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Preface: Special issue of Dynamic Games and Applications in Memory of Professor Engelbert J. Dockner

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1 Engelbert J. Dockner's Life and Career

Engelbert passed away on April 16, 2017, after a long and brave struggle against a terrible disease. Those who knew Engelbert will remember him as an excellent researcher, always enthusiastic, and a good, inspiring, and faithful colleague and friend. Our thoughts go to his wife Renate and their son Matthias.

Engelbert was born in 1958 in a family of wine growers in Höbenbach, a small village located roughly 70 km west of Vienna, Austria. Being the oldest son, he was supposed to

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take over the family business after his father. However, he decided to pursue an academic career and received from the Technical University of Vienna the degrees of Dipl.-Ing. (1981) and Dr. Techn. (1984), both in mathematical economics. The title of his dissertation was *Stability Analysis in Optimal Control Models with Two State Variables*. In 1993, he received his Habilitation (venia docendi) from the Vienna University of Economics and Business Administration with a thesis on *Dynamic Trade Policy and International Oligopolies*, which distinguished him as one of the first economists to use dynamic games in the analysis of international oligopolies.

From 1982 to 1987, Engelbert was research assistant at the Technical University of Vienna and Assistant Professor at the Vienna University of Economics and Business Administration, followed by 4 years as Associate Professor at the University of Saskatchewan and at Queen's University in Canada. From 1992 to 1993, he was a Professor of Management Science and Finance at the University of Bielefeld, Germany. In 1993, Engelbert became a Professor of Finance at the University of Vienna. In 2008, he moved to a professorship at the Vienna University of Economics and Business Administration.

Engelbert was a visiting scholar at several universities outside Austria, for instance, in Australia, Russia, Germany, USA, and Canada. (The first tentative table of contents of the book *Differential Games in Economics and Management Science* Dockner et al. [7] was outlined when Engelbert and his family visited the Australian National University in 1993, together with Gerhard Sorger.) He participated in a substantial number of academic conferences, symposia, seminars, etc., in many different countries.

Engelbert had good connections with institutions outside the university and worked, for example, for the Austrian Ministry for Defence, OPEC, or IMF, and served as a consultant for various companies in the financial sector. He was a reporter to the Austrian Science Fund and a member of its supervisory board. Moreover, he served as a president of the European Finance Association and of the Austrian Economic Association. In addition, he served the scientific community as a reviewer or associate editor for a variety of academic journals.

The list of Engelbert's refereed journal publications contains about 60 papers. Add to this many contributions to edited volumes, proceedings, and so forth. He was an author of the textbook *Differential Games in Economics and Management Science* Dockner et al. [7], which the guest editors of this issue have had the good fortune to coauthor with Engelbert.

Engelbert and his co-workers made a sizeable number of contributions to differential game theory. Important contributions were made to theory (conjectural variations, linear-state games) and applications (macroeconomic stabilization policies, capital accumulation games, environmental games (pollution, natural resources), R&D competition, pricing and advertising). During the years, Engelbert increased his focus on problems in finance, in areas such as investment theory, strategic investment policies, product and financial market interactions, risk management, volatility models, real options, and asset price dynamics. He kept, however, his interest in dynamic game theory and its applications.

2 Summary of the Contents of the Issue

The papers appearing in this special issue have been arranged in five groups: advertising, trade, environmental economics, financial markets, and theory. Engelbert Dockner was active in all of these areas, and some contributions to this special issue take Engelbert's work as a starting point.

