TNIT newsletter

Toulouse Network for Information Technology

Number 1 - July 2009

Content:

Welcome

We are very proud to present this first newsletter of the Toulouse Network for Information Technology (TNIT). The TNIT was created in 2005; it is funded by Microsoft and managed by the IDEI. Funded by Microsoft, because they realized that there was not enough good quality independent research bearing on the inner workings and on the consequences for society of the explosive progress in the treatment and transmission of information that we have witnessed in the last 20 years, since the creation of the Internet. Managed by the IDEI, which, created in 1990 by Jean-Jacques Laffont, is as old as the Internet and has from the start been dedicated to the idea that attention to the "real world" is crucial to good economic research.

This Newsletter will evolve over time; it will bear witness to the richness of the research done by the members of the network, and, we hope, be both instructive and entertaining. Please tell us what you liked, what you did not like and what you missed.

Jacques Crémer

The Toulouse Network for Information Technology (TNIT) is a research network funded by Microsoft and managed by the Institut d'Economie Industrielle. It aims at stimulating world-class research in the Economics of Information Technology, Intellectual Property, Software Security, Liability, and Related Topics.

All the opinions expressed in this newsletter are the personal opinions of the persons who express them, and do not necessarily reflect the opinions of Microsoft, the IDEI or any other institution.

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INSTITUT D'ÉCONOMIE INDUSTRIELLE

Toulouse School of Economics

Interview with **Daron Acemoglu**

Biologists say there is more competition within species than between species. This is why few economists feel threatened by Daron: For most of us, the essence of our research boils down to a small number of breakthroughs, which cost us much pain. But Daron does these things for breakfast. One might believe that to reach such a level, one has to spend all one's time writing papers; but Daron has also read virtually all of them, and produces a constant flow of outstanding Ph.Ds. Furthermore, while the price to be paid for remaining in the intellectual stratosphere is usually to turn into a complete bore, this is not the case for Daron who is great fun to be with at the dinner table. His research interests are without limits, which explains why our team in Toulouse is delighted to have this winner of the John Bates Clark medal in our research network on information technologies.

Gilles Saint-Paul, *Toulouse School of Economics and IDEI*

TNIT: You have an extremely diversified and busy research agenda, which ranges from political economy to development to macroeconomics through labor markets and theory. How do you see the study of Information Technology fitting among all these different interests?

D.A.: My interest in political economy, economic development, economic growth and innovation are all related. They all emanate from the question that got me into economics more than 20 years ago: "Why do some societies achieve continued economic growth, while others fail? "A complete answer to this question still eludes me, but my and others' work over the years has convinced me that useful approaches and perspectives to these issues must be based on two pillars: political economy and innovation. Innovation and introduction of new technologies have been the engine of economic growth for US and West European economies for over two centuries.

Political economy is part of the story because it provides us with answers to why this has been possible in the US and Western Europe, but strenuously resisted in other parts of the world. Information technology is not only the most important example of a radical innovation that has transformed production processes, the labor market, the product market and international trade, but it also provides us with a major platform for the new generation of technologies, ranging from biotech to green technologies, from better service delivery to further improvements in communication technologies to make the world even smaller. I therefore see the study of information technology as an integral part of my intellectual quest.

TNIT: You have recently been working on social networks. Do you believe that the explosion of Internet based social networks, à la Facebook or Twitter, helps or hinders the transmission of quality information? Any hint on open topics in this area?

D.A.: Social networks, their formation, dynamics and evolution, are absolutely fascinating. They provide us with a glimpse of one possible model of future economic transactions. But most importantly, everything we do in society, in our individual choices and in our collective and political choices, relies on information, and social networks are conduits of information. Understanding how dispersed and diverse information on varied topics aggregates and evolves over social networks is as fascinating as it is important. Facebook and Twitter are just two examples of a more general phenomenon: the greater fluidity of information exchanges over social networks.

Although existing evidence suggests that social networks have not become much denser (most people now communicate via Facebook with the same friends that they would have communicated with using different mediums in the past), the frequency of interaction has increased. The direct effect of this on information aggregation is positive: information will reach each individual faster. But the indirect effect can be negative and is perhaps more powerful than the direct effect.

Each individual may make up their mind on a given topic (private matters, quality of products, political and social issues) on the basis of communication with their closest friends rather than waiting for more diverse information from news sources and other "weaker" social links (and this might also reduce the market for traditional news sources, certainly an aspect of the decline of print media as we are currently experiencing).

So at some level, the more fluid model of communication spearheaded by Facebook and Twitter may increase "herding" within pockets of our society and ultimately lead to less successful information aggregation and more disagreement between different pockets.

Much of the previous paragraph is based on conjectures and preliminary results. Systematic theoretical analysis, statistical empirical work and survey work on how different social groups communicate using these different mediums are all open and exciting research areas.

TNIT: What priority do you believe governments of developing countries should give to investments in Information Technology? What is your favorite project in this respect?

D.A.: Information technology is also becoming more important for developing countries for several reasons. First, it will ultimately play a similar role as a platform for further technology development and adoption in these countries. Second, transfer of new technologies, traditional or otherwise, from the world frontier now requires a

developing nation to have reached a certain threshold in information technology. Third, information technology provides a means of developing nation citizens to bypass the inefficiencies of service delivery as in the case of cell phones, and perhaps as in the potentially emerging model for health care delivery. Finally, information technology may also play an important role in the political economy for developing nations because it will remove the monopoly of information that was produced in the hands of authoritarian governments or monopolistic media sources.
In this light, the two projects that I think are most promising are: the continued non-profit and for-profit investments in cell phones in developing nations, which are enabling developing nation citizens to bypass traditional wireline technologies and the bureaucratic barriers, and the non-profit projects for providing a PC for every child around the world.

