Damadian; y cuatro años más tarde fue él quien ideó y fabricó el primer aparato capaz de realizar resonancias magnéticas en hospitales y centros médicos, llegando a poner a uno de ello. Dicho espectrómetro puede verse ahora en el Museo Nacional Smithsonian de Historia Americana.

Quizás Damadian tenga razón.

II CONGRESO INTERNACIONAL DE HISTORIA DE LA ESTADÍSTICA Y DE LA PROBABILIDAD

JESÚS SANTOS DEL CERRO

El *II Congreso Internacional de Historia de la Estadística y de la Probabilidad* sucede con un intervalo temporal de dos años a las *I Jornadas de Historia de la Estadística y de la Probabilidad.* Éstas últimas se celebraron en Madrid durante los días 13 y 14 de Julio de 2001 y fueron organizadas, al igual que este segundo congreso, por la AHEPE (Asociación de Historia de la Estadística y de la Probabilidad de España). A ellos asistieron investigadores de varias universidades e instituciones cuyo interés y dedicación por el estudio de cuestiones sobre Historia de la Estadística y de la Probabilidad dio como fruto el alto nivel de los trabajos presentados y las exposiciones defendidas. Esta primera reunión de investigadores, en un país como España con una débil tradición en el estudio de estos tópicos, resultó tan satisfactorio que impulsó a los miembros de la AHEPE a convocar su segundo congreso, cuya previsión es su celebración bianual, con un carácter internacional.

En lo que se refiere a la AHEPE, entidad organizadora de este evento, es preciso decir que persigue como objetivos principales los siguientes: 1.-Agrupar a las personas que se dedican al estudio de la Historia de la Estadística y la Probabilidad y aquellas otras que estén interesadas en estos temas; 2.-La creación, el impulso y la transmisión del saber científico. Esta línea queda enmarcada dentro de la AHEPE mediante dos direcciones. Por un lado, fomentar la investigación del conocimiento científico y, por otro lado, tener la posibilidad de incorporar los nuevos planteamientos en el ámbito docente; 3.-La promoción e intercambio, entre sus miembros y con cualesquiera otras entidades o asociaciones similares, nacionales o internacionales, de experiencias investigadoras con su campo de observación y la difusión, a todos los estratos de la sociedad, de los resultados derivados de las diversas actuaciones científicas, académicas y profesionales de sus miembros.

Respecto del lugar de celebración, este segundo congreso ha tenido un marco incomparable que atesora una tradición de una gran significación para los estudiosos de

la historia de la ciencia, en general, y de la estadística y de la probabilidad en particular. Se trata de la conocida Escuela de Traductores de Toledo, que constituye actualmente un moderno foro que persigue recuperar las actividades de su homónima medieval. Se ubica en el conocido popularmente como Palacio del Rey Don Pedro, que constituye los restos de un gran palacio medieval toledano del siglo XIV, que ha sido rehabilitado recientemente y actualmente está adscrito a la Universidad de Castilla-La Mancha, en cuyo seno realiza su importante labor. Como nota característica acerca de su pasado es necesario apuntar que entre los siglos XII y XIII se desarrolló en Toledo una gran actividad cultural que ha sido recogida por la denominación de Escuela de Traductores de Toledo. Esto no debe llevarnos a considerarla como un centro educativo o de investigación tal y como hoy se considera sino más bien un colectivo de personas que tienen como común denominador una labor de transmisión a Europa de la sabiduría de oriente y, en especial, la de los antiguos griegos y árabes.

Han participado también en calidad de instituciones organizadoras, junto a la AHEPE, prestando sus recursos y poniéndolos a disposición de este congreso, la Universidad Rey Juan Carlos, la Universidad San Pablo-CEU y la Universidad de Castilla-La Mancha, siendo ésta última la universidad anfitrión del evento. En lo que se refiere al patrocinio hay que agradecer la colaboración de tres instituciones: la Caja de Castilla-La Mancha (CCM), la Junta de Comunidades de Castilla-La Mancha (JCCM) y la Universidad de San Pablo-CEU (Foro Económico-Empresarial). Es necesario agradecer también la colaboración del Instituto Nacional de Estadística (INE) y de la librería Ecobook.

Es preciso asimismo destacar la participación de estudiosos e interesados por la Historia de la Estadística y de la Probabilidad, cuyo número ha estado próximo al centenar, de los que es necesario abundar no sólo en la elevada calidad general de las exposiciones y trabajos defendidos, sino también en el gran interés que han suscitado las discusiones en torno a ciertos temas analizados en el congreso.

