The Science of Economics & The Economics of Science

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THE SCIENCE OF ECONOMICS & THE ECONOMICS OF SCIENCE

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Mijnheer de rector magnificus,
Leden van het College van Bestuur,
Collegae-hoogleraren en andere leden van de universitaire gemeenschap,
Beste familieleden en vrienden,
Zeer gewaardeerde toehoorders,

Vanwege de aanwezigheid van buitenlandse gasten, door mijn langdurige verblijf in de Verenigde Staten en in het kader van de profilering van de Radboud Universiteit Nijmegen als een internationaal opererende universiteit, hetgeen de keuze van "Redboed" wellicht wat problematisch maakt, maar dat terzijde, houd ik mijn oratie in het Engels, waarvoor excuses aan de Nederlandstaligen onder u. Let me switch to English, then, after these apologies to the Dutch speakers amongst you.

You may have spent the last few weeks eagerly reading the newspapers and watching the news on television to learn about this year's recipients of the Nobel Prizes in physics, chemistry, physiology/medicine, literature, peace, and economics. If you have indeed done so, you may have noticed that the award in economics is referred to as the Nobel *Memorial* Prize. In fact, there is no Nobel Prize in economics, at least not officially. The will of Swedish chemist, inventor, and industrialist Alfred Nobel specified that most of his fortune be set aside to establish a fund for the awarding of five annual prizes in physics, chemistry, physiology/medicine, literature, and peace "to those who, during the preceding year, shall have conferred the greatest benefit on mankind."[1] The first honors were presented on 10 December 1901, the fifth anniversary of Nobel's death.[2] The prize properly entitled the Bank of Sweden Prize in Economics in Memory of Alfred Nobel was established in 1968 to commemorate the founding of the Swedish central bank three centuries before, and to recognize the gradual maturation of the discipline of economics.[3] Of special interest to the Dutch among you, the first Economics Prize was awarded to Ragnar Frisch of Norway and Jan Tinbergen of the Netherlands "for having developed and applied models for the analysis of economic processes." During his banquet speech, Tinbergen thanked the Royal Swedish Academy of Sciences in the name of all economists, for giving their discipline the appearance of a grown-up science.[4] I will turn to this observation in the section of my lecture on "The Science of Economics," but before doing so I would like to share two stories, also by way of introducing the other section of my lecture on "The Economics of Science."

The first story concerns Nobel Laureate Robert Lucas and relates to "The Science of Economics." In 1995, the Royal Swedish Academy of Sciences awarded the Bank of Sweden Prize in Economic Sciences in Memory of Alfred Nobel to Robert Lucas of the University of Chicago "for having developed and applied the hypothesis of rational expectations, and thereby having transformed macroeconomic analysis and deepened our understanding of economic policy." To boost the sales of my book on rational

expectations economist Thomas Sargent, I would have liked the honors to have been shared.[5] However, in that case John Muth, the inventor of the concept, should have been included as well. After all, the citations to Muth's publications had skyrocketed, with Muth's 1961 paper as the obligatory reference for any paper on rational expectations economics.[6] However, Muth no longer supported, and perhaps had never done so, the rational expectations hypothesis.[7]

The story starts six years earlier, in 1989, when Lucas and his wife Rita reached a divorce settlement, which stipulated that she would receive half the prize money, after taxes, if he should win the Nobel Prize in Economics before October 31, 1995. By then Lucas had developed an international reputation for his rational expectations research. Taking a cue from her husband, Rita rationally employed all available information, namely that many of her husband's colleagues had all fairly recently won Nobel Prizes in Economics and that the selection committee favored the kind of contributions Lucas developed, which led her to instruct her lawyer to add a clause about her husband's Prize money in the divorce settlement. And lo and behold, the selection committee bestowed Nobel honors on Lucas only weeks before the clause was set to expire. In an editorial, the Toronto Star (1995, p. A22) noted: "For providing such impressive empirical proof of rational expectations, she clearly deserves her half of the $1.3 million prize." The Pittsburgh Post-Gazette (1995, p. A14) added: "Now [Lucas] should have an even greater appreciation for domestic economics." Recent developments in economics, including the contributions of Lucas, are the focus of the first part of my presentation and I will return to the observation about domestic economics in the conclusion. Before moving on to the first part, let me introduce the second part of my presentation with a story as well.

