

## EDITORIAL

### **Corrado Gini: innovator and leader of Italian statistics**

Corrado Gini can be considered as the most eminent Italian statistician, whose scientific relevance was and still is recognised all over the world. During more than half a century, from the last years of the first to the sixth decade of the twentieth century, his leadership over Italian statistics was indisputable: he fascinated researchers both in statistics and in other disciplines that he studied from a quantitative perspective.

Gini was born in 1884 and passed away in 1965. His passing created a deep hole in Italian science. Fifty years after his death, the University of Padua, where he was a professor from 1913 to 1925, and the Italian Statistical Society, of which he was almost uninterruptedly president from 1939 to 1965, wished to remember his didactic, scientific and organisational roles dedicating to his memory a meeting on 7 and 8 September 2015 (Padua and Treviso). Also, the municipality where he was born dedicated to his remembrance several initiatives. The speeches at all meetings highlighted that Corrado Gini still represents something unique in the Italian statistical landscape, a personality that marked vividly the scientific arena and whose disappearance is perceived by involved statisticians in a way that is similar to that of a meteor in the sky, with a sensation of emptiness after it vanishes.

In this thematic issue, the co-editors and the authors – two of whom had the chance to meet Gini in person – aim to represent some of Gini's scientific and institutional activities so as to highlight that he possessed a sort of Midas touch in most of his undertakings, both in improving science through research, teaching so that students could learn, and creating institutions for a wider statistical literacy in society and school and also for a better understanding among statisticians.

Almost all papers presented in this volume can be considered original, in the sense that their authors scrutinised in depth the activities that Gini realised, by patiently consulting archives and historical sources that are unique and difficult to access. The following sources have been examined by the authors: minutes of the sessions of the Law faculties of Cagliari and Padua and of the Faculty of Arts and Philosophy of Padua, minutes of the Governing Board of the University of Padua, the Annals of the universities of Cagliari and Padua, the series of Studi economico-giuridici (Economic and Juridical Studies) of the Law Faculty, the University of Cagliari, the archives at the Centre for the History of the University of Padua, the Portfolio of the Rectorship of the University of Padua, the Historical Archive of the Sapienza University of Rome and the library of the Faculty of Statistical, Demographic and Actuarial Sciences of Rome, various sources at Istat and at the

Italian Presidency of the Ministry Council in Rome, papers, books and historical materials belonging to Gini stored at the State Central Archive in Rome (the Central Archive acquired Gini's private archive and library in 1999 from an antiquarian bookshop in Rome), several books and papers stored at Cagliari, Padua and Rome libraries that have now been transferred into electronic files and can be accessed by any concerned scholar from the Padua Statistics Department website (<http://corradogini.stat.unipd.it>), among which also Gini's graduation thesis kindly made available by the University of Bologna (where he graduated in 1905).

This volume contains, in fact, three articles concerning Gini's scientific and academic life at the Italian universities of Cagliari (from 1909 till 1913, see the paper by Giuseppe Puggioni), Padua (from 1914 till 1925, see the paper by Silio Rigatti Luchini) and Rome (from 1925 till his death with a short interval of which we will account for in the following; see the paper by Loredana Cerbara).

The period from 1909 to 1965 is twofold: during the first one, that lasts till his transfer from Padua to Rome, Gini was mainly engaged in innovating academic teaching, in developing research ideas and in broadening the role of statistics in the academia until it became an autonomous discipline and students could graduate in statistics.

It is worth saying that during the period he spent at Cagliari and Padua universities, statistics was taught as an autonomous discipline in few Italian universities and there was no faculty, nor institute of statistics at all in Italy. Moreover, statistics was at its very beginning as an academic discipline both in Europe and in North America, nothing to be compared with present statistics.

Gini began his academic career as adjunct professor at the age of 24 and after three years of probation he became full professor. He left Padua at the age of 41, but with the Great War in between. In the three years he stayed at Cagliari, he founded a statistical laboratory within the Law faculty, the first of its kind in Italy: in this laboratory, students could engage in research using a specific library and computational tools adequate at that time.

His foresight in teaching methods grew at Padua University: here he was able first to impose the kind of laboratory he had set up at Cagliari and then pave the way to create an Institute of Statistics with the clear aim of creating an autonomous academic institution for the teaching of statistics. This allowed, for the first time in Italy, statistics to be identified as a distinct body of courses among academic disciplines and the establishment of an institute to deliver degrees in statistical matter. Before, statistics was taught in other faculties, such as law or other social sciences. Gini himself graduated in law and approached statistics while writing his graduation thesis.

