Introduction to the “Symposium on Social Networks and Peer Effects: In Memory of Antoni Calvó-Armengol”

By Matthew O. Jackson and Xavier Vives, Co-editors of the Symposium.

The world lost an outstanding economist and individual on November 3, 2007, when Antoni (“Toni”) Calvó-Armengol unexpectedly passed away at the age of 37. This special issue is in memory of Toni.

Toni’s numerous contributions to the understanding of social networks and peer effects in economics had quickly made it clear that he was one of the leading economic theorists of his generation. His research was inspired by important instances of social interactions, such as understanding the incentives for individuals to engage in criminal behavior, or how the transmission of information about jobs through social networks affects employment patterns, wages, and education. For example, his paper “Who’s Who in Networks: Wanted the Key Player”, with Coralio Ballester and Yves Zenou, provided a new and powerful model of how strategic complementarities among people connected in a network impacts their behaviors including criminal activity levels, and shows how their behavior can be understood through measures of centrality and influence. This model has already become an important building block in the literature, as made clear by the fact that two of the papers in this volume are based on it. Toni made extensive contributions to modeling job contact networks, including an important paper “Job Contact Networks” which provided insight into how the job finding process relates to network structure and how that influences agents’ incentives to form and maintain relationships. His paper “The Effects of Social Networks on Employment and Inequality”, with Matthew Jackson, showed how observations about unemployment patterns and persistent inequality across different groups could be better understood by noting that the spread of job information through social networks leads to systematic correlations in employment of path-connected individuals, resulting in spatial and time series correlations, and complementarities in education investment decisions. Through these and other contributions Toni’s research made clear that putting economic interactions in a social context could lead to new and important insights about economic decisions and outcomes.

The leading paper on this volume is an innovative piece by Sergiu Hart and Andreu Mas-Colell (Toni’s dissertation Advisor). The second author partly based his European Economic Association Presidential Address in 2006 on this paper. The authors present a new view of bargaining in the context of a multi-stage game form, where agents have the ability to commit to various threats. This not only provides new insights on standard cooperative game theory solutions when utility is transferable, but also provides new perspectives on bargaining, allocations and trades when utilities are not transferable, such as in the world of pure exchange economies.

The Sergiu Hart and Andreu Mas-Colell paper has a special connection to Toni, through Andreu Mas-Colell’s role as Toni’s advisor, and is also related through Toni’s respect for
foundational research. The other papers of this special issue also involve authors with personal connections and admiration for Toni; and in addition they are directly related to Toni’s own research program. In fact, the two next papers in this volume are ones that Toni was working on at the time of his death.

Toni’s paper, “Delinquent Networks”, with Coralio Ballester and Yves Zenou, is one of the papers building on the model from the “Key Player” paper shows that in order to have a maximal impact, enforcement against delinquent behavior can be targeted at specific agents and groups of agents who hold influential positions in the social network. They also develop a very interesting and novel analysis that integrates this delinquency network into a setting where agents can become honest and join the labor market. The analysis shows how changes in outside wages influence how optimal enforcement relates to the structure of the social network.

Toni’s paper “Peer Pressure”, with Matthew Jackson, presents a new model of the incentives of individuals to try to influence each other by exerting pressure. This examines the many situations where agents care about the choices of others, including simple decisions like whether to smoke, to attend a concert together, to engage in criminal activity, to become educated, and so forth. Agents can influence each other’s behavior through various acts such as subsidizing an action by helping pay a cost, or badgering another agent and making it costly not to take an action via various threats. The interesting aspect is that pressure can help correct problems associated with externalities, as pressure can force an agent to account for the preferences of others. Calvó-Armengol and Jackson examine when it is that such pressure turns out to be beneficial, and more generally who gains and who loses from peer pressure.

Beyond these papers that directly involved Toni as an author, there are papers in the volume that build closely on his research. For example, the paper “Keeping up with the neighbors: social interaction in a market economy” by Christian Ghiglino and Sanjeev Goyal, is based on a model that incorporates features from the “Key Player” paper. Ghiglino and Goyal examine an exchange economy where agents care about the level of their consumption relative to that of other agents. The authors show how prices, trades and consumption relate to network characteristics, and again how social centrality and influence measures play a critical role in understanding the economic outcomes. Using these insights they are able to identify some interesting price effects. For instance, increasing integration among the rich and the poor hurt the poor while helping the rich as prices for the consumption-externality good react to the integration, as due to price and externality effects that result from the agents’ inter-dependent preferences.

Also included in this volume are a series of papers that closely relate to one of the central themes of Toni’s research: the interplay between the way in which people in a society are organized and their behavior.

The paper by Stephen Leider, Markus Mobius, Tanya Rosenblat, and Quoc-Anh Do provides new evidence as to how social distance affects altruism based on an innovative
field experiment. They examine a variation of dictator games where agents have a choice of how much of a given pie to allocate to a second agent. The researchers examine an allocator’s decision as a function of who the second agent is. In particular, they get a baseline altruism measure by examining how the allocator has performed in a case where they are making an allocation to a randomly selected stranger. Next, based on social network information, they examine the social distance between the allocator and the recipient. An interesting finding is that an econometrician using these two pieces of information and some demographics can make a better prediction about an allocator’s choice than the allocator’s direct friends.

Dilip Mookherjee, Stefan Napel, and Debraj Ray examine another area of social interaction and behavior that Toni had written about: education decisions. In particular, Mookherjee, Napel and Ray study a model of overlapping generations where parents’ decisions about whether to educate their children are affected by their neighbors’ decisions, due to local complementarities that could be attributed to local forms of externalities, such as complementarities in investments, learning, aspirations and the like. The new feature relative to a local externality story is that there are society-wide effects that come from equilibrium wages. The geographic structure allows them to study how the equilibrium education decisions vary with segregation and the interplay between wages and local externalities.

