jakob Bernoulli aimed at developing a scientific method for providing a basis for decisions in all fields of human activities. Any decision refers to an activity with a certain purpose, and the problem with decisions is the uncertainty about the future development. Therefore, it is clear that Jakob Bernoulli aimed at developing methods for dealing scientifically with uncertainty about the future development.

Moreover, the only way of reducing uncertainty about the future development is to predict the future event. However, as Bernoulli recognized correctly, only a reliable prediction can be a sound basis for a

decision. Therefore, two problems had to be solved:

• Quantification of uncertainty about the future development.
• Development of a method for measuring the actual value of uncertainty.

Clearly, the two problems represent an incredible high level of difficulty, especially at the end of the 17th century with religion still being the measure of all things. This fact must be considered as it imposed a number of external but also internal limitations on Jakob Bernoulli.

Maybe, Bernoulli got the idea for dealing with uncertainty about the future development, when studying Huygens's problems about gambling, where uncertainty refers to the outcome of a game. Another explanation could be the poor state of Europe as a result of religious and political decisions, which were based on dogma and intolerance and against which Pierre Bayle argued so fervently.

From the point of uncertainty, the advantage with gambling is the fact that the structure of uncertainty is *a priori* known by the symmetric construction of the games. Each outcome of a game has the same chance of actually occurring and, therefore, the ratio of the number of favourable outcomes and the total number of outcomes constitutes a reasonable quantification of uncertainty of an event. Presumably, by means of such thoughts Bernoulli solved the problem of quantification by introducing the probability of a future event. He explains:

The probability namely is the degree of certainty and differs from it as a part from the whole.

Relating this probability to a future event yields the following quantification: *The probability of a future event is the degree of certainty of its occurrence.* Unfortunately, Jakob Bernoulli did not explicitly state that a probability is necessarily a property of a future event, rather he repeatedly related the word with "what has been, what is and what will be'". In other words, Jakob Bernoulli did not distinguish between uncertainty about facts and uncertainty about future events. This omission led to many misinterpretations of his work, as will be explained below.

Having solved the problem of quantification of uncertainty, the even more difficult problem of developing a measurement procedure for the actual but unknown value of a probability of an event had to be developed. He states that this problem does not exist in the field of gambling because of the construction of the games.

However, it is a central problem in the general case, as it is not known whether a number of favourable cases as well as a total number of cases do exist and, if the numbers should exist, they can never be assessed. At this point, Jakob Bernoulli's genius becomes evident. He notices in Chapter IV of Part IV about the unknown numbers:

Because these and similar things depend on completely hidden causes, which, moreover, continuously deceive our knowledge by the infinite variety of their interactions, it would make no sense at all to make an attempt to investigate them directly.

These words are remarkable because of two things:

• Jakob Bernoulli states very clearly that mankind can never achieve truth and, therefore, should not make an attempt to search for it.

• Jakob Bernoulli abandons the idea of developing a measurement procedure for the unknown values based on subjective opinions or belief of the unknown facts.

Jakob Bernoulli did not stop here, but went on. He recognized that based on objective observation or experiments it would be possible to develop a measurement procedure for the unknown value of the probability of a future event. Note that the probability of an event in a certain situation is a fact and Jakob Bernoulli had the idea to measure it by means of the random results of experiments. This idea alone would make Jakob Bernoulli one of the greatest geniuses of mankind.

Next, Jakob Bernoulli developed the anticipated measurement procedure and proved at least theoretically that it works. The remarkable thing of his measurement procedure is the fact that it was again far ahead of his time and also ahead of our time with respect to the definition of the precision and reliability of a measurement procedure. Modern metrology seems to be antediluvian when compared with Bernoulli's advances.

He derived a measurement procedure which allows one to specify the measurement

reliability given as probability of obtaining a correct result. Because of this requirement, the measurement results are necessarily sets or in the one-dimensional case intervals instead of points. Jakob Bernoulli noticed about this important feature of any reliable measurement procedure:

To avoid misunderstanding, it is to be noticed, that we obtain the probability, which we aim to determine by the observations, not exactly (otherwise we would get the converse as the probability of having determined the exact value would get less with increasing number of observations) but only approximately namely between two bounds, which, however, can be arbitrary close to one another.

However, the more precision is demanded the higher the expense to be invested for the measurement procedure.

By the way, the extremely important observation that mankind is not able to detect the truth is already indicated in the introduction of Part II of the *Ars conjectandi* by the following programmatic words:

The infinite diversity which is manifest in the works of nature as well as in human activities and which constitutes the universe's extraordinary beauty cannot have any other source than the diverse combination, mixture and grouping of its parts. The set of entities which interact in generating a phenomenon or event is often so big and varied that the exploration of all ways that may lead or not lead to its combination or mixture encounters the greatest difficulties.
Thus, it is not surprising that even the most intelligent and prudent persons commit no error more often than that which in logic is called insufficient enumeration of parts. Thus, I have no doubts to claim that this error is almost the only source of infinite many of the most severe mistakes, which we commit every day in our efforts to discover and utilize the things.