TNIT: Finally, a few fun questions. Any blog / online journal which you regularly read?
D.A.: New York Times online. A fantastic source of information and commentary. Unfortunately, no time for reading blogs...

TNIT: To which newsfeed are you subscribed?
D.A.: New York Times and the Economist.

TNIT: Just quickly respond to the following 'opposites': LATEX or Scientific Word?
D.A.: Both. Why would you want to choose one :-)

TNIT: Apple, Vista or Linux?
D.A.: None of the above. Microsoft Windows XP. I intend to stick to it until Microsoft comes up with a better product than Vista.

TNIT: Outlook or gmail?
D.A.: Neither. Mozilla Thunderbird.

TNIT: Touch Type or Secretary?
D.A.: Neither. Dragon NaturallySpeaking voice recognition. But I would be dead without my wonderful assistant.

TNIT: JSTOR or paper copies in library?
D.A.:JSTOR for journals. But definitely books in the library.

TNIT: GPS or map?
D.A.: Both. They are complements, not substitutes.

TNIT: Coffee or mineral water?
D.A.: Definitely coffee. Academia is hard without it.

TNIT: Facebook or paper post cards?
D.A.: Unfortunately neither. My social skills need work.

TNIT: Twitter or not?
D.A.: Not.

TNIT: Thank you very much for this interview!

Essential readings in the economics of search advertising suggested by **Susan Athey**

- **Two essential papers that launched the theoretical literature on search advertising are:**

[1] Edelman, Benjamin, Michael Ostrovsky and Michael Schwartz (2007). **Internet Advertising and the Generalized Second Price Auction: Selling Billions of Dollars Worth of Keywords.** American Economic Review, 97(1), 242-259. doi:.1257/aer.97.1.242

[2] Varian, Hal R. (2007). **Position Auctions.** International Journal of Industrial Organization,
25: 1163–1178. doi:10.1016/j.ijindorg.2006.10.002
Each of these papers develop theoretical analyses of the "generalized second-price" (GSP) auction, the mechanism used by major search engines to sell online advertising.

- **Other papers to read:**

[3] Agarwal, Nikhil, Susan Athey and David Yang (2009). **Skewed Bidding in Pay Per Action Auctions for Online Advertising,** American Economic Review, 99(2): 441-447. doi:.1257/aer.99.2.441
Looks at incentive problems that arise in pay per action advertising auctions.

[4] Edelman, Benjamin, and Michael Ostrovsky (2007). **Strategic Bidder Behavior in Sponsored Search Auctions.** Journal of Decision Support Systems, 43(1): 192-198. doi:10.1016/j.dss.2006.08.008
Presents evidence of strategic dynamic bidder behavior in first-price online advertising auctions used historically by Overture.

[5] Lahai, Sebastien and David M. Pennock (2007). **Revenue Analysis of a Family of Ranking Rules for Keyword Auctions.** ACM Conference on Electronic Commerce. 50-56.
Looks at tradeoffs between efficiency and revenue extraction in setting reserve prices in search advertising auctions

[6] Varian, Hal R. (2009). **Online Ad Auctions.** AER Papers and Proceedings, 99(2): 430–34. doi:.1257/aer.99.2.430
A short summary of how online ad auctions work, plus a technique to estimate the value they create for advertisers

- **Working papers:**

[7] Athey, Susan and Glenn Ellison (2008). **Position Auctions with Consumer Search.**
Examines the design of search advertising auctions when consumers' search process is endogenous and consumer clicking behavior responds to consumer beliefs about advertisement quality.

Susan Athey

[8] Athey, Susan and Denis Nekipelov (2009). **Equilibrium and Uncertainty in Sponsored Search Advertising Auctions.**
Estimates a structural model of advertiser bidding in sponsored search advertising auctions and examines counterfactual equilibrium predictions.

[9] Borgers, Tilman, Ingemar Cox, Martin Pesendorfer, and Vaclav Petricek (2006). Equilibrium Bids in Sponsored Search Auctions: Theory and Evidence.
An empirical analysis of the search advertising auctions used historically by Overture.

[10] Edelman, Benjamin, and Michael Schwarz (2006). Optimal Auction Design in a Multi-unit Environment: The Case of Sponsored Search Auctions.
Characterizes the optimal (revenue maximizing) reserve pricing strategy for sponsored search advertising.

[11] Segal, Ilya and Przemyslaw Jeziorski (2009). What Makes them Click: Empirical Analysis of Consumer Demand for Internet Search Advertising.
Estimate a structural model of consumer demand for sponsored-search advertising using a dataset from Microsoft's Live AdCenter on the DVD distributed in the "Beyond Search" initiative.

[12] Yao, Song and Carl F. Mela (2008). A Dynamic Model of Sponsored Search Advertising.
Estimates a structural model of consumer demand and advertiser bidding behavior on a sponsored search advertising platform using a first-price auction pricing rule.

Announcements:

- TNIT yearly meeting Stanford University, September 23-24, 2009

- SIEPR Conference on Online Services Stanford University, September 24-25, 2009

The yearly meeting of the TNIT will take place in Stanford on September 23 and 24. The first day will be reserved for communications internal to the network, but the second day will be held jointly with the first day of an SIEPR conference on Online Services. This conference, open by invitation only, will bring together leading economists and other researchers working on topics related to the provision of online services: advertising, search, the media, security and privacy, marketplaces and reputation mechanisms, social networks.
Hal Varian, Jeremy Bulow, Paul Milgrom, Ali Hortacsu, Michael Schwarz, David Reiley, Matt Gentzkow, and Jesse Shapiro have already confirmed their participation.

For more information concerning the conference you can contact:
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