Las sesiones de trabajo han sido intensas, desarrollándose tanto durante las mañanas como por las tardes en los dos días (3 y 4 de Julio) en que ha tenido lugar la celebración del congreso. El número de trabajos ha ascendido a casi cuarenta y han comprendido temas como el problema de la división de las apuestas; algunas contribuciones al Cálculo de Probabilidades y la Estadística de los hermanos Huygens, Pascal, los Bernouilli, Tadeo Lope y Aguilar, François Nicole, Agustín Martínez Alcíbar, etc.; estudios sobre los inicios de la aplicación de la Estadística a ámbitos sanitarios, sociales, laborales, relativos a la ingeniería, a las encuestas de opinión, a la información, al control estadístico de la calidad, etc.

La mayor parte de los participantes proceden de ámbitos universitarios entre los que podemos citar, por ejemplo, los siguientes: Universidad de Berlín, Universidad Paris VIII, Universidad Franche-Comté, Universidad de la Habana, Universidad

Complutense de Madrid, Universidad de la Rioja, Universidad del País Vasco, Universidad de la Coruña, Universidad de Santiago de Compostela, Universidad de Sevilla, Universidad Nacional de Educación a Distancia y las tres universidades organizadoras ya citadas, entre otras, aparte de otras instituciones como el Instituto Nacional de Estadística (INE) y el École de Hautes Études en Sciences Sociales, etc.

Por último, debemos señalar que las actividades propias de este congreso, de modo análogo a cómo ocurrió con el congreso precedente y primero, no se agotan con su celebración sino que se prolonga fundamentalmente con la publicación de un libro en el que se recogen los trabajos que han sido presentados y defendidos en el congreso y que representan la principal aportación escrita de las sesiones de trabajo desarrolladas en este *II Congreso Internacional de Historia de la Estadística y de la Probabilidad.*

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«REFORMATION» AND «COUNTER-REFORMATION» IN MATHEMATICS – THE ROLE OF THE JESUITS

GERT SCHUBRING

Review of the book by Antonella Romano: *La Contre-Réforme Mathématique. Constitution et Diffusion d'une Culture Mathématique Jésuite à la Renaissance* (1999)

The author has published not only this book, but also several articles on mathematical activities of Jesuits. These publications show as focus of her research interest the teaching of mathematics by Jesuits in France in the sixteenth and seventeenth centuries. This also constitutes the subject of one of the two parts of Romano's book.

In this part, she succeeded in exploring many archives and in evaluating numerous sources revealing the reality of mathematics teaching in Jesuit colleges. She was thus able to clarify how the Jesuits arrived in France in the second half of the sixteenth century and how they established their first colleges, mainly in the south of the country. She unravels the problems in realising mathematical teaching during that first period, given the lack of Jesuits competent in mathematics. The next major part shows how the Jesuits achieved establishing an extended net of colleges across all of France, during the first half of the seventeenth century. There is an impressing richness of dimensions which she studied systematically to present a vivid picture of the teaching reality:

- identifying the persons who taught mathematics and researching their biography and their teaching career within the Order;
- the production of textbooks and their use in teaching;

- evidence for mathematical activities of students, in particular of theses defended in public ceremonies;
- reports of inspections made by superiors of the Order who regularly controlled the individual colleges.

It is particularly rewarding and meritorious that she does not treat the Jesuits who taught mathematics as a uniform group without individual profiles. She is highly conscious that there were some among them who specialized in mathematics, and others who had at best a marginal relation to mathematics and its stock of knowledge and had come to teach it by random, or by order of superiors. She invested much energy in reconstructing the careers of those Jesuits who were oriented towards mathematics.

In fact, she knows and applies the method of history as a science for establishing systematic patterns of particular social groups —the prosopography— and has tried quite successfully to present a maximum of biographical information, structuring it into «biographical itineraries». It is evident that such a task is intrinsically highly complicated in the case of religious Orders, and hence also in the case of Jesuits, since each Jesuit was obliged to change his place many times in his life in order to prevent the emergence of emotional relations within a particular context.