In other words, Jakob Bernoulli had realized that the wrong decisions which are made everywhere at every time are in their majority due to the fact that man tends to assume to have truth, although this is impossible. Jakob Bernoulli not only wanted to state this fact, but intended to replace the subjective traditional approach by an objective approach, which is provided without belief and opinion. Thus, finally we have found the aim of Jakob Bernoulli's masterpiece *Ars conjectandi*, which he himself expressed in the following way, where the literal translation is replaced by taking into account the above elaborated aims and intentions of Jakob Bernoulli:

To predict something is to measure its probability. The Science of Prediction or Stochastics is therefore defined as the science of measuring as exactly as possible the probabilities of events so that in our decisions and actions we can always choose or follow that which seems to be better, more satisfactory, safer and more considered. In this alone consists all the wisdom of the Philosopher and the prudence of the Statesman.

Jakob Bernoulli intended to develop a Science of Prediction for providing mankind with better means in their decision-making processes. He states in the introduction of Part II that without the methods developed in the *Ars conjectandi* neither the wisdom of philosophers, nor the accuracy of the historians, nor the diagnosis of the physicians, nor the prudence of the politicians can persist.

5 Misinterpretations of the *Ars conjectandi*

There are many fundamental misunderstandings with respect to the *Ars conjectandi*. The first one refers to its aim. It is thought to be a decisive step towards the development of mathematics by laying the basis for the *theory of probability*. This wrong idea goes probably back to Jakob Bernoulli's contemporaries, who considered him as one of the greatest mathematicians of his time. The idea became firmly established in 1865 when Isaac Todhunter published his book *A History of the Mathematical Theory of Probability*. Since then, it was not any more questioned, but taken as a proven fact.

The second misinterpretation concerns the concept of probability. Because Jakob Bernoulli fails to define it in a clear way, it is often looked upon as a measure of evidence. This results in two controversial interpretations of probability, a so-called objective one and a subjective one. The two interpretations led to the development of two different statistical sciences, namely the classical statistics following the frequency approach, and Bayes statistics following a subjective approach, both in opposition to each other similar to religious sects.

The most striking and most unjustified assertion, however, is the claim that

Bernoulli's measurement procedure represents the first limit theorem in probability theory. Bernoulli never aimed at deriving a limit theorem but, in fact, aimed at the exact opposite and this is expressed explicitly in the *Ars conjectandi* (see citation above).

Thus, none of the eminent results presented in the *Ars conjectandi* survived the death of Jakob Bernoulli. Instead of Jakob Bernoulli's masterpiece, two other publications became relevant for the further development of the field dealing with uncertainty, namely Montmort's *Essay d'analyse sur les jeux de hazard*, which appeared in 1708 and, especially, Abraham de Moivre's treatise *De mensura sortis: Seu de Probabilitate Eventuum in Ludis a Casu Fortuito Pendentibus* of 1711 and its extended version *The Doctrine of Chances: or, a Method of Calculating the Probability of Events in Play* of 1718. The only item which Montmort and de Moivre took over from Jakob Bernoulli was the term *probability*, which in all the previous publications on gambling did not appear. In the preface of the first edition of de Moivre's masterpiece *The Doctrine of Chance*, de Moivre expresses very clearly his thoughts about Jakob Bernoulli's attempt to develop a science of prediction. De Moivre states:

Before I make an end of this Discourse, I think myself obliged to take Notice that some years after my Specimen was printed, there came out a Tract upon the Subject of Chance, being a posthumous Work of James Bernoully, wherein the Author has shown a great deal of Skill and Judgement, and perfectly answered the Character and great Reputation he hath so justly obtained. I wish I were capable of carrying on a Project he had begun, of applying the Doctrine of Chances to 'Oeconomical' and 'Political' Uses, to which I have been invited, together with Mr. de Montmort, by Mr. Nicholas Bernoully: I heartily thank that Gentleman for the good opinion he has of me; but I willingly resign my share of that task into better Hands, wishing that either he himself would prosecute that Design, he having formerly published some successful Essays of that Kind, or that his Uncle, Mr. John Bernoully, Brother of the Deceased, could be prevailed upon to bestow some of his Thought upon it; he being known to be perfectly well qualified in all Respects for such an Undertaking.

In the later editions of the *Doctrine of Chance*, even this short mentioning of Jakob Bernoulli is abandoned. Abraham de Moivre's unambiguous refusal to carry on Jakob Bernoulli's work clearly shows that Jakob's ideas had passed away with him.