The second story concerns "The Economics of Science" and features a likely Nobel candidate, Andrei Shleifer. In 1988 *The Economist* listed Shleifer as one of the eight best young economists in the world. In 1999 he was awarded the prestigious John Bates Clark Medal, which is presented every two years to the leading economist under 40. And that is where the good news for Shleifer, a Harvard economist since 1991, stops, for in 2000 he was sued, along with his wife as well as associates of the Harvard Institute for International Development, by the United States Justice Department.[8] The lawsuit relates to Shleifer's involvement in the management of the U.S. aid program in Russia. The project was cut short in 1997, after the government had become suspicious that Shleifer and his associates were using their positions for personal gain. The Justice Department's subsequent investigations culminated in the lawsuit. Seeking $120 million in damages, the U.S. Justice Department's lawsuit charges Shleifer with defrauding the government, abusing public resources, and engaging in conflicts of interest while managing the U.S. foreign-aid program in Russia. These allegations prompted *The Economist* (2000, p. 77) to note: "Mr Shleifer, like the other defendants, is adamant that he is innocent. But at times like this he must wish he had stayed in his ivory tower – or entered a less murky career, such as politics." Even if Shleifer's alleged discretions arose from a relatively understandable itch to get rich, Harvard University's dogged defense of its involvement raises the matter to another level. What would have happened if the judge had decided against Harvard? In the end, Harvard University and Shleifer have agreed to pay monetary damages to settle the government civil suit against them. Economic aspects of science such as these are the focus of the second part of my address.

These stories are meant, then, to offer an introduction into the two focal points of my research group, namely "The Science of Economics" and "The Economics of Science." Let me now address these in turn.

THE SCIENCE OF ECONOMICS

The Bank of Sweden Prize in Economics in Memory of Alfred Nobel has been quite controversial since its inception and numerous objections have been raised against it. Some of these have to do with the status of economics as a science. The joke goes that economics is the only field in which two people can obtain a Nobel Prize for saying exactly the opposite thing.[9] This reminds us of the two laws of economists. The First Law of Economists states that for every economist, there exists an equal and opposite economist.[10] And the Second Law of Economists adds that they are both wrong. Yet, the Nobel Memorial Prize was established at a time of relative agreement amongst economists. However, this has not always been the case, as evidenced by Harry S. Truman, President of the United States from 1945 to 1953, who said: "Give me a one-handed economist! All my economists say, 'on one hand... on the other'."

During the period before World War I and the interwar period, pluralism was the dominant force in economics.[11] Here, I associate pluralism with the coexistence and interaction of respectful and tolerant groups, which I contrast with monism. Before World War I, the Social Gospel movement stimulated a pluralistic approach to economics. When the progressive movement declined after World War I to make room for a focus on "realism," pluralism continued to flourish as witnessed by the coexistence of institutional and neoclassical approaches to economics as well as the rise of Keynesian macroeconomics.[12] Let me return to macroeconomics shortly and focus on institutional and neoclassical economics first.

World War II stimulated the move in economics towards monism about beliefs, ideology, theories, models, and policy advice, with the formalism of neoclassical economics pushing out her institutionalist sister, perhaps to the liking of then-President Truman. During the war, heavy demands had been placed on economists to develop tools for solving policy problems. The success of the new set of methods with which neoclassical economists came out of World War II instilled in them a belief in

the ideas behind them. Simultaneously, American society moved from a desire for economic intervention towards support for free markets and open competition, thereby further strengthening the neoclassical belief system. While economics became associated with a certain tool-kit as opposed to a particular area of study, the formalism further supported economists' efforts to gain identity as a "national science," to achieve professional status. During the Cold War period, the technical turn in economics was intensified as a result of a continued narrowing in the range of beliefs, an additional tightening of acceptable ways of expressing them, and open prosecution of suspected communists during the McCarthy period. In the process, the possibilities of pluralism in economics persistently waned as the language, form, and tools of economics continued to narrow.[13] This inspired economist Kenneth Boulding to argue that mathematics brought *rigor* to economics, but, unfortunately, it also brought *mortis*.

My focus has so far been mostly on microeconomics, which concentrates on the decisions of people and businesses. I will now turn to macroeconomics, which studies the national and global economy. The efforts to achieve monism in microeconomics inspired efforts to reduce macroeconomics to it.[14] We will learn that pluralism re-emerged during these attempts. The endeavors to develop neoclassical microfoundations for macroeconomics date back to the years just after World War II and were given new impetus by the rise of rational expectations economics (Sent, 1998), which we encountered in our introduction when I discussed Robert Lucas's Nobel Prize. And they ran into a major stumbling block in the form of the so-called Sonnenschein-Debreu-Mantel result (Sonnenschein, 1972; Debreu, 1974; Mantel, 1976), which established that market demand functions, upon which market-level and macro-level economics rests, are essentially shapeless.[15] This shattering result essentially destroyed the effort to achieve monism by establishing microfoundations of macroeconomics. Problems encountered by neoclassical economics such as those discussed above created opportunities within mainstream economics for the rise of game theory. Yet, this approach encountered difficulties of its own (Sent, 2004), such as multiple equilibria, intuitively unreasonable equilibria, and paradoxical theorems.[16]

Foreshadowing the next section of my presentation, one of the three name-givers to the Sonnenschein-Debreu-Mantel result, Hugo Sonnenschein, is now president of the University of Chicago. It is unknown whether his decision to move away from academic research and into this administrative post is in any way related to the depressing implications of his famous theorem. What is clear is that more and more economists are becoming university presidents, a topic to which I will turn in the next section of my presentation. In the Netherlands we have Jo Ritzen as the president of the executive board of Maastricht University. Another example is Lawrence Summers, who is president of Harvard University. In fact, Summers is an old friend of Andrei Schleifer, whom we

encountered at the start of my presentation.[17] That said, let us return to the science of economics before elaborating the observation that economists head universities.