The paper “Peer effects and peer avoidance: the diffusion of behavior in coevolving networks”, by Constanza Fosco, Matteo Marsili, and Fernando Vega-Redondo, relates to the general theme of Toni’s research involving peer effects. The interesting interaction effect that Fosco, Marsili, and Vega-Redondo study is how peer effects operate in a setting where agents change their relationships in ways that depend on the actions that are being played. Players can choose either “good” or “bad” actions. The authors examine dynamics where agents change both their actions and relationships over time. Links among agents both playing the good action last longer than links with agents playing the bad action. This can help the society sustain good behavior, and provides a nice intuitive explanation of how co-evolution of social relationships and behavior can shape behavior.

The paper by Marcel Fafchamps, Sanjeev Goyal, and Marco van der Leij also relates to social structure’s influence on behavior. They study data on the network of coauthorship relations among economists of a couple of decades. They demonstrate a strong proximity effect: researchers who are closer in the existing social network are much more likely to collaborate together than researchers who are further away from each other at a given point in time. Fafchamps, Goyal and van der Leij examine an explanation for this based on social ties transmitting reputations and other information about potential collaborators.

William Brock and Steven Durlauf close the volume by examining how the presence of social interaction can be tested for in examining adoption curves in the diffusion of products and technology. Identifying social effects in diffusion is challenging since there are competing explanations: social interactions affect an agent’s incentives to adopt as a function of the number of agents who have previously adopted, however patterns of correlation in adoption might also be attributed to correlations in some (unobserved)
characteristics of the agents. The authors examine how feedback effects that are present in social interaction result in jumps in the fraction of agents adopting over time, as well as “reversals” where agents go against their characteristics due to social effects. These effects can help distinguish the presence of social interactions from other influences on adoption, and so the paper provides some new foundations for testing for social effects.

**A short bio of Antoni Calvó-Armengol and some highlights**

Toni was born in 1970, in Les Escaldes-Engordany, in the Principality of Andorra. Toni earned engineering degrees from the École Nationale des Ponts et Chaussés, the Ecole Polytechnique, and the Universidad Politécnica de Madrid. He then went to earn PhD degrees in economics from the Universitat Pompeu Fabra and CERAS-ENPC (The European Doctoral Program) in 2000. He then held positions at Universidad Carlos III de Madrid, the Universitat Pompeu Fabra, the Universitat Autònoma de Barcelona and the Université des Sciences Sociales de Toulouse. Toni served on the editorial boards of several journals including the Journal of the European Economic Association, the Review of Economic Studies, the Journal of Economic Theory and the Spanish Economic Review. His research was recognized through such honors as an ICREA senior research professorship and the Young Economist Award of the European Economic Association, as well as numerous grants.

Throughout his life, Toni was a dedicated Andorran citizen, and he served as ambassador to Portugal for many years, and more recently as ambassador to Switzerland. Andorra was never far from his thoughts, and it even inspired an article that he wrote with Antonio Cabrales and Matthew Jackson about the amazing efficiency in risk-sharing properties exhibited by a simple traditional mutual fire insurance scheme used in the mountains of Andorra, called “La Crema” by the locals.

Family always played the central role in Toni’s life, and he is survived by his wife Goretti, his sons Yann and Tomas, as well as his parents and his sister Silvia.

The following paragraphs provide some impressions of different aspects of Toni’s contributions.

**Antoni Calvó-Armengol as a student**

As a student at UPF Toni displayed unusual determination, combined with maturity, broad culture, generosity to his pairs and intelligence. He was the rare student that makes you feel inadequate in trying to direct his research. One week he was ignorant of a topic, by the next he had focused on it and read the essential, two more and he was teaching you. And it all seemed effortless.

*Andreu Mas-Colell*

**Antoni Calvó-Armengol as colleague**
Toni was my colleague at UAB. His intense presence changed our Department's life. He brought in new horizons, through his wide and deep views on economics and the social sciences, and through his rapidly increasing network of co-authors and intellectual connections. He quietly challenged routines, by simply not wasting time in superfluous activities, while efficiently performing all his social duties, and being generous with his time for any worthy cause. He was a guiding light for the young, and a new conscience for us seniors. He was the future.

Salvador Barbera

Antoni Calvó-Armengol as a friend and co-author

Toni was our friend and co-author. He was generous with his time and ideas. He shared with us his incredibly original mind, as well as his large skills and analytical ability. He would pick up on whatever topic we would think of, sometimes far away from his current line of research, and we could then develop together new interesting research projects. His curiosity and creativity generated synergies that allowed us to write papers far removed from our respective research areas. He achieved inspiration from the unlikeliest sources, and saw connections between seemingly disconnected topics. We will immensely miss his energy, intelligence, creativity, and, above all, his friendship.

Antonio Cabrales and Yves Zenou

Antoni Calvó-Armengol as a mentor and colleague

Eighteen months since Toni left us. And counting. We had the privilege to be his student and colleague, talking to him almost every day. Whether about research (his, ours or that of others), literature, politics, art, family and Andorra (impossible for him to hide his pride about these two latter, always occupying a prominent place in his always ordered office), the conversations with him were always enlightening. Generosity was his second nature, with the office door always wide open. He was a superb mentor, empathic and with a contagious passion for scientific research, enriching us much beyond academic life. Eighteen months without his energy and his loud voice. Eighteen months missing his friendship. But also eighteen months living with an intense feeling: the pride of having met an extraordinary person. And counting.

Joan de Marti and Guillaume Haeringer

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Selected Publications of Antoni Calvó-Armengol:


