

BAYESIANS IN BRAZIL

O artigo a seguir foi inicialmente publicado no Bulletin of International Society for Bayesian Analysis, vol. 7, nº 4, December 2000, e está sendo reimpresso com a autorização do Presidente da ISBA, Prof. David Draper.

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“ Let us suppose that an individual, I , is provided with a certain set, C , of knowledge and that I ought to behave dependently on the occurrence or not of a given event, E .”

“ ... the subjective notion of probability aims exactly to measure this degree ... of belief... ”

These are excerpts (translated from Portuguese) from the “Introduction to Probability Calculus” class notes used during the Fifties at ENCE (Escola Nacional de Ciências Estatísticas - National School of Statistical Sciences) in Rio de Janeiro. The notes were written by Professor Rio Nogueira and constitute the earliest reference to subjective probability we have found in Brazilian writings. In fact, it is a nice surprise to find a Brazilian relative I of de Finetti’s character You ! [ENCE still exists and is an undergraduate school of Statistics maintained by IBGE , the Brazilian Census Institute. A few of the people mentioned below graduated from ENCE].

Let us now move to the Sixties at Berkeley, where Caio Dantas, a probabilist from Sao Paulo, attended the seminars held by David Blackwell and Lester Dubins. Dantas brought back a Bayesian seed (and also Blackwell’s Basic Statistics book) to USP (Universidade de Sao Paulo) where Carlos Pereira wrote up a Bayesian MA dissertation. A few years later, Carlos went to Florida to get his PhD from Debabrata Basu. Upon his return to USP in the late Seventies, Bayesian activities in Brazilian academia finally unfolded in a strong and regular fashion. The multiple - but always Bayesian - interests of Carlos Pereira influenced many researchers at Sao Paulo. Among his early PhD students we find the geneticist Andre Rogatko. Josemar Rodrigues was at USP faculty and wrote several papers jointly with Carlos

Pereira on linear models and finite populations. Another faculty member, Heleno Bolfarine, returned from Berkeley in 1982 to start a brilliant career on Bayesian theoretical statistics.

At that time in Rio Basilio Pereira, a student of Sir David Cox, started to supervise some Bayesian students and hosted a first visit of Adrian Smith for three months in 1980. Basilio (Carlos' brother) proceeded and created the Bayesian atmosphere at UFRJ (Federal University of Rio de Janeiro) where Marlos Viana, Helio Migon and Dani Gamerman would later appear to make the department an excellence center on Bayesian research with sound contributions in econometrics, dynamical models, time series, epidemiology, survival analysis, stochastic simulation.

We are by now in the Eighties and our story becomes way less linear as the branches of the Brazilian Bayesian tree start to become many. At Sao Paulo, Carlos Pereira, Josemar Rodrigues, Heleno Bolfarine and Jorge Achar established a firm research activity and influenced many young people to follow Bayesian careers. Jose Galvao Leite wrote his PhD dissertation on Bayesian capture-recapture sampling under Carlos Pereira supervision. His MA students Telba Irony and Angela Mariotto went to get their doctoral degrees from Dick Barlow on Bayesian industrial engineering and Sir Cox, respectively. In Rio de Janeiro, Helio Migon and Dani Gamerman had returned from Warwick, having obtained their PhD degrees under the supervision of Jeff Harrison and Mike West, respectively. Helio and Dani have been supervising Bayesian dissertations since 1987 at COPPE/UFRJ (Graduate School of Engineering/UFRJ) and from now on at their home department, DME (Statistical Methods Department), which has just started to offer a regular PhD program in Bayesian Statistics.

During the Nineties, Bayesian activities in Brazil started to make good impact in other countries as foreign students returned to them. From USP Daniel Paulino returned to Portugal after getting a PhD from Carlos Pereira. Victor Salinas Torres and Pilar Iglesias, both from Chile and both Pereira's PhD students returned. Back to Chile, Pilar Iglesias has been provoking good Bayesian earthquakes since then. Luis Eduardo Montoya Delgado is back to Colombia after a superb PhD on DNA profiling for paternity investigation. Veronica Gonzalez-Lopez in Argentina is the most recent member of this impressive list of Carlos' PhD students. Paulino worked on identifiability, Torres on Bayesian non-parametrics and Dirichlet process, Pilar on predictivistic representations, and Lopez on Bayesian concepts of dependence. At the same department, Heleno Bolfarine supervised students like Reynaldo Arellano Valle whose PhD dissertation won a first prize award at the Bernoulli Society Clapem contest. Valle is back to Chile and works on

external predivistic representations of elliptical families. Loretta Gasco at Peru and Patricia Gimenez at Mar del Plata were also Bolfarine's doctoral students. Heleno Bolfarine and Pilar Iglesias were PhD advisers to Marcia Branco and Rosangela Loschi. All this people have very strong and active scientific collaboration. We have recent papers by Gonzalez-Lopez and Nelson Tanaka, Bolfarine and Valle and so on, not to mention Pilar Iglesias whose admirable drive puts almost everyone to work.

The brand new generation of Brazilian Bayesians includes Lurdes Inoue who after a PhD from Donald Berry at Duke is now at the MD Anderson Cancer Center at Houston and Hedibert Lopes who also graduated from Duke and is now at UFRJ faculty. Both got MA degrees in Brazil formerly, Lurdes from Sergio Wechsler and Hedibert from Helio Migon. A list of several almost-PhD Brazilian Bayesian students at USP, UFRJ, Duke, Sheffield ... could be given but we prefer to hurry them up (not to mention that we intend to write the Second part of this story ten years from now).

Before getting too close to year 2000, we should remember the series of bi-annual Bayesian Brazilian Seminars held since 1991. The first one was at Sao Carlos and chaired by Josemar Rodrigues and Sergio Wechsler. In 1993, the Seminar was held jointly with the International Bayesian Hierarchical Meeting of Rio de Janeiro organized by Dani Gamerman and Helio Migon and attended by Bayesians like Jose Bernardo, Adrian Smith and Phil Dawid (who would return for the third Brazilian Bayesian two years later). Before that, in 1992, we had in Rio a joint Brazil-US Meeting on Bayesian Econometrics chaired by Ruben Klein and attended by Arnold Zellner and J. Kadane among many others. [Omissions are unavoidable at this point and we apologize for this. Jim Berger, Susie Bayarri, Ed George, D.Poirier, S. Geisser, Alicia Carriquiry, Tony O'Hagan, Steven Fienberg, J. Press Luis Pericchi among again many others were also in Brazil a couple of opportunities. The department at USP was visited by Dev Basu, Dennis Lindley and Dick Barlow. Adrian Smith and Tony O'Hagan visited UFRJ more than once]. During the 1992 Meeting a vote was taken for the creation of ISBA.

Also during the Nineties a diffusion of Bayesian ideas and methods occurred among researchers from other areas and statisticians and probabilists who would not consider themselves exclusively "Bayesians": we find outstanding contributions from Pablo Ferrari on Image Restoration, Antonio Galves on Linguistics, both at USP, Renato Assuncao at UFMG (Federal University at Minas Gerais) on Spatial Statistics and Disease Control, Pedro Morettin (USP) on Time Series.

We should also list the bibliographical contributions of Brazilian Baye-

sian authors: to mention books only, Heleno Bolfarine is co-author of S. Zacks' book on Finite Population Estimation, Dani Gamerman wrote "Monte Carlo Markov Chain: Stochastic Simulation for Bayesian Inference" and, jointly with Helio Migon, "Statistical Inference: an Integrated Approach". Going back to the beginning, we find translations to Portuguese of Blackwell's Basic Statistics and Raiffa's Decision Analysis already in the early Seventies. Carlos Pereira and Marlos Viana wrote a book in 1982 on Introductory Bayesian Statistics which was never translated from Portuguese.

Bayesian research activities are now very active in Brazilian universities with strong interaction with universities abroad. Last year the Brazilian Bayesians decided to create a Brazilian Chapter of ISBA. The new Chapter made the decision to host the First "Latin American Bayesian Meeting" (I COBAL) to be held very probably on January 2002 in Brazil.