6 Summary

The 17th century was marked by religious wars and religious intolerance, founded on postulates and dogma. Pierre Bayle was one of the most ardent and eloquent fighters against dogma and in favour of tolerance. However Bayle, being a philosopher and theologian was not able to develop formal means for overcoming human subjectivity and human limitations. Jakob Bernoulli on the other hand was not only a philosopher and theologian, but additionally a mathematician. Maybe the short encounter of these two eminent men had made Jakob start to think of what had to be changed in order to guarantee better decisions. When he looked at the problems on gambling he almost immediately must have had the idea to extend the quantification from the trivial case of gambling to the general case of uncertainty. Subsequently, Jakob Bernoulli developed stochastics and hoped that it would help to improve the decision-making processes on all levels of human society and, thus, would lead the way out of the poor state of human societies. Since that time, the situation became worse and therefore it is high time to change from a subjective approach to an objective one as developed and proposed by Jakob Bernoulli.

Jakob Bernoulli had 'reached for the stars' and had success in sight when he met his fate. It is with foresight that he requested that *Eadem Mutata Resurgo (Though changed I shall arise the same),* should be engraved on his tombstone.

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Honours for Statisticians and Probabilists

Professor F. Thomas Bruss

Professor F. Thomas Bruss

Prof. F. Thomas Bruss has been awarded the 1st Prize in the Article Competition "Raising Public Awareness of Mathematics" of the European Mathematical Society (EMS). The competition is open to all mathematicians in all fields of Mathematics. The submitted article must has been published in a renowned journal and written in a style which is accessible for the general educated public. Preference is given to candidates who write about their own research contributions. His first prize, *Die Kunst der richtigen Entscheidung* , explaining the Odds-Theorem of Optimal Stopping, was published in the German edition of the *Scientific American* (Spektrum der Wissenschaft, June 2005). It has also appeared in the French and Arabic editions of the *Scientific American* and will appear in English in the Newsletter of the EMS.

Thomas Bruss studied in Saarbruecken, Cambridge and Sheffield. After a career as scientific assistant in Namur (B), he held visiting positions at Strathclyde U. Glasgow, at UC Santa Barbara, at U. of Arizona and at UCLA. Since 1993, he is Prof. of Mathematics at the Université Libre de Bruxelles and currently Chairman of the Math Department. He is a member of the Bernoulli Society, fellow of the IMS, a Feodor-Lynen fellow of the von-Humboldt Foundation and Deruyts-Prize-laureate 2000-2004 of the Belgian Royal Academy of Science.

BERNOULLI SOCIETY COMMITTEES

Report on activities of the European Regional Committee of Bernoulli Society

The European Regional Committee (ERC) held its 2006 meeting during the *26th European Meeting of Statisticians* in Toruń. The most important points at the meeting and in e-mail discussions during the previous year were as follows.

The following **new members** of the ERC were declared elected for the term 2006-2010: Adelchi Azzalini (Italy, chair) Holger Dette (Germany), Martin Janžura (Czech Republic), Alexander Holevo (Russia), J.J. Forster (UK), Dominique Picard (France), Juan Romo (Spain), Jacek Wesołowski (Poland), Tobias Rydén (Sweden).

Eva Vedel Jensen (Denmark) was elected to **chair the Conference Committee** for the term 2006-2008. Sara van de Geer (Switzerland) and Martin Janžura (Czech Republic) were elected to be the members of the Conference Committee.

The meetings during the past year

The *14th European Young Statisticians Meeting*, Debrecen, Hungary, August 22–26, 2005. The meeting had 40 participants from 20 European countries. The ERC is grateful to the local organizers Katalin Varga and Ilona Krasznahorkay for their effort. See webpage:
http://www.inf.unideb.hu/valseg/EYSM/ EYSM2005.html
The *7th Séminaire Europeéns de Statistiques*, University of Warwick, UK September 11-18, 2005. The seminar had 40 participants (47 applicants). The main local organizer was Bärbel Finkenstädt. The lecturers were David Balding, Chris Holmes, Jens. L. Jensen, Sophie Schabath, Korbinian Strimmer, Lorenz Wernisch, Mike West. The ERC is grateful to the organizers and the lecturers for their work.

The *26th European Meeting of Statisticians* was held in Toruń during July 24-28 in 2006. The meeting was organized by the Nicoluas Copernicus University in Toruń. Chairman of the Local Organising Committee was Adam Jakubowski. Chairman of the Scientific Programme Committee was Herold Dehling.

Prague Stochastics 2006 Prague, Czech Republic held August 21-25, 2006. This is one the traditional conferences organized under the auspices of the ERC.

Information on the forthcoming meetings

The *15th European Young Statisticians Meeting 2007* will take place in Spain, location so far unknown. The main organizers are Pedro Perran (University of Zaragoza) and Inez del Puerto (University of Extramadura).

The *8th Séminaire Europeéns de Statistiques* on Statistics for Stochastic Differential Equation will be held in La Manga del Mar Menor, Spain, May 6 - 12, 2007. The local organizer is Mathieu Kessler. The following speakers have agreed to lecture: Jean Jacod, Per Mykland, Lan Zhang, Gareth Roberts, Michael Sørensen, Valentine Genon-Catalot Alex Lindner, Andrew Stewart. Webpage: **http://www.dmae.upct.es/semstat2007/**.

