

## RECALLING CAMILO DAGUM (\*)

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1. These words won't go over Camilo Dagum's work and life. This recollection would be structurally inadequate to the purpose. It is too short and, as it will become evident, incomplete. But there are also two further reasons. I want to avoid the rhetorical style typical of death notices, so far from Camilo's sobriety. Besides, on the occasion of the honorary degree in Statistics and Economics the University of Bologna conferred on him, in May 1988, exactly 18 years ago, two concise speeches outlined the main features of Camilo Dagum's scientific work.

I am referring to the penetrating nomination report by Italo Scardovi, at that time Dean of the Faculty, and to Camilo Dagum's doctoral lecture, where he outlined the fundamental trends of his research and placed them in his way of considering the connection between scientific explanation and consequences on actions.

The title of that lecture is emblematic and it is also a very terse synthesis of his research and life programme: "*Science and freedom*"<sup>1</sup>. The title is emblematic also because it contains an unusual and intriguing ambiguity. "*And*" linking science and freedom is a conjunction, but during the lecture Camilo quoted and commented the inscription by Giosuè Carducci, situated in the hall of this University as a memorial to the Bolognese students dead for Italy, which justifies the title. The inscription sounds different: "*Science is freedom*", where between science and freedom there is a verb, "*is*", an affirmation. Camilo Dagum thus commented: "*More explicitly, we can say that science accompanied by political and social responsibility contributes to the liberation of human beings and to their cultural and social accomplishment*"<sup>2</sup>.

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(\*) This is a marginally revised version of the speech I gave at the closing session of the *Giornata di studio dedicata a P. Fortunati e C. Dagum*, at the Faculty of Statistics of Bologna University, May 26<sup>th</sup>, 2006.

<sup>1</sup> Here and in the following, translation from Italian – the language that both Italo Scardovi and Camilo Dagum used in that occasion – is mine. The translation does not full justice to the similarity, and the contrast at the same time, between the two statements as they result in Italian: "*Scienza e libertà*" and "*Scienza è libertà*", with "*e*" conjunction opposed to "*è*" verb.

<sup>2</sup> Unless otherwise stated, also the following quotations are from that doctoral lecture of Camilo Dagum. Along with the nomination report by Italo Scardovi, it is published in UNIVERSITÀ DEGLI STUDI DI BOLOGNA - FACOLTÀ DI SCIENZE STATISTICHE DEMOGRAFICHE E ATTUARIALI, *Quattro lauree ad honorem*, Martello Editore, Milano, 1991, pp. 31-41.

2. Much has already been said about Camilo Dagum's scientific contributions, especially here in Bologna. Besides, starting from 1994 he was Professor at this University, where he kept on working for more than ten years, leaving deep and lasting marks of his activity. He brought here his wide network of scientific links; as a master and researcher he reinforced his relations with Italian scientists – in particular with Achille Lemmi, other colleagues from Siena and Guido Ferrari; he established new and beneficial scientific relations with other young researchers, above all with Michele Costa and Giorgio Vittadini. Other colleagues who cooperated with him could probably attest to his scientific activity better than I can. I will concentrate my comments only on the features of his many-sided but homogeneous and coherent work – as I will soon underline, which are closer to my research interests: those concerning the distribution of income and wealth, the measurement of inequality and poverty, the estimation of human capital.

Thus, I will leave aside Dagum's contributions in two other fields: economic theory and statistics – and broadly methodology of scientific research and philosophy of science. However, with reference to economic theory I cannot avoid at least mentioning his dissatisfaction with the neoclassical theory (his close criticism of the rational expectations hypothesis, in *Economies et Sociétés*, 1986, is notable). Perhaps even more important is his care in re-founding the economic thought: by paying attention to the factual economic process; by searching formulations able to give an account of the structures of economic behaviour, conditional on the technological and institutional framework, and of the process of structural change, and through this way to provide firm guidelines for the economic policy.

As for Camilo's methodological and epistemological contributions, I will simply quote a few lines from Italo Scardovi's nomination report, at the honorary degree ceremony: "*Camilo Dagum's scientific work distinguishes itself for the originality and completeness of methodological solutions, its wide and composite view of phenomena and problems, its logical and mathematical rigour, and for the continuous and difficult search for a syntactical and semantic connection between theory and reality, between abstraction and observation*".

As I will focus my attention only on some topics of Camilo Dagum's scientific work, I think it important to underline the unitariness of his research programme. Deep, not extrinsic connections link together his reflections on economic structures and dynamics, on the distribution of income, on the measurement of inequality. According to me this reflection has a common and triple pivot: analytical, methodological and ethical.

