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Hardly over a year ago, Suzanne and Steve, her companion, were concluding a six-month stay in Toulouse. Suzanne was her usual self, enthusiastic about anything and everything: her morning jogs along the Garonne, the latest papers she had read or listened to, the quality of the food, the conversation at dinner parties, the memories of her childhood in Alaska. A few months later she warned us that she was sick and very shortly after Steve wrote to tell us that she had died. It still does not make sense that someone so alive should be gone so fast. The only thing we can do is speak about her, remember the good times that we shared, and smile.

Suzanne began her career moving south from her birth state: undergraduate studies at the University of Washington in Seattle, Masters and PhD in Berkeley. She was an Assistant Professor at Harvard from 1981 to 1986, before returning to Berkeley where she spent the rest of her career holding appointments in economics, public policy and law. The first time I met her was during a seminar which she was giving, the focus of which was on her earlier research on club theory; I remember how impressed I was - there were not many women economists working on pure theory at that time! She did substantial work on the topic, in particular developing its links with urban economics. But she quickly turned to Intellectual Property issues, the topic of her most important and influential contributions - her first paper in this area was written jointly with Jerry Green and published in 1990 in *The Rand Journal of Economics*.

Much of her work was co-authored with some of her numerous friends. In this group, I would like to claim a place of honor as one of the most prolific "nearly co-author" of Suzanne. In the 1990's we begun having discussions about the use of optimal contract theory to think about patents - the pressure of other obligations forced me to bail out of the project. In 2013, while she was in Toulouse, we begun thinking (and, to be totally honest, progressing very slowly) about the problem that firms face when searching for patents which they might be infringing. One of the difficulties of working with Suzanne was that it was too much fun to discuss with her, exchange ideas and go on tangents, and hard to go back to the task of focusing on one issue.

We also remember Suzanne as a good friend of TSE. She was a member of and a very active participant to the Scientific Council of TSE, and what she proposed was influential in several of the changes which we have put in place in recent years. She was also a member of the TNIT from its creation in 2005 to 2012.

In this issue of the TNIT newsletter, Daron Acemoglu and Josh Lerner give us two perspectives on Suzanne's intellectual influence. Josh explains why her influence was so important - the theoretical work that she did changed not only the questions that we asked, but also the public policies that we have been recommended. Daron looks at her work through the lens of the macroeconomic literature, and points out areas where this literature could draw inspiration from her work. We hope that you enjoy them.

Jacques Crémer



Jacques Crémer

The Toulouse Network for Information Technology (TNIT) is a research network funded by Microsoft and managed by the Institut d'Économie 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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Suzanne's papers in previous TNIT Newsletters

- *March 2010:*
www.idei.fr/tnit/newsletter_1003.pdf
- *May 2012:*
www.idei.fr/tnit/newsletter_1205.pdf
- *July 2012:*
www.idei.fr/tnit/newsletter_1207.pdf
- *January 2013:*
www.idei.fr/tnit/newsletter_1301.pdf

For more information about the network or this newsletter, please feel free to contact us here:



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Micro innovation lessons for macro models: on Suzanne Scotchmer's Legacy

by *Daron Acemoglou*

*Elizabeth and James Killian Professor of Economics
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[More about D. Acemoglou](#) 



Suzanne Scotchmer's untimely departure has deprived the economics community from one of its deepest thinkers on issues of innovation. Innovation has become a staple of most graduate programs both in industrial organization and economic growth courses, and for good reason. It is now generally agreed that our economic prosperity owes much to innovations and technological progress, and the rapid advances in information and communications technology, the medical field, nanotechnology, and robotics over the last several decades have further fueled the interest in the economics of innovation.

The typical approach in economic growth focuses on the macro picture, investigating the aggregate determinants of the pace (and sometimes the direction) of technological change and its implications. It has proved rather convenient for the theories of economic growth - as well as for many industrial organization models - to take a bare-bones representation of the "technology of technology creation". Starting with the work of Paul Kennedy in the 1960s, economists have specified various different types of "innovation possibilities frontiers" which designate how the economy produces new innovations or ideas. In Kennedy's work the innovation possibilities frontier specified a trade-off between different types of innovations (for example, those augmenting labor and capital). In the subsequent endogenous growth literature, pioneered by Paul Romer, Philippe Aghion, Peter Howitt, Gene Grossman and Elhanan Helpman, it specified how resources (in the form of expenditure or labor) translate into new innovations or ideas.

Though this macro approach to innovation has proved both fruitful and highly tractable, there is something unsatisfactory about it. Where is human creativity? Where is the notion that what is scarce are good and path-breaking ideas? Where is the uncertainty inevitably facing individual innovators and firms toiling to invent a new product or machine? Where is the difference between a production process where the output is known and understood in advance and an innovation process defined by the very fact that the outcome is unknown before the innovation becomes reality?

These questions motivated many aspects of Suzanne's research. Starting with her seminal papers on the design of intellectual property and the optimality of the patent system (in particular, her two RAND Journal of Economics papers with Jerry Green, "Novelty and Disclosure in Patent Law" in 1990 and "On the Division of Profit in Sequential Innovation" in 1995, and her solo RAND Journal of Economics paper, "On the Optimality of the Patent System" in 1999), Suzanne attempted to deepen our understanding on the microeconomics of innovation, where the focus is squarely on innovation at the product or the process level and on the creativity and the choices of individual innovators and inventors - even if Suzanne eschewed, probably rightly, that distinction between innovators and inventors.

There is still much for us to learn from the micro approach that Suzanne so expertly exemplified. Let me illustrate this with two examples.

The first one is on creative destruction and business stealing effect

in endogenous technological change models. It is well known that the canonical endogenous technological change models based on creative destruction - the process by which new firms build on and replace the technologies of other firms - feature a business stealing effect, and as a result, can lead to excessive innovation. Intuitively, when a firm innovates, it not only benefits from the incremental value that its new product or process creates, but also from the fact that it will replace the previous product's monopoly. In essence, the new innovator is "stealing" the business and profits of the previous monopoly. This may increase the incentives for innovation above what is socially optimal. Suzanne's work on the microeconomics of cumulative innovations, for example, another one of her seminal RAND Journal of Economics papers, "Patenting Early Innovators: Should Second-Generation Products Be Patentable?" in 1996, delved deeper into these issues.

The question Suzanne confronted can be posed thus: if new innovations build (and replace) the previous leading technologies, then why aren't they infringing the patents and intellectual property rights of the older technologies? In other words, the arrangement assumed in endogenous technological change models, where leading technologies have sufficient intellectual property right protection to be effective monopolists but no protection against further innovations building on them, is neither natural from the perspective of patent law nor optimal from an economic point of view. If innovations are protected against future advances building on them, then the business stealing effect can be neutralized, while still enabling the process of cumulative innovation where new ideas build on the shoulders of giants. Though the patent system dealing with cumulative innovations is far from optimal in practice (to say the least!), Suzanne's perspective also illustrates why the intellectual property rights arrangements underpinning a very influential class of macro models of innovations need to be questioned and probed further.

The second topic the economic growth literature should take more seriously is related to the importance of creativity emphasized in Suzanne's masterful book *Innovation and Incentives* and taken up in some of her recent work. The question relates to whether the macro approach building on the innovation possibilities frontier is making us blind to certain important features of innovation and creativity - and thus leaving us astray in modeling and conceptualizing innovation.

Though Suzanne was surely right that descriptive realism was not the forte of macro models of innovation, the jury is still out on whether they led to an unduly narrow conceptualization of innovation. As our focus shifts to more micro determinants of the nature of innovation, Suzanne's micro approach might nonetheless turn out to be increasingly more fruitful. Suppose, for example, that the success of innovation efforts and the type of new innovations that an organization undertakes depend on who the chief executive in charge is and also on the power of middle managers who may be able to derail certain projects to protect their divisions or advance their own new products. If these issues become more central to our thinking about innovations (and organizations), as they probably should, modeling creativity, the scarcity and competition of ideas, innovation effort and innovation success more explicitly at the level of individual choices and projects may become increasingly more important and more fruitful than black-boxing the technology of innovation.

In these and other areas, though it is hard to forecast how the innovation literature will advance, there is little doubt that we will have ample opportunity to learn from Suzanne's work and build on her shoulders.



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Suzanne Scotchmer's contributions to the understanding of intellectual property rights

by *Josh Lerner*

[More about J. Lerner](#)



Harvard University and National Bureau of Economic Research



One of the most enduring areas of Suzanne Scotchmer's contributions to economics related to the study of intellectual property. She reigned for several decades as one of the most pre-eminent theorists working on this critically important topic.

It is worth emphasizing the importance of this area before turning to a discussion of her work. Since the work of Abramowitz and Solow in the 1950s, there has been a widespread consensus among economists that growth - a topic of critical interest to all of us, given how nations across the globe are grappling with the need for job creation and increased economic vitality - is critically linked to technological innovation. Intellectual property protection, particularly patents, can serve as a spur to the development and diffusion of new technologies. But increasing evidence suggests that many of the reforms to the intellectual property undertaken in the name of spurring innovation and growth have often actually been counterproductive.

Prior to Suzanne's work, the overwhelming majority of the economics literature had focused on a setting where incentives had a uni-directional effect on innovation: the stronger the protection offered, the greater the spur to innovation and the higher the social welfare. This assumption was standard in the articles on intellectual property in the major general interest and field journals. This assumption also motivated policymakers: for instance, in the debate about patent reform 35 years ago, both Jimmy Carter and Ronald Reagan - two men who agreed upon very little - articulated the argument that stronger patent protection would lead to more innovation.