The *27th European Meeting of Statisticians* will be held in Toulouse, France July 20 - 24, 2009. Chairman of the Local Organising Committee is S. Cohen, the members are Bakry, D., Casalis, M., Laurent, B. The SPC will be chaired by Trevor Sweeting (chair, UK), the members are Jean-Marc Azads (France), Petros Delaportas (Greece), Mathisca de Gunst (Netherlands), Olle Hägetröm (Sweden), Peter Imkeller (Germany), Ingrid van Keilegom (Belgium), Gyula Pap (Hungary).

The organization of the *Stat Camp* during July 13– 17 is under consideration.

The ERC expresses its sincere thanks to Michael Sørensen for the enthusiastic devoted and long lasting work for the ERC and its Conference Committee. The ERC thanks all retiring ERC members.

After the ERC meeting in Toruń Adelchi Azzalini (Italy) took over the responsibilities as chair of the ERC for the term 2006-2008.

Updated information on these activities can always be found via the ERC's website **http://bs-erc.stat.unipd.it.**

Marie Hŭsková

New Editor of Bernoulli journal

Professor Holger Rootzén has been enthusiastically appointed as Editor of *Bernoulli* journal. He succeeds Peter McCullagh, who has been leading the journal after Ole E. Barndorff-Nielsen (1995-2000) and Willem R. van Zwet (2000-2003). We are very thankful to Peter for his enthusiasm and excellent work of the past several years. Holger Rootzén is Professor in Mathematical Statistics at Chalmers University of Technology, Göteborg, Sweden. Among his many and broad scientific interests, we mention stochastic processes, statistics, extreme values, image analysis, data traffic modelling, financial risk, applications in engineering, medicine and industry. Holger has been Editor of the journal *Extremes* since 1996 and served as Associated Editor for *Annals of Applied Probability, Scandinavian Journal of Statistics, Stochastic Processes and their Applications.* Take a look at his web page for more information: **http://www.cs.chalmers.se/~rootzen/**. We wish Holger success in this new activity!

Call for organisers

The European Regional Committee (ERC) of the "Bernoulli Society" is promoting the organization of a "European Meeting of Statisticians" (EMS) to be held in the year 2010. It is envisaged that the meeting will be held in a country where an EMS meeting has not taken place for a length of time, ideally never before; similar time contiguity with ISI conferences is better avoided. Apart from that, any European country can propose itself as a host. For the list of past EMS events, please visit the ERC web-site at http://bs-erc.stat.unipd.it/ and look at the section which lists past events. Groups or institutions which would like to put forward themselves for the role of Local Organising Committee are invited to get in touch with the ERC, by writing to the address below. The Scientific Program Committee of the EMS is selected by the ERC via its Conference Committee; it is customary that one member of the Scientific Program Committee is from the organizing country.

Adelchi Azzalini
Chair of the ERC
azzalini@stat.unipd.it

Call for News of Members and Colleagues

If you hear of news about Bernoulli Society members and colleagues which ought to be shared widely then please pass on the information to the Editors.

26th European Meeting of Statisticians, Toruń

In 2003 the European Regional Committee of the Bernoulli Society had to decide when (and where) to organize the 26th European Meeting of Statisticians. According to the rules there was a choice between 2006 and 2009. Choosing 2009, with a gap of 4 years, was dangerous for the continuity of the tradition. On the other hand, it was clear that organizing EMS in 2006, in the year following the 25th meeting in Oslo and in the same year as traditional conferences in Vilnius and Prague, was risky. After discussion, the task had been assigned to the Nicolaus Copernicus University in Toruń, Poland, and the conference had been scheduled for 2006. Poor organizers! Soon it occurred that the SPA'06 meeting (the Bernoulli Society event) would take place also in Europe, in Paris, just in the week prior to the 26th EMS. The risk had been at least doubled.

Despite all these circumstances, the 26th European Meeting of Statisticians was held in Toruń, from 24th till 28th of July 2006, and gathered approximately 280 participants, which means it was comparable in size to recent EMS conferences in Aarhus and Prague, with the noticeable exception of Oslo, where there was more than 600 participants.

Being faced with the competition of several major conferences, the organizers had no other choice than to attract participants by providing a broad and interesting scientific programme and a rich schedule of accompanying events, and to make everything available at low price.

The Scientific Program Committee (Herold Dehling - chair, Peter Buehlmann, Paolo Giudici, Jesper Moeller, Aleksander Nagajew, Zuzana Praskova, Gesine Reinert) decided to organize 3 main lectures, 6 talks by special invited speakers and 24 invited papers sessions. The invited papers sessions were grouped into clusters of related topics. For Probability Theory these were; Dependence; Extremes; Stochastic Processes; and Mathematical Physics. For Statistics they were Computational Statistics; Statistics in the Sciences; Time Series and Random Fields; and Statistical Methodology.

In the course of preparations, after the sudden death of Aleksander Nagajew (Alexander V. Nagaev, who died in 2005, at the age of 67, in a ski accident), a decision to organize the Special Invited Session in memory of A.V. Nagaev was taken. Just before the conference the Special Invited Session on History of Polish Statistics had been added.