From the analytical point of view, Camilo Dagum's contribution centres on the income generating function, with its connections with the entire economic process – production and demand – and with its effects on the measures of inequality and poverty. (The best synthesis is probably the lecture he gave at Collège de France in memory of François Perroux, "*Fondements du bien-être social et décomposition des mesures d'inégalité dans la répartition du revenu*", published in *Economie Appliquée*, 1998.)

From the methodological point of view, Camilo Dagum's systematic care in combining observation and theory is the distinguishing mark of his thought, that

he loved to link to his great masters and friend economists – François Perroux and Maurice Allais, as well as to his statistical master Corrado Gini.

Camilo Dagum's ethical aim has its origins in his human and civil vicissitudes, but it is also an integral part of his thought and analytical developments. His definition of social welfare is evidence of this scientific dimension of ethics. It is far from the utilitarian doctrine, and therefore it includes interpersonal comparisons of utility (difficult as they may be) and it is extended to the consideration of the structural changes that the utility functions undergo when income inequality exceeds a level considered acceptable by society. Furthermore, Camilo Dagum's ethical and civil aim expresses itself in some fundamental principles regarding the mission of the scientist, to which I will refer at the end of this paper. These principles, as Camilo himself underlined, "*are an indissoluble part of my scientific activity and of my view of humanity*".

3. Please do not criticize me if the scanty reflections on Camilo Dagum's contribution to the study of income distribution and measures of inequality will be accompanied by some mentions of common events, defined by Camilo as "*scientific and personal anecdotes that unfortunately the history of sciences not always can keep record*"<sup>3</sup>. This choice is not suggested by an autobiographical affectation, but by the imperious vividness of the recollection of scientific conversations, as well as of days spent in friendship.

4. I personally met Camilo Dagum in 1986, in Bari, on the occasion of the Scientific Meeting of the Italian Statistical Society. I was Chairman of the Programme Committee. The programme brought innovations into the choice of the topics, format of the meeting, international perspective. We had decided to devote one of the plenary sessions to the distribution of income and poverty – the title of the session was "*The distribution of income and wealth: measurement problems, inequality dynamics, effects of social policy*". We had chosen as a speaker Giuseppe Carbonaro, distinguished researcher and member of the National Commission on Poverty, to which he had given his contribution by elaborating the equivalence scale still in use. I also invited Camilo Dagum as a discussant; he accepted my invitation immediately, with willingness and pleasure. He was asked to speak and discuss about topics at the centre of his scientific reflection: during the 1980s he gave decisive contributions to the income generating function, to measures of income distribution and inequality within and between distributions. Those subjects linked him directly to some Italian statisticians: firstly to Corrado Gini, whose school in Rome he had attended in 1956-57. His short discussion of Carbonaro's paper – for a total length of five pages – is exemplary, and successfully concentrates his fundamental points of view and some of his main scientific contributions.

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<sup>3</sup> C. DAGUM, *School and society*, in UNIVERSITÀ DEGLI STUDI DI NAPOLI "PARTHENOPE" - DIPARTIMENTO DI STATISTICA E MATEMATICA PER LA RICERCA ECONOMICA, *Cerimonia di conferimento delle lauree ad honorem in 'Statistica per la gestione aziendale' ai professori Estela Bee Dagum e Camilo Dagum*, Napoli, 2005, p. 41.

5. Our meeting in Bari and the hours spent together were the basis for an intellectual and human friendship which increased during the years. Our scientific interests were in part close, but they did not coincide: that is the reason why we never wrote papers together, while we discussed about our respective researches at length. Interpolating once again his words, I can affirm that we were also linked by the same way of considering the “*responsibility of intellectuals towards society*”, by the need of connecting “*scientific explanations [...] to the consequences on actions*”; that was not for an ideological apriorism nor for an urgency of operation, but for the firm belief in the validity of scientific analyses and their “*social mandate [...] at the service of human freedom*”.

6. I saw him again three years later. I was on sabbatical at the University of Wisconsin-Madison with my wife and our son Stefano. We visited the Dagums in Ottawa in March 1989, when a bright but harsh winter was turning into spring. There were some academic commitments: a seminar and workshops at Statistics Canada – his wife Estela had acted as intermediary; a seminar at the Department of Economics of Ottawa University, where Camilo taught, followed by a lively convivial meeting with some colleagues. The wonderful hospitality in their beautiful house and some days of relaxing and warm friendship were unforgettable too.

I remember above all two moments of those days. Camilo had received from Michele Zenga the far-seeing proposal of a full-professorship appointment at Milan University and he was considering it with great interest. We spent an evening examining the forms he should have filled in and reading the instructions attached. I helped him to translate, or better to understand everything; he knew Italian well, but we were facing a difficult variant, the *burocratese* – the slang of the Italian bureaucrats. We got at the heart of the matter and discussed about the reasons for and against leaving Ottawa University and, above all, the country where he was living, characterized by tranquillity and well-ordered development, for an important Italian University. I think that in his heart he had already decided to accept the proposal.