You may feel that this is the point in my presentation where you need to space out because you can no longer follow the argument. However, you may have encountered game theory if you watched *A Beautiful Mind*, which is a movie about the life of John Nash that received many Oscars.[18] Nash won the Nobel Memorial Prize for his contributions to game theory, most notably the so-called Nash equilibrium. In the film, the inspiration for Nash's concept occurs when Nash and four pals are drinking in a bar. Five women enter, led by a blonde who is clearly the pick of the bunch. Nash reasons that if they all go for the blonde, they will block each other and nobody will end up with her. In addition, they will no longer stand a chance with the other four, who do not want to be considered second choice. Hence, the only way to win is for nobody to go for the blonde.[19] [The clip is shown.] This clip foreshadows a topic to which I will return in my conclusion, namely the relationship between academic and everyday economics. Before doing so, I need to complete my narrative concerning pluralism and monism in economics, for it has a happy ending.

The difficulties outlined up to now have created space for the emergence of a more pluralistic mainstream economics. Views previously considered heterodox are moving into the mainstream. A very prominent example is behavioral economics, which formalizes and tests psychological predictions, inspired by empirical and experimental counterevidence to the strong rationality assumptions employed in mainstream economics and by the rise of the metaphor of the brain as an information-processing device in cognitive psychology. Other examples include behavioral game theory, evolutionary economics, evolutionary game theory, experimental economics, computational economics, and new institutional economics. With people like Hans Amman, Frans van Winden, and Eric van Damme, the Netherlands is actually at the forefront of some of these changes.

Whereas I have offered a narrative of the developments within economics that stresses internal reasons for the changes, advances within other disciplines have also had a significant influence (Davis, 2004). My former colleague from the University of Notre Dame, Philip Mirowski (1989), for instance, has argued that the rise of neoclassical economics owes much to the incorporation of insights from physics. For example, the dissertation of the first Nobel Laureate in economics we encountered earlier, Jan Tinbergen, was titled "Minimum Problems in Physics and Economics." In the end, his concern for the causes of poverty made him switch from physics to economics. And he was not the only scientist to make such a move. In his book *Peddling Prosperity*, Paul Krugman (1994, p. xi) relates the view of an Indian-born colleague on reincarnation. When an economist dies, he said, two things can happen.

When you have been a good, virtuous economist, you will be rewarded for this in the next life, you are allowed to return as a physicist. When you have been an evil, wicked economist, you are reborn as a sociologist.[20] So as not to anger my highly regarded sociology colleagues, let me return to my argument by mentioning econophysics and neuroeconomics as recent examples of efforts to incorporate insights from other disciplines into economics.[21]

Risking the ire of President Truman, who preferred one-handed economists, we can observe that on the one hand problems within economics and on the other hand possibilities within other disciplines opened up opportunities for pluralism within economics. Indeed, I believe that there are many ways in which pluralism in economics may be defended. The world may be patchy and one model or theory might explain phenomena in one patch and a different model or theory might be necessary to explain similar phenomena in a different patch. We may want to hedge our bets because it may be difficult to predict which theory (or research program) will lead to a theory that provides a complete account of the phenomena. The entities and processes that make up the world may be so complex that any account or description of them is incomplete. Different descriptions and different approaches may be beneficial because some descriptions offer better accounts of some aspects of a complex situation and other descriptions provide better accounts of other aspects. Or pluralism may be due to cognitive limitations on the part of human inquirers. Indeed, pluralism itself is a reflexive doctrine. That is, there can be more than one kind of pluralism, depending on its nature, source, and classification.[22]

Let me conclude my discussion in this part of my presentation with the observation that pluralism in economics is recurring, but often denied. In my opinion, the lack of success of the monist efforts in economics strengthens the case for pluralism, and therefore suggests that pluralism is contingently true. This justifies the plural perspectives on economic theory that are embraced by the Chair in Economic Theory and Policy. And this helps it to contribute to policy debates within the economics of science, to which I turn in the following section.

THE ECONOMICS OF SCIENCE

The present pluralism is due to not only changes within economics and other sciences, but is also fueled by the funding of economics. What would President Truman think of a three-handed economist? Winston Churchill might have understood, for he once said: "If you put two economists in a room, you get two opinions, unless one of them is Lord Keynes, in which case you get three opinions." Though I am not John Maynard Keynes, let me offer a third perspective on contemporary economics by giving a few illustrations of the importance of money for developments in economics, which also transitions us nicely into the second main focus of my talk, namely the economics of science.

First, the RAND Corporation served as an important patron of the Cold War military-science complex in general and economics in particular. RAND is an American think tank that was first formed to offer research and analysis to the U.S. military and significantly shaped post-World War II economics (Mirowski, 2001). For instance, remember John Nash from the clip I showed you from *A Beautiful Mind* with dating strategies? Starting in the summer of 1950 and continuing from time to time over the next few years, he worked for the RAND Corporation, where his insights on game theory made him a leading expert on the Cold War conflict that dominated RAND's work.[23] Another Nobel Laureate who could be found at RAND was Herbert Simon, who is known in political science as a major political scientist, in economics as a leading economist, in psychology as a major psychologist, and in computer science as a significant computer scientist. There is a direct link between the patronage of RAND and the seachange in Simon's research from decision making to problem solving (Sent, 2000). Finally, recall our earlier mention of behavioral economics and its efforts to incorporate insights from psychology. Well, the Alfred P. Sloan Foundation and the Russell Sage Foundation played a critical role in stimulating this research.[24] As these stories as well as the experiences of Andrei Shleifer that I narrated towards the beginning of my lecture highlight, money plays an important role in economics in particular and science in general. Let us leave economics for a short while and take a closer look at the wider world of science. Much has changed in this world since the fall of the Wall.

The impression that science is going through a new phase of reorganization and retrenchment is widespread, and growing (Mirowski and Sent, 2002, Forthcoming; Sent, 1999). This is often referred to as the commercialization of science. Opinions about these developments vary widely. Some bewail the disappearance of an invisible college of truth-seekers and the emergence of feckless individual scientific entrepreneurs. Some celebrate the fact that scientists are finally operating with guidance from their ultimate patrons, the corporate pillars of the economy. And some conclude that commercialization has not drastically changed contemporary science. The approach I would like to take suggests that alternative forms of the funding of science have shaped the practice and organization of science throughout its history. More precisely, let me outline three regimes of twentieth century science organization.[25]

First, the "Captains of Erudition Regime" lasted from 1890 through World War II and is so named in honor of Thorstein Veblen, who wrote one of the earliest descriptions of the research university as becoming subject to specific corporate organizational principles. More specifically, he saw University of Chicago President William Rainey Harper as a prime example of those "captains of erudition" who prostitute genuine scholarship in their drive for competitive standing in the academic world.[26] During the "Captains of Erudition Regime," the success of large-scale corporate laboratories inspired the export of corporate protocols and funding structures to research

universities by way of foundations. Second, the "Cold War Regime" lasted from World War II through the 1980s. Science was utterly transformed during World War II and then persisted in a novel economic format throughout the Cold War. It was during this regime that scientists were sponsored largely by the government and came to believe in the independence and isolation of the ivory tower. Finally, the "Globalized Privatization Regime" is the one in which we find ourselves at the present. It was triggered by the oil crisis, the subsequent economic slow down, and events in the former Soviet Block. In other words, the changes we are experiencing during this regime are more than a response to budget cuts, but attributable to a larger shift in the nexus of science management and funding.[27] In short, some form of economic underpinning has always shaped the organization and management of scientific research. As a result, the current wave of commercialization is not entirely new, but also not entirely the same.

Now, you may argue that my narrative takes science in the United States as its main focus, while ignoring developments in the rest of the world. However, illustrations of all three regimes can also be found elsewhere. Let me offer just a few. For the "Captains of Erudition Regime," I would like to point our attention to NatLab, the Philips Physics Laboratory in Eindhoven, which was established in 1914 (Boersma, 2002). Its founding director, Gilles Holst, created an academic environment by, amongst others, organizing lectures by top scientists and stimulating congress participation and academic publications by the laboratory's own scientists. In addition, NatLab significantly shaped the technical physics degree at the Technical University of Delft.[28] For the "Cold War Regime" I would like to turn our attention to CERN, the European Organization for Nuclear Research, which is the world's largest particle physics laboratory. It was created at the height of the Cold War, in 1954, in an effort to rebuild European physics to its former grandeur, reverse the brain drain of the brightest and the best to the United States, and continue and consolidate postwar European integration (Pestre and Krige, 1992). Most of you have enjoyed some of the fruits of CERN's labor, because it played an important role in the creation of the World Wide Web, which started as an effort to facilitate sharing information among researchers. For the "Globalized Privatization Regime," examples include the Lisbon objectives aimed at making the European Union the most competitive and dynamic knowledge-based economy in the world, attempts at American-style reform of German universities, and wrenching experiments in privatization in Japan, where national universities are being transformed into independent administrative agencies that are forced to seek funding from companies and other outside sources.

