TNIT newsletter

Toulouse Network for Information Technology

Number 2 - October 2009

Content:

Welcome

This is the second issue of the TNIT newsletter, which, like the first, was edited by Jacques Crémer and Astrid Hopfensitz. It contains an interview of Glenn Ellison and a reading list on antitrust issues in network industries drawn up by Mike Whinston.

The IDEI has a long tradition of frontier research on telecommunications , the media and software industries and the Internet (our web site http://idei.fr will provide you with more information). When Microsoft asked the Institute to run the TNIT, we felt that this was a good complement to our own activities in the domain: we are excited to encourage other scholars to do research on the Internet and Software industries. And the main aim of this newsletter is to advertize their work. However, we also feel that you might enjoy reading about the research done at the Institute. This is why we have asked our colleague Bruno Jullien to inaugurate a new column "How, why, when, who, what?" With his co-author Andrei Hagiu, of the Harvard Business School, they explain why some web sites are purposely made confusing.

We hope you enjoy reading this newsletter, and hope that you will send us comments, suggestions, and contributions.

Patrick Rey
Director IDEI

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.

http://idei.fr/tnit/index.html

INSTITUT D'ÉCONOMIE INDUSTRIELLE

Toulouse School of Economics

Interview with **Glenn Ellison**

Glenn Ellison is Professor of Economics at MIT, and to present him, there is nothing like letting his CV speak: "Current research interests include theoretical and empirical topics in game theory and industrial organization; in particular, learning, large population and spatial models, e-commerce, mutual funds, pharmaceuticals, network externalities, the location of industries, and academic publishing." What this does not say is that Glenn has made breakthrough contributions in and continues to publish extensively in all these areas; that his publications are remarkably diverse methodologically, ranging from empirical investigation to high theory; that he has a distinguished record of service to the economics profession, in particular as editor of the Rand Journal of Economics and Econometrica, and to his department (of which he is currently associate department head) ; and that he is a great teacher! We are very happy that he has been a member of the TNIT since its creation.

Jacques CREMER, *Toulouse School of Economics and IDEI*

TNIT: Your latest paper in Econometrica, co-written with Sara Ellison, deals with electronic market places. Yet, we remember you saying, when you edited Econometrica, that you were surprised at how many papers you received on auctions and how few on Walmart, given their relative importance for the economy. Do we spot a contradiction there?

G.E.: Wow, that's a tough question. I have to say I'd assumed this would be a puff piece … But no, I don't think I'm hypocritical on this. … I do still think Walmart deserves more attention than it gets in our profession. It's remarkable to have two million employees in a single company. … But e-commerce is really important too. Online sales are already about one-third of Walmart's sales. Given how big Walmart is, this makes e-commerce an important part of the economy too. And just counting online revenue vastly understates the impact of the Internet. You see statistics saying things like 95% of car purchasers do some research online even though the ultimate purchase is almost always offline.

Within e-commerce, the particular paper you mention is studying a small and quite atypical online marketplace. But I won't apologize for this. Many of the most important studies in empirical IO have examined atypical environments and I think this is not a coincidence. In my view, industrial organization is an inherently theoretical field. Many questions we need to address are often one-time questions. We can't be like labor or development economists and compare what happened in the years following the previous 100 times when two satellite radio companies were or were not allowed to merge. We need to have a set of theoretical models we can apply. Empirical work should play an important role in helping us improve our modeling. Which of the many effects theorists have identified are important and which are not? Are there other more important factors that we should be modeling? To gain such insights, it's often a good idea to study atypical environments. There are two reasons for this. First, many real-world environments are very complex. It's easier to do a thorough study if you pick an atypically simple environment. The retailers we study, for example, essentially just buy big boxes of computer parts from a wholesaler, put them in individual-sized cardboard boxes, and mail them. This makes it atypically easy to correctly account for costs. Second, if you're trying to learn about some factor, it's advantageous to find an atypical environment where that factor is unusually important. In our case, we were trying to learn about search costs, so it was useful to study an environment where there was hardly any product differentiation. This makes demand patterns and markups as affected as possible by search costs.

TNIT: Actually, we have really liked the paper, but one interpretation would be that the same type of trickery that we find in traditional markets can be found in electronic markets - we would have expected them to be more transparent. What is your overall feeling about the consequences of the Internet for the efficiency of market places?

G.E.: I certainly think the Internet is making markets more efficient. I remember what it was like when you had to call each airline separately on the phone or go out to the travel agent's office and hope there wasn't a long line.