I also remember a trip to Parc de la Gatineau to see their *casa de campo* (it sounded a bit odd, and evocative at the same time, that they kept on using their native language to refer to that typical and lonely wood cottage in the cold Canadian forest, where they used to spend their holidays), or better to catch sight of it from about fifty metres, as there was too much snow to reach it.

I met him again during conferences, seminars. We met also at least twice just for the friendship that united us – the last time in Venice, at the beginning of June 2002.

7. Camilo Dagum has left a fundamental scientific heritage regarding the distribution of income, the link between social welfare functions (in their not strictly utilitarian version) and measures of income inequality, the measurement poverty. If we read some of his essays we can notice their intact actuality: in *Economie Appliquée* (1979, 1980 and 1998), *Econometrica* (1980), *Journal of Econometrics* (1990). His scientific legacy is vital for two reasons: firstly for the numerous and original con-

tributions to these subjects – I will soon mention them, and perhaps even more for the coherence and systematic nature of the context where these contributions are placed. They form an consistent corpus of reflections, a theory empirically founded on the distribution of income and on economic inequalities.

Dagum put forward and generalized models of income distribution (known as Type I, II and III), which include the best known models proposed by literature and enable their clear interpretation.

He placed an inter-income inequality measure, clearly and rigorously representing the structure of inequality between populations with different mean income, side by side with intra-income inequality measures concerning inequality within a population of income receivers.

He integrated the two measures, enabling Gini's index to be decomposed and thus putting an end to the debate over its apparent non-decomposability.

Through a fundamental equation he also proved that, given a mean income, there is a dual relationship between social welfare functions and measures of income inequality. On this basis he developed a close criticism of the strictly utilitarian version of the social welfare functions (based on the assumptions of separability, additivity and identity of all the individual utility functions), in favour of functions allowing interpersonal comparisons of utility.

Above all during the last fifteen years, when his presence in Italy became regular and his cooperation with young Italian researchers more intensive (but precedents can be found in some essays written as early as in the 1970s), Camilo Dagum turned his attention to two further subjects: the measurement of poverty and the estimation of human capital.

Both trends of research interlace typically scientific interests with policy concerns. The development of multivariate measures of poverty enables the identification of the main causes of poverty, thus offering essential information to the policy maker to combat poverty by means of structural socio-economic policies.

The aim of a satisfactory estimate of human capital in monetary terms, both at an individual and national – or anyway aggregate – level, finds a convincing motivation in the fact that the lack of a robust estimation method is a considerable obstacle for the economic theory of production, distribution of income – both functional and personal, inequality and poverty. On the other hand, Camilo Dagum's interest for human capital comes from his awareness that the role of this capital is fundamental to give birth to lasting and equitable processes of economic growth. The estimation of human capital is a difficult, still open question. The estimation strategy outlined by Camilo Dagum (proposed in *Journal of Structural Change and Economic Dynamics*, 2000, together with Daniel Slottje, and developed with Costa, Vittadini and Lovaglio) is innovative and promising, and it distinguishes itself as it combines an actuarial evaluation method with the treatment of the individual human capital as a latent variable.

8. Few people have been constantly interested in achieving the reconciliation between scholarship and commitment better than Camilo Dagum did. His ambition still confers a peculiar power of attraction to his life and work, in particular

referring to traditions that set up, according to me unjustly, one against the other these two existential dimensions of a person worthy of being called intellectual. Camilo Dagum's care to achieve this reconciliation was very difficult, and in some circumstances dramatic. In 1966, actually, as a forty-year-old Dean of the Economics Faculty of Cordoba University, he experienced the pressure of dictatorship and had to leave the country in the name of his fidelity to freedom and democracy.

The international scientific community welcomed him with open arms. He worked as a professor for several Universities and assumed scientific directorships: Princeton University from 1966 to 1968; Université de Paris in 1968-69; National University of Mexico in 1969-70 (where he was appointed Chairman of the Division of Graduate Studies in Economics); Iowa University from 1970 to 1972; Ottawa University from 1972 to 1991 (when he was appointed Emeritus Professor); Milan University from 1991 to 1994; Bologna University, starting from 1994, where he went on collaborating even after his retirement, until few months before his death.

Camilo Dagum's scientific prestige, his devotion to teaching and research, his affinity and friendship with researchers of great value – such as Oscar Morgenstern, François Perroux, Maurice Allais, Herman Wold, Nicholas Georgescu-Roegen, Italo Scardovi – eased his introduction into various universities and different countries. Ottawa became a second homeland for him, and Bologna a third.

But no country can really or only be a *homeland* for a man who is obliged to leave his motherland at the height of his scientific maturity and academic responsibilities, under the pressure of a fierce dictatorship. It can also be, partly, its opposite: an *exile*.