2.1 Advertising

Dockner and Jørgensen [6] provide an extension of the standard Lanchester advertising game. There are two novelties in the paper. First, the rate at which a firm attracts market share from its competitors (known as the attraction rate) depends not only on the firm's own advertising effort, but also on the efforts of all rival firms. Second, under a plausible assumption—requiring that the sum of attraction rates is a (positive) constant—it turns out that the market share dynamics can be considerably simplified. Advertising rates (controls) and market shares (states) no longer enter on the right-hand sides of the dynamics in a multiplicative way. The effect is that the game becomes a linear-state game, a most helpful feature for the analysis of the game. The authors introduce three formulations of attraction rates that have their origin in the economic theory of contests. A main idea of these specifications is that what matters for attracting customers from rivals is not a firm's absolute effort, but its relative effort, i.e., attraction rates are ratios. For the three types of attraction rates, equilibrium advertising strategies, market shares, and profits are identified analytically.

Salhab et al. [17] apply mean field game theory to study a dynamic collective choice model. In a market, there is a firm that advertises with the purpose of convincing as many consumers as possible to choose an alternative which is favorable to the advertiser. The market consists of a large number of consumers (hence the use of mean field game theory). Any consumer must choose between two alternatives, given that the choice is influenced (1) by the aggregate choice of all consumers in the market and (2) advertising efforts. The model is a dynamic Stackelberg game with the advertiser as leader. First, the advertiser makes her investment decision and then consumers choose one of the two alternatives. The authors provide a description of the consumers' individual and aggregate behavior as well as the advertiser's optimal advertising strategy. It turns out that when consumers have sufficiently diverse a priori opinions about alternatives, a unique Nash equilibrium exists. This enables the advertiser to make optimal advertising decisions. For a uniform distribution of a priori opinions, the authors determine closed-form representation of the advertiser's optimal strategy and consumers' optimal choices.

2.2 Trade

Engelbert Dockner was one of the first economists to use differential games in the analysis of international oligopolies. Their model of voluntary export restraint (VER) in Dockner and Haug [5] showed that under dynamic Cournot competition with a sticky price, a foreign firm may gain by committing to a VER for the destination market. They confined their analysis to the limiting case where the speed of price adjustment is infinite. Fujiwara [12] generalized that model to the cases where the speed of adjustment can be finite or infinite, and where firms may use linear or nonlinear feedback strategies. In this volume, Lambertini and Palestini [16] explore further the nature of feedback equilibria under VER. Their analysis delimits the range of VER levels that the foreign firm would find profitable.

In Dockner and Haug [4], the authors compared tariffs and quotas when the rival firms use feedback strategies and the state variable is the sticky price. Complementing this dynamic approach to protection of the domestic industry, Benchekroun and Long [1] consider protection policy in the presence of duopolistic competition in the home market when the state variable is the industry's level of knowledge which accumulates with learning by doing. Assuming that the firms use feedback strategies, they show that the home government can achieve the first best outcome by designing a subsidy scheme that conditions the per unit subsidy in any period to the currently observed level of knowledge. They prove that there is

a continuum of efficiency-inducing subsidy schemes that achieve the same outcome. Interestingly, the linear affine member of this continuum has the property that the subsidy rate is increasing in the state variable. The intuition is that a policy of subjecting the firms to tougher competition during their infancy, coupled with a promise of higher rewards later on, gives the firms the right dynamic incentives for learning.

2.3 Environmental Economics

Dynamic games between countries that have concerns for the global environment have been a subject of intensive studies. Generalizing the model of Dockner and Long [8], the paper by Chang et al. [3] studies a transboundary pollution game between two regions in the presence of trading of emission permits. Assuming that the two players are nonidentical both in terms of benefit functions and abatement cost functions, the authors compare the outcomes in the cooperative and the noncooperative games. They find that cooperation leads to increased abatement and lower emissions. They extend the model to a stochastic setting and obtain a numerical solution.

Eigruber and Wirl [10] investigate strategic trade policies in the context of climate policies. In their model, the home country engages in geoengineering activities to reduce the temperature, but these activities generate negative externalities on the foreign country. The firms are static maximizers of profits, while the two governments are intertemporal maximizers. Linear feedback strategies are derived. The authors show that the foreign country finds it optimal to impose a tariff on the goods produced by the home country and may subsidize its own domestic firm. They conclude that unilateral introduction of geoengineering may exacerbate trade restrictions.