But the point of our article was to argue that the Internet probably won't make markets as transparent as people had hoped. The Internet is a great consumer search tool. But it's a multipurpose tool and firms will also harness it to make search more difficult. We call this obfuscation. In some cases the Internet makes obfuscation a lot easier – it used to be cost effective for firms to employ a used-car salesman if they were selling something really expensive like a car, whereas now you just pay a fixed cost to design a website that runs consumers through a long sales pitch and the server will deliver it at almost no cost. In other cases, the Internet isn't directly facilitating the obfuscation, but is still relevant because of the role it's played in reshaping the market. For

example, I think the ease of online price search is one factor that's leading airlines to adopt extra fees for snacks, checked luggage, etc.

TNIT: Many online markets use reputation systems of buyers and sellers. What do you think about these? What are their problems and how could they be improved? Do you think that they could have attenuated the "obfuscation" you describe?

G.E.: I think online reputation systems are useful, but it's difficult to get them to work well. Many sites with consumer comments don't get large volumes of comments. It's hard to know whether the 0.1% of people who left comments had experiences that were at all representative and they're also prone to abuse by merchants who can leave fake feedback on themselves (or rivals). Systems that generate more feedback more frequently might seem better, but can be really cluttered in a world where disreputable merchants still deliver 95% of the time. In two-sided settings like eBay it's also hard to get people to give accurate negative feedback because there's the fear of retaliation.

In the markets we studied consumers could have looked up ratings separately on independent ratings sites, but I think few did. I don't know that it would have made much difference if the ratings had been easier to access. In theory, yes consumers probably would have been more likely to click on a firm's link if there was feedback saying "This firm is honest, has an easy-to-use website, and doesn't spend a lot of time making you sit through automated sales pitches pushing add-ons." But if a retailer actually behaved this well, then it probably couldn't have made a profit at the prices you saw on Pricewatch. So in practice, there wouldn't have been any firms with that feedback and things probably would have worked out similarly.

TNIT: In collaboration with Susan Athey, you also have done work recently on position auctions. What are the big issues there?

G.E.: The sale of "sponsored-link" advertising on search engines is becoming very important. It's made Google a $150 billion dollar company and continues to grow as other forms of advertising are suffering. At the broadest level the goal of our work is to develop a complete model of sponsored-link advertising – we'd like to understand how the business works, to see what economics has to say about how search engines should want to design their sponsored-link auctions, and to see what insights we can get on how the incentives of search engines are and are not aligned with what is best for consumers and advertisers.

Our work in this area came after we saw previous papers on the topic which had developed an elegant analysis of the "position-auction" sales mechanism. The primary thing that we wanted to add to this literature was to incorporate that the sponsored-link positions are not just generic "objects" that are being auctioned. They're advertisements and being a sponsored link only has value if consumers believe that sponsored links are sufficiently likely to be of interest to make clicking on them worthwhile.

The most basic conclusion of our paper is that the reason why this business works so well is that the winners of a well-designed position auction are generally the advertisers who have the most to offer consumers, which makes consumers want to click on the links. Our auction analysis is mostly showing that the elegant analysis of the previous papers carries over fairly directly to our more complete model. The fun part then comes in when we talk about auction design. There are a number of new effects in our model that make optimal auction designs very different from what they'd be if you were auctioning generic "objects". But the basic principles behind auction design in our model turn out to be pretty easy to understand and we can give lots of advice.

TNIT: Some personal and fun questions. When buying electronics for yourself. What do you rely on: online pricecrawler, your usual electronics dealer or advice from friends and family?

G.E.: I read online reviews to try to figure out what I want. What happens next depends on who's doing the buying. If it's my wife, she pretty much always buys from Amazon. I may do this too, but am also open to buying from firms, even ones I've never heard of, to get a better price.

TNIT: Just quickly respond to the following opposites.
Getting rid of unwanted presents: ebay or yard sale?

G.E.: Neither. Our house has a big basement and it's full of stuff that we've meant to get rid of one way or the other but have never gotten around to selling.

TNIT: Facebook, LinkedIn or address book?

G.E.: I have a Facebook page, but don't use it much. Not on Linked In. So I guess address book.

TNIT: Touch Type or Secretary?

G.E.: Touch type.

TNIT: JSTOR or paper copies in library

G.E.: I love browsing through journals. But I rarely have time for browsing these days. So it's almost always JSTOR.

TNIT: coffee or mineral water?

G.E.: Don't drink coffee, so mineral water. I have been known to have a Coke Zero in the morning though.

TNIT: Twitter or not?

G.E.: Not

TNIT: LaTeX or Scientific Word?

G.E.: LaTex. I hate the way Scientific Workplace rewrites LaTex code and try to forbid my coauthors from using it.

TNIT: Thank you very much for this interview.

news

"Exclusivity, Contingent Control Rights, and the Design of Internet Portal Alliances" by Dan Elfenbein and TNIT member Josh Lerner has been accepted for publication in the **Journal of Law, Economics and Organization**.

The paper can be found at:
http://www.people.hbs.edu/jlerner/PortalExclusivityContingencies.pdf

TNIT Readings on Antitrust in High Tech Industries by **Michael Whinston**

High-tech industries have characteristics that distinguish them from their "low-tech" counterparts. Most noticeably, they often have network effects and/or switching costs, and, of course, innovation is a central feature of competition in these industries. This guide includes background readings on the economic implications of these features, and readings focused more specifically on antitrust policy in such industries.

- **Background readings on the economics of switching costs and network externalities:**

  Farrell, J. and P. Klemperer (2007), ***"Coordination and Lock-in: Competition with Switching Costs and Network Externalities,"*** Chapter 31 in M. Armstrong and R. Porter, eds., Handbook of Industrial Organization, vol. 3, Amsterdam: Elsevier.

  J.-C. Rochet, and J. Tirole (2006), ***"Two-sided Markets: A Progress Report,"*** RAND Journal of Economics 37: 645-67.

  Armstrong, M. (2006), ***"Competition in Two-sided Markets,"*** RAND Journal of Economics 37: 668-91.

  The first article summarizes much of what is known theoretically about the economics of switching costs and basic network externalities. The next two articles, which appeared in a symposium in the Autumn 2006 issue of the RAND Journal (which also contained some other interesting articles), are excellent introductions to the recent literature on two-sided markets, industries in which network externalities exist across various complementary user groups who require access to a platform in order to interact.

- **Background readings on the theory of innovation:**

  Reinganum, J. (1989), ***"The Timing of Innovation: Research, Development, and Diffusion,"*** Chapter 14 in R. Schmalensee and R.D. Willig, Handbook of Industrial Organization, vol. 1, Amsterdam: Elsevier.

  Aghion, P. and P. Howitt (1992), ***"A Model of Growth Through Creative Destruction,"*** Econometrica 60: 323-52.

  The first of these papers surveys work prior to 1990 on the theory of innovation. The second is one of the seminal papers looking at models of continuing innovation.

- **Background readings on the economics of foreclosure:**

  Rey, P. and J. Tirole (2007), ***"A Primer on Foreclosure,"*** Chapter 33 in M. Armstrong and R. Porter, eds., Handbook of Industrial Organization, vol. 3, Amsterdam: Elsevier.

  Whinston, M.D. (2006), ***Lectures on Antitrust Economics,*** Cambridge, MA: MIT Press. (Chapter 4)

  These two readings provide discussions (not focused on high-tech industries per se) of the economics of foreclosure through practices such as exclusive dealing, tying, and vertical mergers.

- **Readings focusing on antitrust issues arising in such industries:**

  Shapiro, C. (1996), ***"Antitrust in Network Industries,"*** speech available on the web at: http://justice.gov/atr/public/speeches/0593.pdf

  Armstrong, M. (2007), ***"Two-sided Markets: Economic Theory and Policy Implications,"*** in J.P. Choi, ed., Recent Developments in Antitrust, Cambridge, MA: MIT Press.

  Rochet, J.-C. and J. Tirole (2008), ***"Competition Policy in Two-sided Markets, with a Special Emphasis on Payment Cards,"*** Chapter 15 in P. Buccirossi, ed., Handbook of Antitrust Economics, Cambridge, MA: MIT Press.

  Armstrong, M. and J. Wright (2007), ***"Two-sided Markets, Competitive Bottlenecks, and Exclusive Contracts"***, Economic Theory 32: 353-80.

  Rysman, M. (2007), ***"The Empirics of Antitrust in Two-Sided Markets,"*** Competition Policy International.

  The first reading is a speech given by Carl Shapiro, who was then (as he is now) chief economist at the DOJ. The next two readings provide somewhat more policy-oriented discussions of two-sided markets based on the two background articles by these authors that I have cited above. The fourth discusses the effect of exclusive contracting in such markets. The fifth reading discusses possible uses of empirical work in antitrust analysis of two-sided markets.

  Schmalensee, R. (2000), ***"Antitrust Issues in Schumpeterian Industries,"*** American Economic Review Papers and Proceedings 90: 192-6

  Segal, I. and M.D. Whinston (2007), ***"Antitrust in Innovative Industries,"*** American Economic Review 97: 1703-30.