A second area to which Gini contributed during this first period was that of

statistical research. Before the age of 30, Gini had already written most of the innovative ideas for which he was and still is considered a forerunner. He had already published the inequality index, nowadays known simply as 'Gini index', his ideas on variability measures with variables on every measurement scale, the relationships among sample means, a measurement of distance between distributions (which he named 'transvariation'), the possible use of prior probabilities to corroborate statistical estimates in a Bayesian perspective, the meaning and the possible use of what is now called 'human capital' for measuring in a comparative way the wealth of nations, the cyclical evolution of nations from demographic and eugenic perspectives, and else.

For some of these topics he refined repeatedly his ideas, either spontaneously or reacting to criticisms of other researchers, but he wrote the basics of his ideas very early. His ideas on nations' evolution and correlated issues have had a controversial destiny also because they interacted with the social leaning of the political regime of these days and, for symmetric reasons, with that of the social and political trends following World War II. Though even now his ideas on that topic attract attention of researchers.

During the second period, from 1925 on, Gini struggled instead to create a national bureau of statistics, to identify statistics as an across-the-board discipline that all substantive disciplines should use for the analysis of their phenomena, and to diffuse and characterise the research of Italian statisticians through the international organisations of statisticians, that is to say, to highlight internationally the scientific contribution of the so-called 'Italian school' of statistics.

Most methodological issues raised by Gini stemmed from his reflection on to-be-solved measurement and analysis of human problems more than from the development of a general logic-mathematical function. In other words, he tried to solve substantive problems with methods, moving from the conjecture that statistics was the general method for all sciences development. In current academic terms, Gini can be considered an applied statistician, a researcher who, puzzled by a knowledge problem, is able to select an appropriate method from the existing ones and, if the available methodology is inadequate, to devise an innovative solution.

Gini recognises that mathematics is basic though instrumental to statistical solutions: mathematics helps finding a solution that is enough general to solve a class of problems. He used to say that statistics should answer to mankind's problems 'with as less mathematics as possible'. The relevance of mathematics for the solution of research problems was always present in Gini's mind, in fact, after his degree in law, he took the courses covering the first two years of mathematics.

The papers by Antonio Forcina and Benito Vittorio Frosini in this volume deal with the relationship that Gini sees between probability and statistical estimation

and inference. Both works refer to ratio between genders at birth, a topic which Gini started studying while writing his graduation thesis and which he progressively focused on, trying to find general laws. The first work moves from the intuitive concept of exchangeability between – that is to say, constant probability of – birth events and re-elaborates the results of Gini, who showed that the probability of having a male child in an enough large community, although varying from couple to couple, may be considered a phenomenon with constant parameters during a given period. Gini was fascinated by the fact that nature possesses self-regulating mechanisms that, although admitting individual or occasional variability, tend to follow time- and/or space-related statistical laws. He showed, for instance, that couples with an initial excess of boys were more likely to have a girl as next child, and vice versa for couples with an excess of girls.

Frosini interprets Gini's way of thinking about the relationship between probability and statistics and concludes he can be considered a forerunner of empirical Bayes concepts for statistical inference. In fact, Gini avoided to deal with the testing of simple hypotheses in the case of parametric spaces defined on intervals or planes and suggested that prior probabilities to estimate confidence intervals should be determined in an objective way, by analysing large sets of data as is common in demographic studies, and should not be chosen subjectively. Unfortunately, Bruno De Finetti was only five years old at the time Gini put forward this conjecture.

During his stay at the University of Padua there was the Great War, in Italy lasting more than three years. During and after the war, Gini showed his organisational and leadership skills: he was able to carry out surveys on a national scale, in very difficult contexts and with clear results. Among others, he organised a census of mass migrations due to war circumstances and a census of war damages in Italy.

The reputation he achieved in the academia and at the war ministry put him in such a top position that he was suddenly renowned nationally as an outstanding statistician. This and his signing of the 'Manifesto of intellectuals for Fascism' put him in high regard also of the Fascist government: Gini was asked to transfer his chair to Rome, where Mussolini was struggling with his partially failed experiment of establishing a national institute for official statistics. Before and after this experiment, official statistics was dispersed in various ministries, with different methodologies and with peculiar goals. Gini, as is well documented in Giuseppe Leti's paper, took part with Mussolini in the definition of the competences of statistical bodies, in the definition of the bill to be approved, as well as in the organisation of the new-born 'Istituto Centrale di Statistica', then ISTAT. In 1926 he became its first president.