To make the conference accessible for people at any age and from all regions of Europe, the Local Organizing Committee fixed the conference fee at an almost symbolic level, cut fees by half for students and PhD students and participants from Eastern Europe and provided reasonable accommodation at really competitive prices. This kind of policy proved to be successful with respect to young people. More than 120 participants were PhD students, from all over Europe. However, only few people came from

Peter Jagers, President of the Bernoulli Society and Marie Huskova, Chair of the European Regional Committee of BS

Eastern Europe (Russia, Belarus, Ukraine) and, what was really surprising, from Scandinavia.

The conference had an extensive program of accompanying social events, including the piano concert by Waldemar Malicki, one of leading personalities in the Polish show business. Since no funds were provided by the Bernoulli Society (nor the European Union), the social program was possible due to support received from the local authorities. The regional government of Województwo Kujawsko-Pomorskie was a co-organizer of the conference and reimbursed a substantial part of costs. The other sponsors were: the Town of Toruń; the Polish Ministry of Science and Higher Education; the Polish Statistical Association; and Blackwell Publishing. Obviously, the main support came from the Nicolaus Copernicus University. The conference staff was recruited among people from the Faculty of Mathematics and Computer Science and practically all of them were volunteers. The conference took place in the building of the Faculty of Economic Sciences and Management, whose local facilities - rooms, and computer system - served perfectly during the conference, but were also really helpful in surviving the scorching heat that existed outside. On the other hand, the tropical weather settled in Europe that summer allowed participants to enjoy the full beauty of the Old Town of Toruń every night.

Before the conference started, two events disrupted the scientific programme. Walter Philipp, a friend of many participants, who was supposed to present an invited paper in the session on Empirical Processes for Dependent Data, died on 19 July 2006, at the age of 69. Participants of the conference commemorated Walter Philipp and Sasha Nagaev by a minute of silence during the opening ceremony.

The other bad news was that Soeren Johansen, who had been appointed as the Forum Lecturer with A Survey of Cointegration Theory, was hospitalized few days before the conference and could not come to Toruń.

Apart from this bad news, the scientific programme was carried out smoothly. From the Opening Lecture, presented by Gareth Roberts on Exact Simulation and Inference for Diffusions to the Closing Lecture, delivered by Friedrich Goetze on Asymptotic Statistics and Geometry of Numbers, there was an excellent programme on a broad list of topics. Special Invited Lectures were presented by Chris Glasbey, Marie Hŭsková, Thomas Mikosch, Brian Ripley, Tomasz Rolski and Donatas Surgailis. A total of 63 papers were presented within 24 Invited Papers Sessions. There were over 120 contributed papers organized in 40 contributed paper sessions and around 40 posters.

During the Special Invited Session in memory of Aleksander Nagajew, held on Thursday, 27 July 2006, the speakers were

The Special Invited Session in Memory of Aleksander Nagajew. From left to right:: Yuri Davydov, Victoria Steblovskaya, Oleksandr Zaihraiev, Ildar A. Ibragimov, Vugantas Paulauskas, Tatiana Lobanowa (wife), Konstantin Nagaev (grandson), Tatiana and Sergey Aivazian, Valentin Kolchin.

Herold Dehling (right) and Adam Jakubowski

Ildar A. Ibragimov, Vygantas Paulauskas, Victoria Steblovskaya and Yuri Davydov. (The list of Special Invited Papers Sessions, the detailed scientific programme of the conference and other information can be found at the conference web page **www.ems2006.umk.pl**).

During the Closing Ceremony, on the afternoon of Friday, July 28, 2006, Beatrice Laurent-Bonneau invited all the audience to participate in the 27th European Meeting of Statisticians, to be held in Toulouse in 2009.

Herold Dehling
Chairman of the Scientific Programme Committee
Adam Jakubowski
Chairman of the Local Organizing Committee

FORTHCOMING MEETINGS

A conference in honour of Professor Ester Samuel-Cahn: 18-20 December 2006

A conference in honour of Professor Ester Samuel-Cahn, who recently retired from the Hebrew University, will be held near Jerusalem on December 18-20, 2006.

The general theme of the conference will be statistics and its applications. Ester's lifelong commitment and contributions to the profession and science of statistics, her endless fostering of young statisticians and her impressive record of teaching statistical theory are highly respected by her many colleagues and her countless former students. Her achievements have earned her worldwide recognition and many awards, including the Israel Prize. We all feel that Ester's memory should be honoured with a conference.

There is still a possibility to add speakers. Those interested in contributing to the programme are kindly requested to contact: Prof. Isaac Meilijson, Chair, Programme Committee, at **isaco@post.tau.ac.il,** tel: +972-3-640-8826.