Besides appreciating the importance of this research and the concrete results for France, it is necessary to be aware of two limitations which impede generalization to Jesuit teaching of mathematics in other countries:

- The first limitation is due to an extraordinary but not well known fact which the author justly emphasises. It is the fact, unique for entire Europe, that the Order of Jesuits became «nationalisé» in France in 1604. The reason for this extraordinary development was the first expulsion of Jesuits from France, occurred in 1594 as a decision of the Parliament after an attempt upon the King's life committed by a former student of a Jesuit college. The negotiations about readmitting them resulted in a royal edict by Henri IV of 1604, permitting the return under three conditions:
- establishing new colleges required the King's permission,
- only «naturels François» - French born Jesuits - were admitted to teaching; «aucun estranger» - no foreigner - being allowed to serve,
- all Jesuits had to take an oath promising to refrain from acts against the French state [ROMANO, 1999, 357].

The Jesuits accepted these conditions and in doing so confirmed the strong tendency in France towards Gallicanism, i.e. towards national French religion, which ran contrary to the ultramontane, Rome-dependent practice of the Catholic Church. Given this «nationalised» context, Jesuit colleges in France are not representative for or directly

comparable to other Catholic countries in Europe - a fact the author neglects and does not observe or comment on.

This first limitation is even reinforced by a second one. The author claims that the idea and principle of autonomy of mathematics from philosophy was perceived and realised within the French colleges since the beginning of the seventeenth century [*Ibid.*, 362].

What is this alleged autonomy intended to mean? As is also evident from Romano's exposition, mathematics in Jesuit colleges was commonly not taught by a father specialised in this field, but rather by one of those in charge of teaching in the highest forms, the philosophy classes, hence at best by someone versed in philosophy or in (Aristotelian) physics. What Romano has in mind when speaking of autonomisation is that the French kings had established so-called «chaires des Mathématiques» since the early seventeenth century annexing them to already existing colleges. By this, twelve Jesuit colleges were endowed with such chairs. For these select institutions, the Order named fathers who specialised for such a teaching; they remained in local service for extended periods. This can best be judged to be a certain professionalisation, but not an autonomy. These chairs were not founded gratuitiously, rather their holders had to prepare military officers and civil functionaries in applied and in technical disciplines for state service. The founding of these «chairs» thus reinforced the first French peculiarity: the nationalisation of teaching in the service of the state.

Moreover, there is another characteristic feature of these chairs not mentioned by the author. Their specialised lectures occurred outside of normal teaching: it was given to external students, in fact to adults, and not within the usual philosophy class. This feature shows that autonomy of mathematics was realised nowhere within the teaching given by the colleges.

It should be mentioned that the studies presented by Antonella Romano show another restriction besides the two limitations of generalisability of her French case just outlined. She restricts her study to those Jesuit colleges which were endowed with the aforementioned annexed chairs, excluding the other, more normal, colleges, which did not offer a professional training to adults. While such restrictions are evidently legitimate for the pursuit of research, their consequences for generality should be made explicit.

Summarising the development of mathematics teaching even within the select colleges, she affirms that nobody creative in mathematics emerged, neither in the first nor in the second half of the seventeenth century [ROMANO, 1995, 281].

These meagre effects and the mentioned limitations for France, her field of specialised research, provide counter-evidence to the main intentions and claims in the other part of the book under review - actually its first part. Its subject is the general Jesuit program for teaching mathematics, since the founding of the Order up to the

definitive version of the *Ratio Studiorum* of 1599. The author's intention for this part is to present Christoph Clavius as the gifted architect of a seminal far-sighted project for mathematics: to establish mathematics with a modern status, adapted to contemporary needs, and to the future. Clavius is even depicted as the only person in Europe having elaborated a noteworthy programme for mathematics [ROMANO, 1999, 162].

Consequently, the author concentrates her analysis on the projects for the *Ratio Studiorum* between 1580 and 1599. Clavius (1537-1612), professor of mathematics since 1565 at the *Collegio Romano*, the central and most prestigious institution for the formation of Jesuits, approved by the Pope as a university, tried in fact to assure an important status for the teaching of mathematics and for the formation of teachers of mathematics in the *Ratio Studiorum*. Clavius's main propositions were to extend the teaching of mathematics to all three years of the philosophy class und to create an Academy of mathematics, intended for the formation of specialised teachers of mathematics who were to be sent to all the provinces of the Order to provide that teaching. According to the author, this would have been the first institutionalisation of mathematics and of a specialisation of future teachers [*Ibid.*, 120].

Without opening up newer sources than those already analysed in the literature, e.g. by Krayer (1991), she describes the stages of reduction which Clavius's programme suffered between 1586 and 1591. She does not report and analyse, however, the critical discussions of Clavius's programme which occurred in several provinces. This discussion is only presented in Krayer's book (about which she published a review in 1993). In fact, she states only briefly the meagre result in the final version of 1599 where mathematics teaching was reduced to a part of the final year and where some additional instruction was relegated to private teaching. The students did not have to pass an exam like in other subjects, and there were no prescriptions about the qualification and the procedure for nominating those who were to teach mathematics. And A. Romano does not analyse the reasons of the failure of Clavius's programme. She prefers just to speak of a «realist solution» [*Ibid.*, 130].

Curiously enough, the author is well aware of the resistances within the Order against mathematics, in particular by philosophers and direct colleagues of Clavius within the *Collegio Romano*, due to the dominant form of Aristotelianism, but she does not relate this resistance to the failure of Clavius's programme. She even devotes a chapter of its own to the discussions about the epistemological nature of mathematics - but *after* having exposed the fate of Clavius in the *Ratio Studiorum*, and hence as a separate, not related issue [*Ibid.*, 134 ff.].

Probably, it is not amazing that the Jesuits —an Order well known for its militancy in preserving the Catholic faith and Church, and hence primarily devoted to theology— did not ascribe a major role to mathematics within their educational mission. It is amazing to observe, however, that the author nevertheless claims the Jesuit programme in

mathematics to have been original in Renaissance Europe, and even superior to other competing programmes. Unfortunately, she seems to have ventured the domain of her competency with these assertions. Of all the seven hundred pages of her book, she devotes only sixteen to discussing the question whether there were approaches towards mathematics of a competing dimension elsewhere in Europe.

Before evaluating these pages, let us have a look at the contemporary context. The first question which the book's title provokes is about the relation between the Reformation and the Counter-Reformation. Since the Counter-Reformation was the answer to the Protestant Reform, initiated mainly by the newly created Jesuit Order, one expects to learn how a Counter-Reform(-ation) in mathematics brought about by Jesuits reacted to a previous Reform(-ation) in mathematics initiated by Protestants. Nothing like this happens in the book. Although it is well known that it was the Humanist movement which achieved the introduction of chairs for mathematics to the European universities since the turn from the fifteenth to the sixteenth century, and that the Protestants continued this policy [see SCHÖNER, 1994], the author remains completely silent about this change as compared to medieval universities and thus implying that the alleged *Contre-Réforme mathématique* was an independent movement, modernising the still medieval structures for the first time — an entirely false and unhistorical hypothesis. In reality, Jesuits taking over humanistically reformed universities succeeded in suppressing the mathematical chairs and reducing mathematics teaching to a few month's teaching at secondary school level in the colleges [see the case of Landshut/Munich university in SCHÖNER, 1994]. A few Catholic territories resisted handing over their systems of education to the Jesuits and consequently maintained the chairs for mathematics in their universities [see the case of Padua in the Republic of Venice: SCHUBRING, 2002].

In her brief chapter on non-Jesuit mathematics in sixteenth century Europe, she devotes five of its sixteen pages to the Italian universities. She finds nothing important there — not having evaluated P.L. Rose's book (1975) and Biagioli's article (1989). In fact, with the exception of publications on Italian universities by Ch. Schmitt, she shows no acquaintance at all with the vast international literature on the institutional history of mathematics in Europe. Less than eight pages follow about France. While she mentions that the prestigious Parisian university had not been modernised, she does not admit that there had been intense struggles to achieve a modernisation. These failed, however, since this center of theology was at the same time the stronghold of Aristotelianism in France. In fact, it was precisely due to the failure of introducing Humanism at the Sorbonne that the King created the later so famous *Collège Royal*, an institution in which the modern disciplines promoted by Humanism could be lectured. The author does not fail to mention that this institution was renowned, and to explain that it could boast of a chair specialised in mathematics; she names important mathematicians as holders of this chair and even admits a comparability of the *Collège Royal* with Clavius's programme — while immediately dismissing this comparison for alleged reasons of briefness [ROMANO,

1999, 169]. Even more remarkably, she does not mention that it was Petrus Ramus (1515-1572) who donated that chair. It is true that A. Romano briefly mentions Ramus's name and explains that he realised an important programme in revalorising mathematics, but she immediately adds that the importance of this subjet precludes pursuit of its investigation in her context [*Ibid.*, 174]. These two lacunae notwithstanding, she continues that in France there was not anything rivalling the importance of Clavius's programme either [*Ibid.*] – a *petitio principii* hence instead of the necessary demonstration.