2.4 Financial Markets

The paper by Kunieda and Nishimura [15] belongs to the literature on the tragedy of the commons. It analyzes a dynamic game of capital accumulation in a situation where there is a malfunctioning financial market. (The latter feature extends the model of Tornell and Velasco [18].) The authors show that economic growth is impeded as the number of (possibly corrupt) interest groups increases. However, increasing the number of interest groups relaxes the extent of financial constraints in the malfunctioning financial market and economic growth is promoted. Under mild parameter restrictions, these two conflicting effects produce an inverted-U relationship between the number of interest groups and economic growth. When the number of interest groups is small, the growth rate increases as the number increases. However, when the number of groups reaches a certain threshold, the growth rate begins to decrease. Due to these two conflicting effects, the relationship between the number of interest groups and the expected lifetime utility of interest groups also is inversely U shaped. The effect of this is that there are an optimal number of interest groups in the economy.

The paper by Dockner et al. [9] is devoted to financial and product market interactions. Brander and Lewis [2] demonstrated that oligopolistic firms with limited liability will use a more aggressive production strategy as their leverage increases. (Leverage, also known as gearing, is the name for a situation in which equity owners use borrowed funds to finance the purchase of an asset). Glazer [13] showed in a two-period game that when debt is long term and competing firms choose their equilibrium quantities to be produced in two consecutive periods, they have an incentive to be more collusive in the first period than static oligopolists. The paper argues that the incentive to collude is driven by limited liability and the dividend policy of the firm. The model is a two-period game of Cournot competition under random

demand. It turns out that increasing leverage causes firms—in both periods—to increase output and thus be more aggressive. Moreover, it is shown that a symmetric game admits multiple equilibria some of which cause firms to use asymmetric product market strategies.

2.5 Theory

Differential games often have multiple equilibria. A frequently cited paper by Tsutsui and Mino [19] elaborates on this issue in the context of a linear-quadratic differential game between oligopolistic firms in a market with price stickiness. Dockner and Long [8] follow the methodological approach of Tsutsui and Mino [19] and apply it to the question of international pollution control. These two papers, as well as many others that emerged after the publication of Tsutsui and Mino [19], focus on the comparison of welfare across the different equilibria and argue that some mechanism (such as pre-play communication) allows the players to coordinate on the most efficient one. Frutos and Martín-Herrán [11], on the other hand, propose a new method for equilibrium selection. More specifically, they show that the question of which equilibrium materializes boils down to the question of which control values the players choose at the initial time. They then rewrite the value functions of the two players as functions of these initial control values and solve the resulting "reduced game" for a Nash equilibrium. Depending on the parameter constellation, this method can select the linear equilibrium or one of the nonlinear ones, and it does not always select the most efficient one.

The contribution by Hofbauer [14] uses the replicator dynamics from evolutionary game theory in order to prove the minimax theorem of von Neumann [20] for the special case of a bilinear function. This paper is not the first one to derive the minimax theorem by means of game dynamics, but it is the first one to use the replicator dynamics. As a by-product of proving the minimax theorem, the paper also establishes the existence of equilibria for zero-sum bimatrix games.

3 Personal Remembrances of Some of Engelbert Dockner's Coauthors

This section contains some personal remembrances from Engelbert's coauthors. Since Engelbert enjoyed collaboration, he had very many coauthors. Given the constraints on space, it would have been impossible to include contributions of all of them. We therefore apologize to those coauthors who would have liked to contribute but are not included. The following texts are arranged roughly in the order in which their authors got to know Engelbert.

3.1 Gustav Feichtinger (TU Vienna)

Shortly after Engelbert's death (in the night of Easter Sunday to Monday 2017), Andrea Gaunersdorfer informed on the sad event. Next day, I condoled his wife Renate. She told me that less than 2 weeks before her husband's death the family was preparing some events for Easter. But then, suddenly, Engelbert's state of health worsened. When I phoned his son Matthias, at the first moment I had the impression that Engelbert himself was speaking—so similar were their voices. The last time I met Engelbert and Renate was 3 months earlier at a dinner with Reinhard Neck, Mikulas Luptacik, and our wives. After giving a seminar lecture, Engelbert spoke (as always) openly about his sickness and was quite optimistic. This was his nature and helped him to cope with the difficulties that fate had bestowed on him.

One early cornerstone of Engelbert's scientific career was his Ph.D. thesis in which he provided an elegant stability analysis for the stationary states of two-state optimal control

models. Generations of economists and operations researchers have used "Dockner's formula" to get valuable insights into the qualitative structure of the solutions of intertemporal optimization models of various kinds. Later, Engelbert applied his formula successfully to our research on habit formation and addiction. It is not the place here to review his scientific successes. But my contribution would not be complete, if the "blue bible" *Differential Games in Economics and Management Science* were not mentioned. Together with his coauthors, Engelbert wrote the best book that ever existed on dynamic games in economics and Operations Research. Engelbert was not only an outstanding scientist, but also an excellent teacher. Students were enthusiastic about his teaching qualities. His lectures given at conferences were notoriously brilliant. Several young colleagues were motivated by him to start a successful scientific career.

Engelbert's mind was full of sparkling ideas, and his capabilities for networking made him a favorite coauthor. Besides his deep and broad research interests resulting from his curiosity in scientific problems, his trademark was his modest and well-balanced personality. He accepted his fate with equanimity. I never saw Engelbert upset. I know many good scientists. I also know several remarkable outstanding personalities. But I hardly ever met a man who simultaneously exhibited all these fine properties as Engelbert did. Engelbert was like a scientific son for me. I had the privilege to influence a bit his early work. On the other hand, I learned a lot from him. When I came with a new model to him, he never refused to discuss it with me. In my memory, I see him with paper and pencil calculating the solution paths of some intertemporal optimization problem.

But I also recall when he and Renate visited us in our garden in Wiener Neustadt. Generously, as he always was, he gave us a selection of excellent wines from the winery of his brother Sepp. Actually, he gave us more than wine, much more.

3.2 Reinhard Neck (Alpen-Adria-University Klagenfurt)

I met Engelbert for the first time in the 1980s when he was a Ph.D. student at Gustav Feichtinger's department of Operations Research at the University of Technology in Vienna. He was returning from military service (yes, he was captain in the Austrian army) and quite determinate to pursue a career in academia, in applied mathematics. Soon it became clear to us that he was exceptionally talented, not only in mathematics, but also in areas such as economics and business. He became a regular contributor to the series of *Viennese Conferences on Optimal Control* and a prolific writer of papers in control and dynamic games. A few years later, Engelbert obtained a position of research assistant and later Assistant Professor at the Vienna University of Economics and Business (WU Wien) where he was affiliated with the Department of Economics and became my colleague. From this time dates our collaboration on problems of dynamic macroeconomic policy games and optimal policies, which resulted in about a dozen joint papers (one of them even received a best paper award from *Open Economies Review*). Although he was the younger of us, I am sure that I learned more from him than he did from me.

After stays as Visiting Professor in Canada, he became Professor of Business and Finance at the University of Bielefeld, Germany, where we were again colleagues in the Faculty of Economics. At this time, he obtained a Habilitation (the formal right to lecture at a university in the German-speaking countries) from the WU Wien, although he was in fact already a professor abroad. And it did not take much time until he was called back to Vienna as full professor, first at the University of Vienna and then at the WU Wien. Engelbert Dockner was one of the very few people who were professors of business and of economics for some time, and he fulfilled both tasks splendidly.

Above all, Engelbert was a real gentleman, never arrogant or aggressive, a reliable co-worker, and a true friend. When we last met, in January 2017 in our home in Klagenfurt, after he had given a lively presentation of his current research in spite of his severe illness, we asked him how he could deal with this. He answered: "I have achieved so much more than I could expect. So, everything to come will be an extra goody." It is so sad that only a few weeks later he fell victim to the fatal disease. I will remember him as one of my best friends.

3.3 Franz Wirl (University of Vienna)

I first met Engelbert in the conversatorium organized by Gustav Feichtinger (the Argentinierstrasse circle) where he was already a bright young star. However, he held only a temporary academic position and had to leave, inter alia joining the OPEC Secretariat as my follower since I returned to academia (cutting my salary to one-third). Fortunately, he could return quickly to his beloved academia and made an international career, first in Canada (Saskatchewan), then in Germany (Bielefeld) before returning to Vienna filling a chair in finance, where he entered a new field of research and teaching. Along the way, he worked with many colleagues from many countries and made friends with most of them. Although we had many common interests and many fruitful discussions (later, after the turn of the century, often over lunch), in the end we produced just a single joint paper, and I regret this lack of more intensive collaboration in writing papers.

Even if it does not show Engelbert in the brightest light, the following anecdote highlights his enthusiasm that we all enjoyed so much. While working with Ngo Van Long on their dynamic version of the tragedy of commons (which many picked up, including myself, and which is cited several times in this special issue) he told me all smile: "Franz, we have SOLVED the tragedy of the commons." He kept his optimism, his enthusiasm, and his work ethic. (His department head told me once "if all in his department were just as hard working as [then already sick] Engelbert" even after facing his fight against cancer and undergoing a tough therapy.)

Now, in an unambiguously favorable light, one must mention his generosity, e.g., he took the entire faculty (of the Faculty of Economics) to his brother's winery. His generosity extended to the use of his time for colleagues and students although he shouldered too many responsibilities. Apparently, his fault was that he had difficulties to say "no." I owe him (as many others) a lot, personally and academically, as I picked up topics that he pioneered at least within our Viennese group such as optimal control (in particular studying cycles exploiting "Dockner's K" first derived in his thesis), differential games (in particular the existence of multiple equilibria), and real options, just to mention a few.

3.4 Gerhard Sorger (University of Vienna)

I first met Engelbert Dockner in the mid-1980s when I was working on my Ph.D. thesis under the supervision of Gustav Feichtinger. Gustav' s office was regularly used as seminar room, and it must have been at one of the seminars there that Gustav introduced me to Engelbert. Whereas Gustav laid the seed for collaboration between Engelbert and me, it did not sprout until Ngo Van Long invited the two of us for a research visit at the Australian National University in Canberra in 1993. Engelbert was accompanied by his wife Renate and his son Matthias, and the four of us stayed together in a small house on the edge of ANU campus. During the days, Engelbert and I went to the office and in the evenings the Dockners prepared delicious meals for all of us. In those weeks in Australia, Engelbert, Long, and I developed the

idea of writing a book on differential games and its economic applications. Not much later, we were joined by Steffen Jørgensen as a fourth coauthor. But despite (or, maybe, because) the large number of coauthors, it took us 7 years to complete the project.

Engelbert and I were colleagues at the University of Vienna for many years. Almost every time we met on the corridor, Engelbert would say "Gerhard, I have a really interesting problem. Let me explain it to you." And then he would go on and enthusiastically describe his ideas. It was only due to my reluctance to do more than one project at a time that the two of us did not produce more than a few joint journal articles (one of which was also coauthored by Long). In addition to being very creative and enthusiastic about research, Engelbert was extremely generous. Several times he invited colleagues and friends to his country house in Eggendorf am Walde, where we would relax, play soccer, have fine food, and, of course, also talk about research. After Engelbert had moved to the Vienna University of Economics and Business Administration in 2008, we met only rarely. The last time I saw him was at Richard Hartl' s birthday workshop in September 2016. Despite the fact that he was already visibly marked by the disease, his spirit was unbroken and he was talking about his future research projects with the same excitement that I had known from him for more than 30 years. Engelbert was a prolific scholar, a pleasant colleague, and a very fine person, indeed.

3.5 Kazuo Nishimura (Kobe University)

Engelbert and I first met around 1985 at a Vienna conference on optimal control and economic analysis, organized by Gustav Feichtinger. At that time, I had just returned to Tokyo from the USA. Engelbert was an Assistant Professor at the Vienna University of Economics and Business Administration where he was a senior among young researchers on macro dynamics in Vienna. In 1987, Engelbert joined the University of Saskatchewan, in Canada, where he met and undertook joint work with Haru Takahashi. Haru was several years junior to me at the graduate school of the University of Rochester. In the same year, I moved from Tokyo to Kyoto. In 1992, Engelbert became a Full Professor at the University of Vienna. Shortly after, he came to Kyoto as an exchange scholar between Kyoto University and the University of Vienna. I was pleasantly surprised when he wrote to me about his visit to Kyoto. While in Kyoto, Engelbert kindly guided me toward the field of dynamic games, an area in which we started working together. Sometimes, he came to Kyoto with Renate and Mathias. Whenever I visited Vienna, I was always welcomed in his home. When he went to UC Berkeley in 2000, I travelled to Berkeley to work with him.

Being with such a warm-hearted and ever-smiling person was always very comfortable. He was one of the few economists with whom I could talk about the meaning of life, the importance of contributing to society, and the value of works of other theorists. His comments and statements about works by other economists were always precise and fair. Engelbert was a wonderful person and remained positive even in the face of difficult problems, whether in economic theory or life in general. I greatly miss an excellent scholar, a fine coauthor and, above all, one of the nicest people I have ever known.

3.6 Harutaka Takahashi (Meiji Gakuin University)

By fortunate coincidence, I met Engelbert at the University of Saskatchewan in the middle of the Canadian prairies in 1986. He had sought a job in North America, and it was the only available position for him at that time. It also happened to be the only available position for me. He was extremely energetic about research and was looking for collaborators at the department. I had just finished my Ph.D. studies under the supervision of Lionel McKenzie

and had sufficient knowledge related to stability theory, which had been investigated under the title of turnpike theory. He approached me and asked about the possible applicability of turnpike theory to dynamic games. Until then, I had never studied dynamic games but had studied a little bit about super games, which I had taken at Jim Friedman's class. Because turnpike theory specifically addresses capital accumulation, we began examining whether it could be applicable to other dynamic games, especially capital accumulation games, which were investigated intensively in a series of papers by Fershtman and Muller in the 1980s.

We began with a generalization of their two-player model to N players. We specifically examined the applications of techniques developed by Araujo and Scheinkman, Dasgupta and McKenzie, and Friedman to a general class of capital accumulation games and to the characterization of its noncooperative equilibrium solutions. During work with him, he demonstrated his strong passion for our efforts whenever we had a hard time in proofs. I felt great relief every time he cheered me up with his big smile. Although I left Canada in 1988 and Engelbert also returned to Vienna a year later, we continued our collaboration by exchanging many letters by fax. That was before the internet! We eventually published four manuscripts of our seven joint papers in several journals. It was especially very honorable for us to publish our best paper in the Festschrift for Lionel McKenzie in 1993. Once my research interest returned to growth theory and Engelbert became more closely involved in the research of financial theory, we lost opportunities for work together.

In retrospect, I realize that I was truly lucky to have had the great benefit of working with Engelbert at the earlier stages of my career because I learned a great deal from him through our mutual collaboration. I have heard that he never lost his hope for his own recovery from his illness up to his final moments. I think that indomitable spirit and optimism, what Engelbert showed me, is what he was all about!

3.7 Andrea Gaunersdorfer (University of Vienna)

I first met Engelbert Dockner in May 1993 at the *3rd Workshop of the Austrian Working Group on Banking and Finance* in Graz. He gave a presentation on "Deterministic chaos versus stochastic modeling for analyzing Austrian capital market data." I was interested in this topic since I had a background in dynamic systems, which was the field that had brought me to finance. At that time, I didn't know that Engelbert belonged to the renowned group around Gustav Feichtinger with whom I had been in contact since my diploma studies in mathematics. Around half a year later, in September 1993, after having become full professor at the University of Vienna, Engelbert called me and asked me if I would be interested in becoming an assistant professor in his group. I started in January 1994. Engelbert gave me an introduction to differential games, and already half a year later we had finished our first joint paper.

Engelbert had an extremely good-natured personality and was a great person. He always was open-minded toward new ideas and approaches which were not mainstream. He supported me in important phases of my career. Maybe his greatest failure was that he never could say "no" and took on too many tasks. The consequence was that I often had to wait when we had made an appointment. But his innocent way of making excuses and the fruitful discussions afterward as well as his enthusiasm compensated me for everything. Whenever it really was important I could rely on him. When he and Josef Zechner left the University of Vienna and moved to the Vienna University of Economics and Business Administration, it was not only a great loss for the Department of Finance, but also for the whole Faculty of Business, Economics, and Statistics. The Faculty did not only lose great scientists, but also a person who always acted in an integrative way and was highly appreciated by his colleagues

and his students. In September 2016, Engelbert gave a presentation at a workshop in honor of Richard Hartl's 60th birthday. Gustav Feichtinger commented after his talk "and such a guy the rector had let go." This workshop was the last time I met Engelbert. It's hardly graspable that he left us. A colleague said that he never saw so many people at a funeral. This illustrates Engelbert's numerous activities and how appreciated he was.

3.8 Gila Fruchter (Bar-Ilan University)

It is still hard to believe that Engelbert has left us… I first met this modest guy in 2000 at UC Berkeley where both of us were spending our sabbatical. He invited me to have lunch together and talk about our shared research interests. He was there with his son and his wife Renate. I did yoga with Renate, and Engelbert and I had many research discussions. This led to an invitation to his apartment in Vienna and his vacation home near Vienna where we (Engelbert, Renate, and me) spent 2 weeks doing research and enjoying great wine in the evening together. I also discovered his amazing talents for haute cuisine and organizing the refrigerator. That unforgettable summer led to our fist paper. The next time I saw Engelbert was in 2010 at a dynamic games conference where he talked to me about his new ideas for a study.

The last time I visited him in 2012 along with my daughter, husband, and granddaughter was once again in Vienna at his new apartment. He cooked a great pumpkin soup and apologized that he was not as good a cook as Renate, but actually he was! He so nicely picked us up from our hotel and drove us to his apartment. That visit led to our second paper. I still need to thank him for introducing me to Thomas Reutterer from the Vienna University of Economics and Business Administration, my current coauthor on my marketing papers. When he found out about his illness Engelbert let me know, but more importantly he communicated how optimistic he was that he could fight it. He still wanted us to start a third project last summer… unbelievable. God took him too soon from us. We always will remember him. He was a great man, friend, and researcher!

3.9 Florian Wagener (University of Amsterdam)

When I heard of Engelbert's untimely demise, I was shocked for a couple of days. I knew him as a quiet, gentle man, indeed a quiet gentleman, listening attentively and, when contributing to the discussion, formulating his thoughts calmly and very deliberately. From what I have seen, he must have been involved in a great many projects, which was trying the patience of his younger collaborator, for our paper grew only little by little. The benefits I saw only later: Our ideas had more time to develop, and this was all for the better. It certainly provided me with many opportunities to visit Engelbert in Vienna and to enjoy his company. When all was done and dusted, he invited me to come over to Austria for the holidays, sometime. I did not accept quickly enough, foolishly thinking that there would still be time… I am still saddened by the loss of this cultured scholar and fine friend.

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