In our own country, the Netherlands, the "Globalized Privatization Regime" is evidenced by recent reports from the Education Department in which we can read about the knowledge-based economy, international positioning, top studies, student portfolios, multi-disciplinary knowledge strategies, research schools, admission

restrictions, PostDoc programs, the Ba-Ma structure, student vouchers, variable tuition, and so on.[29] In his article in *de Volkskrant*, Thomas van der Dunk (2005) refers to this as Prozac language, while Adrienne van den Boogaard (2005) comments in *NRC Handelsblad* that the student appears to be king. The efforts of so many Dutch universities to belong to the top reminds me of Lake Wobegon, which is a mythical American town that is an invention of humorist Garrison Keillor, who starts each story by saying "Welcome to Lake Wobegon, where all the women are strong, all the men are good-looking, and all the children are above average." Efforts to establish above-average universities by trying to create Harvard-aan-de-Maas, Stanford-aan-de-Waal, and Princeton-aan-de-Rijn thoughtlessly incorporate American-style reforms that clash with Dutch culture.[30] Indeed, the wholesale copying of methods and practices from one system to the other is fraught with danger and possible unintended consequences (Hochstettler, 2004). Worse, it fails to address deeper problems within the Dutch system such as the student-centeredness, the bureaucratic meddling, and the general lack of finances. That said, let me offer some concluding reflections concerning the economics of science.

Experiences such as those of Andrei Shleifer and the move towards the commercialization of science have not gone unnoticed by academics. Economists, historians of science and technology, sociologists of science, philosophers of science, science policy experts, and real working scientists have all offered insights into the recent developments. However, the economics of science has not been approached in any systematic fashion. Perhaps worse, there has been little or no attempt to gauge the achievements and drawbacks of the economic approach to science relative to those of other contemporary scholarly fields that have sought to describe and analyze the procedures and institutions of science. As a result, here lies an important role for the Chair in Economic Theory and Policy. The plural perspectives on economic theory that it embraces enable it to prevent the insensitive foisting of traditions and jargon of one field onto another and to help policymakers evaluate the often conflicting scenarios that they receive from one or another group. This brings me to the concluding part of my presentation.

CONCLUSION

As I have stressed during the first part of my presentation, there is much cause for excitement within the science of economics. As I have discussed during the second part of my address, these developments enable it to contribute to the economics of science. I have also touched on the economics of economics, which ought to engage economists in the self-referential enterprise of rethinking their own presuppositions. For instance, studies show that economists who advocate the self-interest model often employed in economics tend to behave less cooperatively than non-economists

(Frank, Gilovich, and Regan, 1998).[31] Indeed, with so much intellectual activity at the academic level, economists run the risk of losing touch with the world of everyday economics. This reminds us of two of the people we encountered during my introduction, namely Rita Lucas, whose everyday economic insights helped her secure half of an academic economist's Nobel Prize money, and Andrei Shleifer, whose encounters with everyday economics were troubled.

As a result of the widening gap between academic and everyday economics, the role of economists in political debates and policy decision-making seems minimal. Economists devote a large part of their time trying to understand how the economic world works and rather little on the effect of their insights on this world.[32] Let me offer a few illustrations. Consider the North American Free Trade Agreement (NAFTA) (Klamer and Meehan, 1999). Its approval in November 1993 seemed a victory for economics. After all, economists argue that specialization and trade based on comparative advantages benefit all trading partners. However, economists played a very limited role in the establishment of NAFTA. That is, they were effectively removed from the negotiation and debate process. Instead, political and moral arguments prevailed. Experiences such as these have led the economist Alan Blinder to formulate Murphy's Law of Economic Policy, which states: "Economists have the least influence on policy where they know the most and are most agreed; they have the most influence on policy where they know the least and disagree most vehemently." Another example is the Federal Communications Commission auctions for electromagnetic spectrum licenses in the United States (Nik-Khah, 2004). The design of these auctions has been hailed as a success for Nash game theory, which we encountered several times this afternoon. However, the auctions actually failed to implement the universally acclaimed goals of allocative efficiency and minimization of transactions costs. This is due to the fact that the game theorists were hired by large telecommunications firms to advocate policies these perceived as favorable to their interests, which reminds us of our earlier discussion of the importance of considering funding.[33]

There is a proliferation of appeals to economics outside of academic economics. Within the academy, disciplines such as cultural studies, political science, and sociology are increasingly deploying economic metaphors and using economic theories and concepts. Outside of the academy, non-economists are more and more engaging in debates about matters such as globalization, the European Union, and immigration from an economic perspective. At the same time, some academic economists are turning to the methods of disciplines such as biology, literary criticism, and psychology to support their economic theories and models, while others are offering economic perspectives on a wide variety of non-economic concerns raised in policy debates.