But she weakens her «proof» even more. She devotes less than three pages to the rest of Protestant Europe, titling this part «cercles réformés» [*Ibid.*, 175], thus suggesting a marginal existence of some unstructured groups, seemingly not well identifiable as geographical territories. For her, the considerable size of Protestant territories materializes only in two towns: Wittenberg and Strasbourg. She is not able to detect something significant in these «cercles»; her revealing conclusion deserves to be quoted in its entirety:

> «À la différence de Wittemberg ou Strasbourg, qui constituent des pôles isolés, susceptibles certes d'irriguer les espaces périphériques, voire de constituer des modèles à imiter ou imités, la Compagnie de Jésus déploie un réseau d'établissements en Europe, puis hors d'Europe. [...] les exemples de Wittemberg ou de Strasbourg ne peuvent rivaliser avec celui du Collegio Romano» [*Ibid.*, 177].

This summary constitutes a rare document of ignorance and of imperialism, expressing the still classical prejudice according to which Rome is the navel of the world. Culture exists nowhere but in Italy and France; outside of these countries —in particular north of the Alps— there is only dry *terra incognita* in need of irrigation.

Actually, it was just the decentralised character of the German territories which permitted a much more widely disseminated culture, thus contributing to the eventual rise of Germany as the long leading nation in mathematics[1].

This distortion of historical analysis, due to preconceptions loaded with prejudice, did not remain an isolated case. It is repeated almost literally in the Proceedings of a *Colloque* on Sciences and Religions organised in 1996 by A. Romano and Catherine Brice [ROMANO, 1999a, 276-277]. The author claims the relation between Catholic and Protestant approaches towards mathematics to be an hitherto unknown subject, for which she was now launching and «inaugurating» a project of comparative analysis [*Ibid.*, 256][2]. In fact, the entire volume shows lack of knowledge about the state of development in relevant disciplines. Despite its ambitious title, the papers in the latter volume are almost all focussed on Italy and impregnated by the historical Trauma of the Catholic Church's confrontation with science: by the Galilei process. Only once, in the *Avant-propos*, Merton is mentioned — but without explaining the meaning of this name and its context. Also neglected is use or even mention of the evidently immediately relevant special issue of the journal *Science in Context* of 1989 on Catholic and

Protestant Science, commemorating the 50th anniversary of the Merton Thesis. Actually, since Max Weber, the relation between science and religion constitutes a major field of sociology, and in particular of the sociology of science and of the sociology of religions - and last not least in the history of science.

It is difficult to understand how the organisers of the *Colloque* were able to circumnavigate these well-established scientific disciplines. It is likewise difficult to understand how the first part of Romano's book, originally a Ph.D. thesis at a Parisian university, was able to pass scientific assessment.

NOTES

1. The different fate of mathematics, after Humanism, in Protestant and in Catholic territories has been analysed by myself in various studies; e.g. for Germany in Schubring 1989, comparing France and Germany in Schubring 1991, and as a comprehensive history for Europe in Schubring 2002.
2. She emphasises the (subjective) novelty of this research issue by saying «Il s'agit en effet d'un chantier que je commence à défricher» [ROMANO, 1999a, 256].
   This paper is again methodologically weak since two institutions are compared which were not functionally equivalent, but served quite different ends: The *Gymnasium* at Strasbourg and the *Collegio Romano*.

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LA SOCIEDAD CUBANA DE HISTORIA DE LA CIENCIA Y LA TECNOLOGÍA APOYA EL LLAMAMIENTO DE LOS ESCRITORES Y ARTISTAS

La Sociedad Cubana de Historia de la Ciencia y la Tecnología ha decidido apoyar el llamamiento de la Unión Nacional de Escritores y Artistas de Cuba para la creación de un Frente Antifascista Mundial, en vista de la resurrección de los métodos y acciones de corte fascista que están ensombreciendo peligrosamente la escena internacional. Cualquiera puede ser la próxima víctima.

Hace varios decenios, el nazifascismo confió la realización de su sueño, finalmente derrotado, de conquistar el mundo a la creación de un poderoso aparato militar, la guerra relámpago y las bombas volantes.

En nuestros días, la actual administración estadounidense confía sobre todo en la efectividad de su maquinaria de guerra y su enorme arsenal, que no sólo incluye bombas inteligentes y sísmicas, sino también un terrible surtido de armas de exterminio masivo, para someter a cualquier país que perciba como que pueda interferir sus planes de dominación mundial. Todo ello, apoyado en el uso de la ciencia y la tecnología más avanzadas, mientras se desprecian olímpicamente la preservación de los valores cultura-