Camilo and Estela Dagum did not experience the condition of mortification and bitter dependence portrayed by Dante as an exile in a tercet of his Paradise: “*You are to know the bitter taste of others' bread, how salt it is, / and know how hard a path it is for one / who goes descending and ascending others' stairs*”<sup>4</sup>. Thanks to their scientific capacities, Camilo and Estela were welcomed by prestigious institutions and they became important people in all the countries that gave them hospitality.

Anyway, the exile they experienced left deep and indelible scars, as I sensed when we met for the last time in May 2005. We were in Siena, at Pontignano Carthusian Monastery, on the occasion of the *International Conference in Memory of Two Eminent Social Scientists: Corrado Gini and Max Lorenz*. During a lunch break we were under the colonnade of the Monastery: Camilo and Estela introduced me to a group of Argentinian friends and researchers. I sensed a solidarity which came not only from the same language, but which was also based on common experiences, also characterized by danger, hardship and loss, and belonging only to them.

This history of dangers and losses also explains Camilo Dagum's way of combining scholarship and commitment. He never associated his teaching and re-

<sup>4</sup> “*Tu proverai sì come sa di sale / lo pane altrui, e come è duro calle / lo scendere e 'l salir per l'altrui scale*” (DANTE ALIGHIERI, *La Divina Commedia*, Paradiso, XVII, 58-60).

search activity to a real political commitment, that, as he was an exile, would have been in conflict with inevitable restrictions. But he seasoned his teaching and his researches with two fundamental ingredients. The first was his distance from all schools of thought, his refusal of ideological prisons, in the name of that “*theoretical empiricism*”<sup>5</sup> that took him to an incessant and tough confrontation between scientific hypotheses and empirical evidence. The second was his constant concern to develop the scientific research, especially in the fields of income distribution, inequality and poverty, in the light of a principle of social equity. That principle came from his criticism of the measures of social welfare centred on strictly utilitarian assumptions, and hinged on a theory of the stochastic dominance founded on the specification of “*a clear and workable concept of inequality aversion (less intra-income inequality) and poverty aversion (higher mean income)*”<sup>6</sup>.

Camilo’s separation from Argentina probably explains his choice, followed by Estela’s, to leave Canada, where they had lived for twenty years with great professional satisfactions and fully integrated in that society, to undertake, at the beginning of the 1990s, their migration to the Italian universities and above all to Italy and Europe: to a “world” that Camilo considered closer to him for its language, but in particular for its culture and civilization.

9. For all these reasons and many others we are all grateful to Camilo Dagum. The scientific community, students, many other men and women thank him for his fundamental scientific contributions; his dedicated activity as a professor and master; his incessant proposition of four fundamental principles at the very heart of economy and social sciences: “*economic efficiency, [...] social justice, [...] freedom, [...] preservation of mankind and of his habitat*”. For Camilo those principles were at the same time independent, meaning that none of them can be derived from the others, and interdependent, complementary. We also thank him for his loyalty to those principles all his life long.

For all these reasons, Camilo, today each of us thanks, honours and remembers you. In the name of those present today and of many other colleagues and friends, I want to say aloud, as you used to greet a friend or to write at the end of a letter: “*With a strong hug*”.

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<sup>5</sup> C. DAGUM, *Statistica ed economia: riflessioni ontologiche, metodologiche ed epistemologiche*, in UNIVERSITÀ DEGLI STUDI DI SIENA - DIPARTIMENTO DI METODO QUANTITATIVI, *Conferenze di statistica nell'anno del 750° anniversario dell'Università degli Studi di Siena*, Nuova Immagine, Siena, 1994, pp. 35-54. The paper is an effective compendium of Camilo Dagum’s methodological and epistemological perspective.

<sup>6</sup> C. DAGUM, *Sessione plenaria sul tema 'La distribuzione del reddito e della ricchezza: problemi di misura, dinamica delle disuguaglianze, effetti delle politiche sociali'. Discussione*, in SOCIETÀ ITALIANA DI STATISTICA, *Atti della XXXIII Riunione Scientifica. Bari, 28-30 aprile 1986, Volume terzo*, Cacucci Editore, Bari, pp. 12-16.

## RIASSUNTO

*Ricordando Camilo Dagum*

L'articolo ripercorre le linee essenziali del contributo scientifico ed etico di Camilo Dagum. In particolare sottolinea la generosità del grande studioso, che si è sempre riflessa nelle Sue relazioni personali e professionali.

## SUMMARY

*Recalling Camilo Dagum*

The paper goes over the fundamental lines of the scientific and ethical contribution of Camilo Dagum. Particularly it underlines the social and human nobility of this great scientist which characterized His personal and professional way of life.