There is something called Bentley's Second Law of Economics, which states that the only thing more dangerous than an economist is an amateur economist. The opposite

is stated in Berta's Fundamental Law of Economic Rents, according to which the only thing more dangerous than an amateur economist is a professional economist.[34] In light of these connected and contradicting claims, there is an urgent need to foster an exchange among economic and non-economic academics and non-academics. Non-economists' use of economic concepts and employment of economic analysis have a tenuous relationship to the insights developed by the economics profession. In turn, economists are not familiar with non-academic economic theorizing nor exhibit much respect for the insights this might offer. At the same time, non-economists are often suspicious of the sometimes uncritical borrowing on the part of economists from other disciplines and criticize them for the lack of policy relevance of their theoretical contributions.

The Chair in Economic Theory and Policy stands at the intersection of these exchanges between economists and non-economists concerning economic theory and policy. As such, it serves as a bridge between economics and other clusters within the Nijmegen School of Management. By facilitating exchanges between academics and non-academics concerning economic theory and policy, it further functions as a bridge between the Radboud University Nijmegen and the policy making arena, thereby serving an important societal function. Obviously, its focus on economic theory and policy further places it at the center of the academic discipline of economics. On the one hand, sorry President, the Chair in Economic Theory and Policy investigates how economic policy concerns may shape economic theory. Insights developed by non-economic academics as well as non-academics may inspire fruitful areas of collaboration and new cross-disciplinary initiatives that benefit economic theory. On the other hand, the Chair in Economic Theory and Policy researches how economic theory may shape economic policy. Efforts on the part of economic academics as well as non-academics may provide opportunities for a more effective design of economic processes and policy alternatives.

Let me finish my presentation by returning to the Nobel Memorial Prize with which I started, for it is also connected to the economics of economics, which is a natural ending point for our discussion of the science of economics and the economics of science. There is now an economic tool for predicting the winner of the Prize in Economics. That is, the University of Frankfurt has created an electronic Nobel Prize Market on which one can buy and sell "stocks" on candidates for the Nobel Prize.[35] There is also an annual betting pool, with each entry costing $1, in which professors and graduate students in top economics programs bet on the favorites. Over the history of the pool, the favorites have not usually won the prize in any given year, but have won it eventually. This reminds one of the joke that economists have forecasted nine out of the last five recessions and the quote by Laurence Peter[36] that "[a]n economist is an expert who will know tomorrow why the things he predicted yesterday didn't happen

today." In light of such jokes as well as the mixed performance of the Nobel Prize Market, perhaps it is time to consider insights from behavioral economics, behavioral game theory, evolutionary economics, evolutionary game theory, experimental economics, computational economics, and new institutional economics concerning the functioning of agents and markets. These are exciting times, indeed, which is a good note on which to end my presentation. That is, the customary word of thanks is all that is left between now and the reception.

WORD OF THANKS

So I have now come to the part of the inaugural address during which the audience usually perks up for two reasons. First, they learn something about the personal life of the speaker. Second, drinks and munchies will be served soon. I am referring to the word of thanks, of course. I shall endeavor to satisfy your mental curiosity without delaying the satisfaction of your physical desires too much.

I am a single mom, aged 38, … who would like to start by thanking an inspiring high-school economics teacher, Herman van den Berg, and a boyfriend who was an economics major, Raijmund Wennekes, for inspiring me to set foot in the world of economics at the University of Amsterdam. Encouraged by my adviser Neil de Marchi, to whom I am very grateful for rousing my fascination with history and philosophy of economics, I set out to continue on this path by enrolling in graduate school at Stanford University. I am very thankful to Kenneth Arrow for allowing me to pursue my interests further. At the University of Notre Dame, my first and former employer, I had the very good fortune to be constantly invigorated by Philip Mirowski's never-ending inspiration and verve. My efforts to return to the Netherlands were greatly helped by my stay at the Netherlands Institute for Advanced Study in the Humanities and Social Sciences (NIAS) in Wassenaar and the support of my now-colleague Irene van Staveren. I am grateful to the dean of our faculty, Hans Mastop, for his warm welcome and to my colleagues especially in economics for accepting me in their midst. As a scholar of expectations, I am looking forward to being grateful to the members of my research group for a very fruitful collaboration and the students of our university for meaningful, mutual learning opportunities.

And now for the even more personal stuff, I would like to express sincere thanks to my daughter, Luna, for enriching not only my personal life, by helping me develop skills that I find very useful in my professional life. Finally, my extended family, and especially my parents and step-parents, deserve much gratitude for their never-ending support. It does not get more personal than this, so let us continue our celebration under the enjoyment of some refreshments.

Ik heb gezegd.