  These two readings focus on antitrust in winner-take-most (or all) markets in which innovation is a critical feature of competition.

  Gilbert, R.J. (2007), ***"Competition Policy for Intellectual Property,"*** Chapter 14 in P. Buccirossi, ed., Handbook of Antitrust Economics, Cambridge, MA: MIT Press.

  Vickers, J. (2009), ***"Competition Policy and Property Rights,"*** working paper.

  These two readings discuss the interface between intellectual property protection and antitrust.

  Finally, much has been written on the most important antitrust case involving a high-tech industry, U.S. v. Microsoft. A starting point is the symposium in the Spring 2001 issue of the Journal of Economic Perspectives.

WHY are websites sometimes so confusing?

by Andrei Hagiu and Bruno Jullien

Do you sometimes get the feeling that Internet portals, search pages, social networks, e-commerce and other websites are not necessarily designed in order to maximize user convenience and benefits? We do too. Why – you might ask? For a fundamentally similar reason to the one that some retail stores place the most popular items (e.g. bread, milk) in the furthest possible place from the entrance; that shopping malls seem designed in order to make sure you get lost at every single visit and that popular magazines drown the content they carry in a sea of advertising with no clear table of contents and split stories.

Indeed, all of these intermediaries are in the business of matching consumers with products. Trouble is, prior to visiting an intermediary, consumers are interested only in some products, which may not necessarily be the ones that yield the highest margins for the intermediary. If the latter was offering a perfect information service (i.e. one that enabled consumers to find what they want most quickly and efficiently), it would be losing valuable potential revenues. Hence the incentive to attract users with products that they want a priori and then divert them towards products that they might be interested in ex-post (i.e. once there).

Thus, consumers coming to the supermarket to buy daily staples (say, bread and milk) might be induced to also get expensive chocolate if they have to walk past the corresponding aisle anyway. Shoppers visiting a mall for its anchor store (say, Macy's) may decide to stop by a small design store while walking around the mall. And while flipping through the pages of a magazine in search of the article promised on the cover, readers are exposed to advertising, which produces most of the revenues.

In the same way, Google faces a subtle issue in designing its search result pages: consumers are mostly interested in the "objective" (i.e. middle) search results, but all revenues come from the sponsored search ads on the right hand side. The result is a compromise between what users want and what produces more revenues. For any given search, the 11th objective search result might be more relevant than any of the sponsored search results displayed on the right; yet it will be displayed on the second search page only – well beyond the reach of most users.

Most e-commerce sites nowadays (e.g. Amazon, iTunes, Netflix) use recommendation systems to suggest to each individual user products or content which might interest him/her, as inferred from their past behavior or the behavior of users with similar profiles. How much should you trust those recommendations? Not entirely, of course: while consistently irrelevant recommendations would eventually drive people away, the sites have an incentive to steer users to the products that yield them the highest margins – which may not always coincide with the ones that best correspond to users' preferences.

So how bad is this apparently insidious form of "search diversion"? (It started in the brick-and-mortar world but the digital economy provides many more subtle ways to divert search). Well, it may appear that users lose whereas some vendors (and the intermediaries) benefit, but in a world without perfectly efficient search, potentially valuable product-consumer matches might go unrealized. Thus, enabling those matches through search diversion may, to a certain extent, provide a net benefit to society. Turns out, there are benefits which go beyond that. A recent and thought-provoking Science article* shows that as library search has gotten vastly more efficient with the advent of digitized libraries and online search tools, the depth of scientific research has suffered. Scholars in a variety of fields tend to reference fewer articles and cast a narrower net when conducting their background research. The old, inefficient search method, which relied on index cards and inevitably entailed flipping through pages of not necessarily relevant journals, had the benefit of exposing scientists to a wider range of ideas, which could potentially also widen the scope of their research. This kind of serendipity can turn out to be a vastly more valuable consequence of search diversion than stumbling upon new products at the supermarket or while browsing aimlessly through Amazon.com.

Andrei Hagiu *is Assistant Professor at the Harvard Business School and* **Bruno Jullien** *is a senior researcher at the Toulouse School of Economics.* *Their article is based on their joint paper* ***"Why do intermediaries divert search?"*** *which can be found here :*

http://www.people.hbs.edu/ahagiu/Hagiu%20Jullien%20revision%2002122009%20HBS

* For a summary see: **www.roughtype.com/archives/2008/01/rewiring_the_mi.php**