Among those who already approved their participation in the conference are: Robert J. Aumann (Hebrew U.); Lawrence D. Brown (Penn); F. Thomas Bruss (ULB); Theofilos Cacoullos (Athens U.); Yuan S. Chow (Columbia U.); Thomas Ferguson (UCLA); Larry Goldstein (USC); Alexander Gnedin (Utrecht U.); Allan Gut (Uppsala U.); Sergiu Hart (Hebrew U.); Theodore P. Hill (Georgia Tech); Ioannis Karatzas (Columbia U.); Abba M. Krieger (Penn); Tze L. Lai (Stanford); Isaac Meilijson (Tel Aviv U.); Ingram Olkin (Stanford U.); Emanuel Parzen (Texas A&M); Danny Pfeffermann (Hebrew U.); Jerome K. Percus (NYU); John Preater (Keele U.); Ernst Presman (Russian Academy of Sciences); Yosef Rinott (Hebrew U.); Uwe Saint-Mont (Fach-Hochschule Nordhausen); Stephen M. Samuels (Purdue U.); Marco Scarsini (Torino U.); Norbert Schmitz (Muenster U.); Lawrence Shepp (Rutgers); David O. Siegmund (Stanford U.); Isaac M. Sonin (UNC Charlotte); Wolfgang Stadje (Osnabrueck U.); Krzysztof Szajowski (Wroclaw Tech.); Mitsushi Tamaki (Aichi U.); Neil Turner (Keele U.); Alexander Yushkevich (UNC Charlotte); Shelemyahu Zacks (Binghamton U.) and Cunhui Zhang (Rutgers).

For further information contact: Ms. Aliza Shadmi, Conference Coordinator

shadmi-n@012.net.il, tel: +972-2-641-6394, or see:

http://www.EsterConference.huji.ac.il.

Sixth International Triennial Calcutta Symposium: 29-31 December 2006

The Calcutta Statistical Association, jointly with the Department of Statistics, Calcutta University is organizing the Sixth International Triennial Calcutta Symposium on Probability and Statistics during December 29-31, 2006.

This Symposium follows in the footsteps of earlier five Symposia held in 1991, 1994, 1997, 2000 and 2003. As in the earlier Symposia, the objective is to provide a forum for researchers engaged in the field of Statistics and Probability to exchange ideas, facilitate discussions and share views amongst themselves.

As in the previous occasions, this time also there will again be a special session on Design of Experiments and Combinatorics in the memory of the Late Professor R.C. Bose.

On the occasion of the 100th birthday of the late Professor S.N. Roy, there will be a special session on December 29, 2006.

Intending participants are requested to contact the convener of the organizing committee for further details:

Dr. Asis Kumar Chattopadhyay, Department of Statistics, Calcutta University 35, Ballygunge Circular Road, Kolkata 700 019, INDIA.

e-mail: akcstat@caluniv.ac.in

asis_stat@yahoo.com

sixtricalsy@yahoo.com

For further information visit us at **www.calcuttastatisticalassociation.org**.

4th Meeting of the Eastern Mediterranean Region of the International Biometric Society: 23-25 January 2007

The fourth meeting of the Eastern Mediterranean Region of the International Biometric Society (EMR-IBS) will be held at the Hilton Hotel, Eilat, Israel, on January 23-25, 2007. A pre-conference reception will be held on the evening before the conference. The lead organizers of the conference are Orly Manor, Hebrew University School of Public Health, and David Zucker, Hebrew University Department of Statistics. The conference will include three full days of sessions. The first of these three days will be a special one-day symposium in honour of Marvin Zelen on the occasion of his 80th birthday. This special symposium is under the joint auspices of EMR-IBS and the Harvard School of Public Health, and is being organized jointly by Marvin's former doctoral student Ori Davidov, now at Haifa University, and Stephen Lagakos of the Harvard Department of Biostatistics. A slate of distinguished invited speakers has been lined up for the conference, and we look forward to a very stimulating meeting. The conference website is **http://www.congress.co.il/emr-ibs2007**. The website provides further details about the conference and a mechanism for submitting abstracts. We welcome abstracts in all areas of biometrics.

Statistics under one roof: 27-30 March 2007

This conference will be held in Bielefeld, Germany, 27-30 March 2007.

This is the first joint conference of German Statisticians organized by DAGStat-Deutsche Arbeitsgemeinschaft Statistik/German Statistical Working Group.

The DAGStat is a collaborative project among five larger statistical societies in Germany, namely the:

* German Statistical Society (DStatG),

* German Region of the International Biomet-

ric Society (IBS-DG),

* German Classification Society (GfKL),

* Fachgruppe Stochastik within the German Mathematical Society,

* Association of German Urban Statisticians (VDSt).

The first joint statistical conference organized by DAGStat brings together academics and professionals from different areas of statistics, providing a platform for interdisciplinary research and exchange.

Major themes in 2007 are Statistical Methods of Bioinformatics, Survival Analysis, Time Series, Graphical Models, Analysis of Panel Data, Analysis of Space-Time Data, and much more.

Confirmed invited speakers are: Raymond J. Carroll, Lon Cardon, Ralf Korn, Helmut Lütkepohl, Johann Pfanzagl.

Email: **dagstat2007@uni-bielefeld.de**

Web: **www.statistik2007.de**

Languages: German and English.