NOTES

1 Nobel's fortune is partly due to his invention of dynamite. At first glance, it may seem strange that the inventor of a powerful explosive would stipulate the inclusion of a peace prize. However, Nobel was an industrialist with a conscience. Moreover, his interests were not limited to science. In fact, he was a lover of English literature and poetry and wrote several novels and poems. This clarifies the inclusion of the prize in literature.

2 You may have heard a rumor that the Nobel Foundation does not confer a prize for achievement in mathematics because Alfred Nobel was upset that his wife was carrying on an affair with an eminent mathematician. Gosta Mittag-Leffler is often claimed to be the guilty party. The "wife theory" is easily discounted, though, since Nobel was never married. Other variations involving a fiancée or mistress are equally inaccurate. You may then ask: Why *did* Alfred Nobel give mathematics a pass? Since this is an inaugural lecture in economics, we shall not dwell on the several plausible possibilities, even though much of economics looks a lot like mathematics and famous mathematicians such as John Nash have won the prize via the economics route. In fact, Nash will shortly make an appearance in our narrative.

3 The Nobel Memorial Prize has a similar procedure of award selection (by the Royal Swedish Academy of Sciences) as the original Nobel prizes. It also disburses the same monetary amounts and shares in the formal ceremony.

4 When you visit http://www.nobelprize.org, you can see a picture of Tinbergen multi-tasking by having his picture taken and talking on the phone at the same time. A very handy skill for an academic, indeed!

5 See Sent (1998).

6 Lucas and Sargent (1981) called this "Muth's classic paper" (p. xvi) and described it as "one of the most carefully and compactly written papers of recent vintage: every sentence in the introduction counts, and many have since been expanded into entire articles" (p. xvii). According to Herbert Simon (1991), who served as his advisor and later collaborator and colleague, Muth "clearly deserves a Nobel for it" (p. 249).

7 See Sent (2002) for the argument that Muth had meant the rational expectations hypothesis to be merely an illustration of the rationality implicit in theories of bounded rationality and of the bounded rationality implicit in theories of rationality.

8 They were also sued by the Forum Financial Group. The Forum suit alleges that the associates sought to gain influence over Russian officials by using U.S. aid money to provide the officials and/or their families and friends with cash, no-show jobs, and exorbitant and unjustified compensation and benefits.

9 In the case of Gunnar Myrdal and Friedrich August von Hayek, two people *shared* a Nobel Prize for saying exactly the opposite thing.

10 This led George Bernard Shaw to argue that if all economists were laid end to end, they would not reach a conclusion.

11 Our focus is almost exclusively on developments in the United States, which is justified by the United States' predominant influence on the expansion and internationalization of economics during the past century. As a result, the trends outlined here have spread and are spreading, with some lag, to Europe and Japan. At the same time, the process of internationalization has by no means completely obliterated national differences.

12 Perhaps of interest to a Catholic university such as this one, neoclassical economics is often said to be based on a Holy Trinity of her own, namely rationality, greed, and equilibrium (Colander, Holt, and Rosser, 2004).

13 Complicating our admittedly simplified description here and foreshadowing our claim that pluralism in economics is recurring, though often denied, some have suggested that neoclassical economics owes its strength to its persistent inability to enforce any monolithic orthodoxy. For instance, Wade Hands and Philip Mirowski (Hands and Mirowski, 1998; Mirowksi and Hands, 1998) outline three approaches to neoclassical demand theory, associated with the University of Chicago Economics Department (in particular Milton Friedman and George Stigler), the Cowles Commission at the University of Chicago (especially Kenneth Arrow and Gerard Debreu), and the Massachusetts Institute of Technology (most notably Paul Samuelson).

14 See D. McCloskey (1982, p. 7): "Not all fields of economics are based on microeconomics, but all strive to be. Most of the lasting advances in economic thinking over the past century or so have consisted of reducing one or another piece of economic behavior to microeconomics." This observation is echoed by Gary Becker (1976, p. 5): "The combined assumptions of maximizing behavior, market equilibrium, and stable preferences, used relentlessly and unflinchingly, form the heart of the economic approach as I see it."

15 Wade Hands (1995, p. 617) succinctly summarizes the problem: "In other words, the standard micro model has almost no implications for macrobehavior."

16 First, the folk theorem illustrates the (very real) possibility of encountering multiple equilibria in repeated games. Second, intuitively unreasonable equilibria may be selected in the finitely repeated prisoner's dilemma game, the chain store paradox, and the centipede game. Finally, Nash equilibria call for requirements such as common knowledge that are so stringent that they have resulted in theorems concerning the nonexistence of trade and the impossibility of "agreeing to disagree" about an event.

17 Summers sparked an uproar at an academic conference earlier this year when he said that innate differences between men and women might be one reason fewer women succeed in science and math careers. Summers also questioned how much of a role discrimination plays in the dearth of female professors in science and engineering at elite universities. This is a topic about which I have strong opinions, but no time to air them now. I am glad that it appears that the president of our university does not share the views of Summers!