Moreover, at the University of Rome, he founded a School of statistics at the

Faculty of Political Sciences in 1927. In 1936, the School became the first faculty of statistical disciplines in Italy (named *Facoltà di Scienze Statistiche, Demografiche ed Attuariali*, '*Faculty of Statistical, Demographic and Actuarial Sciences*') and Gini was its first dean. Gini was elected as dean of the Faculty several times up to 1954.

In Rome Gini founded also, we could say through an intermediary, the Italian Statistical Society and became its president a year after its establishment and until his death, with the exception of one year and a half from 1944 through 1946, when he was indicted in connection with the purge trial for his past as a fascist and suspended from academic service.

We can summarise Gini's activities in Rome as follows: almost all Italian statistics, both at the academic and institutional levels, revolved around Gini. We can however identify two time segments in that period, one from his arrival in Rome in 1925 till 1931 and a second from 1932 on. This fracture was determined between the end of 1931 and the first months of 1932 by his (forced) resignation from the presidency of Istat, due to an irreconcilable discordance with the Fascist regime and the ministerial bureaucracy caused by the insistence of Gini to concentrate all official statistics at Istat.

The period 1925-1931 was very intense: Gini could deploy his organisational ability, the strength of his personality, in particular his resolution to get a prearranged target and his annoyance with 'adaptive' and 'live and let live' attitudes, his moral priorities between science and politics, the former always coming first, and his strategic vision of statistics as the universal method to develop science. All these personality traits can be considered as positive aspects for a determined man but may be evaluated as negative traits from the perspective of people who conflict with the decisions taken to get the target. In fact, Gini had to face strong opposition from students not engaged with statistics, less efficient employees of the national statistical system, ministerial bureaucracy resistant to confer data to Istat, and, for various reasons, activists and the hierarchy of the Fascist Party.

Gini was characterised by a dominant and obtrusive personality. Only authorities above him could oppose him. He was a person to whom it was not easy to say no, someone seemingly insensitive to guilt. He was considered an authoritarian man, by some others even a dictator, because he used to put targets in front of his actions and did not admit exceptions. So, while he managed the national statistical system, he used merit instead of political sympathy as a criterion for career progress. And, while he aimed at concentrating all official statistics in a single institute with a common methodology, he had to fight with ministerial bureaucrats and ministries who were accustomed to create their own statistics, which were sometimes conflicting among themselves and sometimes 'too creative'. Even his

idea that statistics is a necessary tool for the advancement of science, which today is common belief, was fought in the academia. Also his will to assert that all statistical ideas are relevant, even those originated out of the dominant Anglo-Saxon school and in particular those of his 'Italian school', was a matter for criticism. His critics found the courage to complain about him whenever it was perceived that his authoritativeness was declining, others only after his death.

Gini created such a popping of ideas and activities that everybody at that time could notice it. Though, given the fact that most of his papers were in Italian and also the aversion that such a personality brought with it, many of his ideas have been forgotten or rejected internationally. This volume, representing in a circumstantial way Gini's public life, aims at highlighting his figure of innovator in university teaching, of imaginative and multidisciplinary scientist, of tireless promoter of statistics in the academy and society, of founder of associations of statisticians, demographers and sociologists and of painstaking protector of scientific roles in confront with political ones. Definitely, he was a figure who left indelible signs of his action.

During the period starting from 1932 and ending in June 1944, when the Allies occupied Rome, the relationship between Gini and the Fascist regime was more distant though not openly. His resignation from Istat presidency had upset Gini, even though he was invited to indicate his successor at Istat and allowed to maintain in his previous position the general director Alessandro Molinari (unpopular among fascists because he had been a socialist). Besides, from his resignation on, Gini's relations with the Fascist regime and Fascist ideology changed drastically. He was annoyed not only with the Fascist authorities but also with Mussolini who, six years after having called him to Rome to set up a national statistical system, a system that Gini was able to activate efficiently and effectively, did not defend him against bureaucrats and ministries who had openly taken position against the concentration of statistical activities at Istat. It is difficult to guess the reason why Mussolini, who had the same aim as Gini, 'suggested' him to resign. There are historical hints that help imagining how much Mussolini was tired of an untactful personality like Gini, incapable of mediation when statistics was the matter of concern. But there is room here for digging, as other hidden reasons may have played, but this overcomes the present volume's aims.