Suzanne's work, beginning with Green and Scotchmer [1990 and 1995], and continuing with Scotchmer [1996] and O'Donoghue, Scotchmer and Thisse [1998], exploded the assumption. In particular, the work forced economists to realize that while broad patent

rights may provide some encouragement to the initial innovator, it is likely to discourage follow-on innovations by competitors. As a result, stronger protection for inventions may actually have the perverse consequence of reducing innovation. This critical insight has spurred a variety of follow-on work, by Suzanne and co-authors (for instance, in works distinguishing between different forms of patent breadth and their consequences for innovation), and by many other economists and legal scholars.

It is also worth noting the real world impact of these ideas. In the recent debates over patent reform in Congress, the concept of the deleterious effects of excessive patent scope has been very much on legislators' minds. Suzanne helped ensure the translation of her ideas into practice, whether through serving on National Academy of Sciences panels, consulting with the U.S. Department of Justice Anti-trust Division, and even serving as a scholar in residence at the U.S. Court of Appeals for the Federal Circuit.

Having made these important discoveries early in her career, Suzanne continued to "push the envelope" in the last 15 years of her life, challenging our assumptions about the nature of intellectual property systems. Particularly striking is her 1999 article on patent renewals - which highlighted how the presence of renewal fees for patent awards, which economists had paid little serious attention to, could actually play an important screening mechanism - and 2001 article with Mark Schankerman, which explored the critically important question of how to optimally punish patent infringers. Her book, *"Innovation and Incentives"*, also represented an important synthesis of work by herself and her co-authors.

In short, Suzanne's contributions to the economics of intellectual property were manifold, and she will be sorely missed.

WHO

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[More about M. Gentzkow](#) ↓



on Matthew Gentzkow

Richard O. Ryan Professor of Economics and Neubauer Family Faculty Fellow at the University of Chicago Booth School of Business.

Congratulations to Matthew Gentzkow, the American Economic Association's John Bates Clark young economist award, earlier this year.

Congratulations to Matthew Gentzkow, the American Economic Association's John Bates Clark young economist award, earlier this year. Matthew, was honored for his contribution to "understanding of the economic forces driving the creation of media products, the changing nature and role of media in the digital environment, and the effect of media on education and civic engagement," as stated on the AEA website. They also describe him as a productive young economist who applies frontier methods in empirics and theory to an important set of questions. He has been a pioneer in the area of media economics, defining questions appropriate to the changing media landscape.

More info on the John Bates Clark Medal

The John Bates Clark Medal was awarded biennially from 1947-2009 to that American economist under the age of forty who is judged to have made the most significant contribution to economic thought and knowledge. Since 2010, the Clark Medal is awarded annually and the winner is announced in the month of April.

Further reading:

[AEA official announcement](#) ↓



TNIT yearly meeting at Microsoft Research (Cambridge, Massachusetts), October 3-4, 2014

The yearly meeting of the TNIT will take place in Cambridge, MA on October 3 and 4. This conference, open by invitation only, will bring together the members of the TNIT and other researchers working on topics related to information technology, intellectual property, and innovation.



For more information concerning the conference you can contact: Priyanka.talim@tse-fr.eu

Eighth bi-annual conference on:

The Economics of Intellectual Property, Software and the Internet

Toulouse, January 8-9, 2015



➔ **THE OBJECTIVE OF THE CONFERENCE**, co-sponsored by the Institut D'Economie Industrielle and Toulouse School of Economics, and organized by Jacques Crémer and Paul Seabright, is to discuss recent academic contributions to the economics of Intellectual Property, and of the Software and Internet Industries, whether theoretical, econometric, experimental or policy oriented. (The program of past conferences can be found at <http://bit.ly/SYAuvT>.)

➔ **TOPICS TO BE COVERED** include (*this list is suggestive and not exhaustive*):

- The industrial organization of the software and internet industries: changes in the competitive landscape, regulation and antitrust, the demand for software and for internet services.
- The effect of IT and of the Internet on economic organization: Internet advertising, new technologies of information and the organization of firms, E-Commerce, including jurisdictional issues/taxation and competitive strategies, cloud computing.
- Intellectual property in digital goods: patents, copyright, standards and the joint management of intellectual property rights.
- Access to information: gatekeepers (search, media, etc.), privacy, cybercriminality, Freedom of information and the rights of citizens.

Papers dealing with emerging policy issues (for instance, taxation, privacy) are especially welcome.

➔ **PROSPECTIVE PARTICIPANTS** are invited to pre-register and/or to submit papers by sending an e-mail to: softint@tse-fr.eu

Papers should be received by 30 September 2014 (abstracts will be considered, but papers are more likely to be accepted). A decision will be made by 15 October 2014.

➔ **REGISTRATION FEES:** €250 (includes lunches, conference dinner and coffee breaks). Waived for speakers and discussants, special rates for certain other attendees.

FURTHER INFORMATION is available on the conference web page, and more specific information will be sent to those who have pre-registered. Travel on the basis of economy class, accommodation and local expenses will be provided for speakers and discussants. For further information contact the conference secretariat:

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