Séminaire Européen de Statistique 2007: 6-12 May 2007

This EMS summer school is organised by the European Mathematical Society together with the European Regional Committee of the Bernoulli Society, and will take place in La Manga del Mar Menor (Cartagena, Spain) during May 6 - 12, 2007.

Courses will be delivered by Valentine Genon-Catalot (Paris), Jean Jacod (Paris), Alexander Lindner (Munich), Per Mykland (Chicago), Gareth Roberts (Lancaster), Michael Sørensen (Copenhagen), Andrew Stuart (Warwick) and Lan Zhang (Chicago).

The summer school is intended for up to 40 Postdocs and PhD-students interested in the subject. Contributed talks or poster presentations are possible. The summer school is funded by the European Commission under EU Contract MSCFCT-2005-029473, which will cover major parts of travel and living expenses. Applications including a CV, a list of publications, a short letter of reference and (optionally) a title and abstract for a proposed presentation should be sent electronically to **semstat@upct.es** by January 19, 2007.

More information is available at **www.dmae.upct.es/semstat2007/.**

International Conference in probability and statistics (ESAIM P&S MEETING): 14-15 June 2007

This conference will take place at the University Paul Sabatier, Toulouse, France, 14-15 June 2007. The aim of this meeting is to give an overview of high standard modern statistics and probability. With this perspective, the editors (from foreign countries) of ESAIM P&S which are experts in their domains will give a talk. This meeting will also give the opportunity for the participant to acquaint themselves with the ESAIM P&S editorial board.

There are no registration fees for this meeting. More information is available at **http://www.lsp.ups-tlse.fr/Fp/Klein/esaim/engesaim.html.**

8th Tartu Conference on Multivariate Statistics and 6th Conference on Multivariate Distributions with Fixed Marginals and Given Dependence Structure: 26-29 June 2007

This conference will take place in Tartu, Estonia, 26-29 June 2007. Conference Subject Areas are: Multivariate Distributions, Estimation and Testing Problems, Multivariate Dependence Structures, Semiparametric and Non-parametric Methods, Hidden Random Structures, Classification and Statistical Learning, Longitudinal Data Analysis, Incomplete Data, Stochastic Models in Finance and Insurance, Applications of Multivariate Analysis.
Deadline for registration: January 1, 2007
Contact Information: e-mail: msi@ut.ee.
Homepage: **http://www.ms.ut.ee/tartu07/.**

5th International Conference on Lévy Processes: Theory and Applications 13-17 August 2007

The *5th International Conference on Lévy Processes: Theory and Applications* will be held Copenhagen, August 13-17, 2007.

It will be preceded by a *Satellite Summer School on Lévy Processes: Theory and Applications* in Sandbjerg (Denmark), August 9-12, 2007.

The following speakers have agreed to give talks: Victor Perez Abreu (Mexico), Søren Asmussen (Aarhus), Jean Bertoin (Paris VI),

Loic Chaumont (Paris VI), Serge Cohen (Toulouse), Rama Cont (ENS Paris), Giulia Di Nunno (Oslo), Ron Doney (Manchester), Vicky Fasen (TU Munich), Niels Richard Hansen (Copenhagen), Henrik Hult (Brown), Niels Jacob (Swansea), Jean Jacod (Paris VI), Anders Tolver Jensen (Copenhagen), Ingemar Kaj (Uppsala), Jan Kallsen (TU Munich), Davar Khosnevisan (Utah), Claudia Kluppelberg (TU Munich), Andreas Kyprianou (Heriot-Watt), Jean-Francois Le Gall (Paris VI), Alexander Lindner (TU Munich), Filip Lindskog (KTH Stockholm), Makoto Maejima (Keio), Tina Marquardt (TU Munich), Mark Meerschaert (Otago), Bernt

Oksendal (Oslo), Martijn Pistorius (King's College), Philip Protter (Cornell), Sid Resnick (Cornell), Holger Rootzen (Chalmers), Jan Rosiński (Knoxville), Francois Roueff (ENST/TSI), Gennady Samorodnitsky (Cornell), Ken-iti Sato (Nagoya), Rene Schilling (Marburg), Thomas Simon (d'Évry-Val d'Essonne), Philippe Soulier (Paris X), Donatas Surgailis (Vilnius), Jeannette Woerner (Goettingen), Ymin Xiao (Michigan State).

For more information, please visit the website:
http://www.math.ku.dk/conf/levy2007/levy.html

Upcoming workshops and conferences at EURANDOM

The following workshops and conferences will take place in Eurandom, Den Dolech 2, Eindhoven, The Netherlands:

- Workshop "Image Analysis and Inverse Problems", December 6, 2006, 11.30-13.00 h., LG 1.105;

-Workshop "YEP (Young European Probabilists) 2007: Random Graphs and Complex Networks", March 2007;

- Workshop Mathematical Methodologies for Operational Risk, March 19-21, 2007;

- Workshop "Random Polymers", June 18-22, 2007;

-Mini-course Algebraic Statistics, organised by EIDMA and Diamant, June 25-29, 2007;

- Applied Probability INFORMS Conference, Eindhoven University of Technology, Eindhoven, The Netherlands, July 9-10-11, 2007.