It is possible to guess that Gini's ideas toward Fascism changed after 1932 if we consider his attitude toward racial (anti-Jewish) laws of 1938. Even in this case, it is difficult to scout Gini's thought about this. To fully understand our meaning, we have to start from his absolute faith in a totalitarian state: in fact, he wrote in 1927 a paper on 'The scientific basis of Fascism' (*Political Science Quarterly*, 42-1) in which he identified Fascism as the only type of government apt to realise in an efficient way social and political targets of general interest. Moreover, he was

convinced of the necessity of eugenic policies to keep up a certain biological quality of a nation's population and this belief also converged with Fascist ideology. So, it is really difficult to understand why he effectively circumvented the racial laws not reporting about his Jewish collaborators, and, while other journals were purging Jews of the editorial and scientific boards, Gini discarded the whole board of *Metron* – of which he was the editor-in-chief – instead of targeting its Jewish members. Again the question is: was his behaviour a consequence of estranged political feelings toward Fascism or was it determined by the fact that his collaborators were above all 'his' or that they belonged to the class of 'statisticians' before being normal citizens? It is difficult to say.

What is easier to perceive from the analysis of Gini's life is that he was primarily coherent with himself. He possessed an irrefutable self-esteem that induced him to look always for a tailored destiny. After the fall of the Fascist regime, he did not become a communist like most of his collaborators. He tried an autonomous political pathway, writing articles and leaflets of anti-fascist propaganda in cooperation with the underground resistance front and then joining the Labour Democratic Party, an anti-fascist party led by Ivanoe Bonomi, Prime Minister of the Italian government from June 1944 to June 1945. He wrote an elaborate brochure supporting its program and ran as one of its candidates, without being elected to the Constitutional Assembly in 1946. The LD Party did not stand other elections after this one. This experience put an end to Gini's willingness to be a political protagonist.

Thus, Gini looks more like a technocrat able to interpret the needs of decision makers and suggest refined technical solutions to their queries than like a political diplomat able to interpret his times and suggest consequential strategies. For people opposing Gini's political ideas on an ideological basis, his 'technical' availability toward the Fascist regime is to be blamed even more severely than he would have been if he were a political actor. On the other hand, technocrats who possess a penetrating mentality consider the use of diplomacy toward the dominant power as a necessity, a price to pay in order to reach their own targets. We can examine, for instance, the need to improve the statistical literacy of public administration personnel. This need was present in the minds of both Mussolini (who was intimately convinced of the importance of statistics for public governance purposes) and Gini (who struggled in the academia to set up schools of political science for training students with statistics, demography and economic statistics and pushed to improve the level of statistical literacy of employees once he was president of Istat). We can ask: who was instrumental to whom? Any answer has exceptions. Our analysis of Gini's personality leads us to assume the same perspective as Anna Treves, that is '*Gini was a fascist as long as Fascism was Ginian*' (2002, *Le nascite*

*e la politica nell'Italia del Novecento*, LED, Milano).

In this volume, Mariella Nocenzi's paper presents the figure of Gini as a sociologist. In particular, she describes how Gini institutionalised sociology in Italian higher education, lectured in sociology from 1924, was one of the founders – and for long president – of the Institut International de Sociologie (IIS), favoured the start and was president of the *Società Italiana di Sociologia*, formerly the Italian section of IIS, and published in the *Revue Internationale de Sociologie*, the oldest of sociological journals. Against this context, Nocenzi highlights his and other scholars' social conservatism during and after Fascism, an issue that led many American and European sociologists to oppose the IIS and that led to its disappearance. Nevertheless, some of Gini's sociological ideas are still quoted nowadays by several authors.

Unluckily, the volume's editors have not been able to obtain an analogous contribution on Gini as an economist. This and much else could be useful for further exploration of Gini's contributions to other disciplines. More than an eminent statistician, Corrado Gini was indeed a true polymath. He wrote, in fact, more than 800 works – among which 87 monographs and essays, lessons and notes – that deal with topics that refer to many disciplinary fields.

Gini's multidisciplinary scientific approach made him a scholar able to contribute to a variety of substantive disciplines, from demography to economy, sociology and other social sciences. As had been said, he was a sort of Renaissance scholar, guided by an original *curiositas* about society. He was involved also in the study of natural sciences, such as biology interpreted from a eugenic perspective. But eugenics also served him to interpret the historical evolution of nations, so eugenics itself may be meant as a social science.

His scientific authoritativeness on these disciplines was well recognised by most scholars of his time, even at international level. In fact, he was appointed for leading positions of national and international associations of sociology, eugenics and quantitative economics. The (mail) correspondence between Gini and other Italian and foreign scholars was intense. It shows a scholar who used to deal with other renowned international scholars as peers. A sample of this correspondence is described in the Giorgio Marbach paper, whose source was Gini's file at the Italian State Central Archive (Archivio Centrale dello Stato).

The editors

Luigi Fabbris\* and Jean-Guy Prévost\*\*

---

\* University of Padua, Italy

\*\* Université du Québec à Montréal, Canada