18 There is much wrong with the movie, including the fact that John Nash never gave a heart wrenching speech in Stockholm during which he thanked his wife Alicia for her continued support. The Laureates do not give acceptance speeches, but are each invited to give an hour-long lecture. However, the Nobel committee did not ask Nash to do so. Moreover, the couple was divorced at the time and remarried only later. Other items left untouched by the movie include Nash's homosexuality, abandonment of a child, and poor treatment of his students. As the movie-makers subtly note, *A Beautiful Mind* is *inspired* by the life of Nash.

19 Unlike the bar-scene solution, however, a Nash equilibrium does not require each player to altruistically seek the common good with his own. Worse, the scene does not portray a Nash equilibrium at all. Any player will switch his strategy once he thinks the others have chosen theirs, so the strategies are not mutually reinforcing and the "solution" portrayed cannot be a Nash equilibrium.

20 Krugman (1994, p. xi) comments that economics is "harder than physics, luckily it is not quite as hard as sociology."

21 This is also why it is better to relegate the response of Nobel Laureate George Stigler to the question why there were no Nobel Prizes awarded in the other social sciences, sociology, psychology, history, et cetera to an endnote. "Don't worry", Stigler said, "they already have a Nobel Prize in … Literature."

22 For the nature of pluralism, a distinction needs to be made among theories, methods, methodologies, approaches, perspectives, models, explanations, and so on. The source could be ontological, epistemo logical, pragmatic, historical, sociological, heuristical, political, and so on. And the various objects of pluralism could be translatable or not and might be compatible or not.

23 A detail that is left out of the fictionalized account in *A Beautiful Mind* is that in the summer of 1954, while working for RAND, Nash was arrested in a police operation to trap homosexuals. He was dismissed from RAND.

24 While at the Sloan Foundation, Eric Wanner, a psychologist, was itching to get economists and psychologists talking to one another. After he became president of the Russell Sage Foundation, Wanner continued supporting behavioral economics. In 1986, Sage started a behavioral economics program jointly with the Sloan Foundation. Since 1992, the Foundation has supported two principal activities in behavioral economics — a series of workshops run by the National Bureau of Economic Research (NBER) and the Behavioral Economics Roundtable. Sage also sponsors the Summer Institute for Behavioral Economics.

25 My former colleague Philip Mirowski deserves much credit for these insights developed in our joint work (Mirowski and Sent, 2002, Forthcoming).

26 Harper ran an autocratic administration that used questionable methods to extract ever-increasing funds from the University's founder, John D. Rockefeller, to attract a most distinguished faculty to Chicago. Veblen was one of the founders of the Institutionalist school that I mentioned in the previous section of my presentation. You may be familiar with the phrases "conspicuous consumption" and "pecuniary emulation." Well, these were coined by Veblen, who was unorthodox in his teaching, writing, and love life. In fact, his relations with women are of the most discussed and least documented affairs in American cultural history.

27 Looking into the future, we may very well witness the establishment of a new alliance among governments, corporations, universities, and international organizations within a "National Security Regime."

28 Moreover, Holst served as a chairperson of two commissions that were instrumental in establishing the Technical University of Eindhoven. Upon retirement, he became a member of the Board of Advisors of Philips and a curator of the Technical University of Delft.

29 Examples include the "Hoger Onderwijs en Onderzoek Plan 2004," "Ruim Baan voor Talent: de Gelijkheidsdeken Opgeschud," and "Meer Flexibiliteit, Meer Keuzevrijheid, Meer Kwaliteit: Financiering in het Hoger Onderwijs."

30 I owe the idea for these names to Evert Schoorl.

31 This has led Frank, Gilovich, and Regan (1998) to conclude that "[w]ith an eye toward both the social good and the well-being of their own students, economists may wish to stress a broader view of human motivation in their teaching" (p. 62). And what is so encouraging about recent developments within the discipline of economics is that economists are indeed moving in this direction.

32 Taking this to the extreme, rational expectations economists established the so-called policy ineffectiveness proposition, which claims that properly anticipated policy measures have no effect on the economy.

33 For more on the withered public purpose of economics, see Bernstein (2001) and Sent et al (2005).

34 Princeton University economist and provost Stephen Goldfeld quipped that an economist is someone who sees something working in practice and asks whether it would work in principle.

35 See http://www.nobelpreisboerse.de. It is run every other year due to the high cost of maintaining the market. Of the Laureates last year, Finn Kydland and Edward Prescott, both candidates were suggested at the Nobel Prize Market, but Kydland did not make his IPO (Individual Public Offering), while Prescott was ranked first in the economics category.

36 Laurence Peter is a Canadian-U.S. author and educator who created the Peter Principle, which states that employees within a hierarchical organization advance to their highest level of competence, are then promoted to a level at which they are incompetent, and then stay in that position.

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