For further information please have a look at the website **www.eurandom.tue.nl**.

Invitation to the Bernoulli Society satellite meeting of ISI 2007

As broadly publicised, the 56th Session of the ISI will be held in Lisbon in 2007 and satellite meetings are being organized on a few subjects.

We would like to invite people working in the field of Probability and Statistics in Science and Technology to join us at the Bernoulli Society satellite meeting of ISI 2007, to be held at the Faculty of Engineering at the University of Porto, Portugal, after the Session in Lisbon. More information will be available in the near future.

The Faculty of Engineering at the University of Porto has good facilities and hosts a few scientific conferences and technical meetings

each year (**http://www.fe.up.pt/si_uk/ WEB_PAGE.INICIAL**).

The city of Porto is very easily to reach by plane from many cities in Europe; connections from some cities are at various times

throughout the day. International flights into Porto are also very convenient and arrive at the international airport. Connections to Lisbon are good and frequent by train (3 hr. trip departures approximately every hour), by plane (30 min. several flights a day) or bus. Porto is also a tourist destination together with the River Douro Valley and the old part of town is a classified UNESCO World Heritage (**http://www.portoturismo.pt/en/init/default1.asp**).

Address for inquiries:

Local Organisers: Paula Milheiro, poliv@fe.up.pt, (+351) 225081923.

Secretary: Clotilde Leite, clotilde@fe.up.pt, (+351) 225081944.

Faculdade de Engenharia, Rua Dr Roberto Frias, s/n, P-4200-465 PORTO, Portugal.

Dates: following the 2007 ISI Lisboa Session.

JOB ADVERTISEMENTS

Message from the Treasurer. You are welcome to advertise jobs in *Bernoulli News*. The cost is currently EUR 50 per advertisement. The advertisement should contain no more than 300 words and should be emailed as plain text (ASCII or ISO8859-1) to the Editor. *— Ursula Gather (Bernoulli Society Treasurer).*

VACANCIES AT EURANDOM - Postdoctoral researchers and Ph.D. students

EURANDOM is the European Research Institute for the study of random phenomena. Research at EURANDOM covers stochastics and its applications, as well as its interfaces with other disciplines. Stochastics consists of statistics, probability and stochastic operations research. The core business of EURANDOM is fundamental research in an international environment, carried out by a non-tenured staff of junior researchers and senior advisors supplemented with an extensive programme of seminars, workshops and visitors.

Research at EURANDOM is clustered into thematically organized research programmes:
- Queueing and Performance Analysis: Performance Analysis of Production Systems; Performance Analysis of Communication Systems, Queueing Theory, Multivariate Risk Modelling;
- Random Spatial Structures: Critical Phenomena; Disordered Systems; Combinatorial Probability;
- Statistical Information and Modelling: Statistical Signal and Image Analysis; Statistics in Biology and Statistics in Industry.

At present the junior staff consists of approximately twenty-five internationally recruited post-doctoral researchers and graduate students under the guidance of senior advisors. Vacancies at EURANDOM occur at any time during the year and are not restricted to the beginning of the academic year.

Postdoctoral appointments are typically for two years (but shorter periods can be discussed as well). Appointments for Ph.D. positions are typically for three to four years. Furthermore we welcome candidates who wish to apply for an external research grant, e.g. the Marie Curie Individual Fellowship from the European Union or for a research grant from European or American science foundations such as DFG, FWO, CNRS, EPSRC, NSF etc.). We have built up expertise with the application procedures and consequently we are willing to help you with the application.

Candidates with a suitable mathematical background are invited to send a letter of application together with *curriculum vitae* with full educational details to EURANDOM. Applicants for a post-doc position should also include a list of publications, a pre-print of a selected paper, and names and contact details of three academic referees.

Applicants for a Ph.D. position should include information on their thesis. The complete package should be sent to:

Prof.dr.ir. O.J. Boxma
Scientific Director EURANDOM
P.O. Box 513
5600 MB Eindhoven
The Netherlands

For further information have a look at our website **www.eurandom.tue.nl** or contact us at **office@eurandom.tue.nl**.

Phone: +31 40 247 8100
Fax: +31 40 247 8190.

WHO IS WHO IN THE BERNOULLI SOCIETY

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Council Member 2005-2009	Rajeeva Karandikar	New Delhi, India	rlk@isid.ac.in
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Co-Chair, BS/IMS Liaison Committee	W. R. van Zwet	Leiden, The Netherlands	vanzwet@math.leidenuniv.nl
Co-Chair, BS/IMS Liaison Committee	Ole E. Barndorff-Nielsen	Aarhus, Denmark	oebn@imf.au.dk
Chair, Committee for Conferences on Stochastic Processes	Ruth Williams	San Diego, USA	williams@stochastic.ucsd.edu
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