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POMS CHRONICLE

FIRST ISSUE 2021

IN THIS ISSUE

Chelliah Sriskandrajah
2020 POMS President
Hugh Roy Cullen Chair Professor,
Department of Information & Operations Management,
Mays Business School,
Texas A&M University

Dear POMS members:

It is my honor and privilege to serve as the President of the Production and Operations Management Society (POMS) for the year 2020 and 2021. I have been actively involved in serving POMS in various capacities since 1998. This has enriched my professional life immensely; and has given me an opportunity to build a worldwide network. I took over the Society's reins from Dr. Nada Sanders. Dr. Sanders and the preceding POMS presidents have set high bars for POMS' performance. My endeavor will be to advance what POMS has already achieved.

POMS, a distinguished professional society, has an impressive 30 plus years of history. The strategic initiatives undertaken, over the years, by our founder Dr. Kalyan Singhal, our leaders Dr. Sushil Gupta and Dr. Martin Starr and many past presidents have made POMS the society of choice for POM professionals.

Production and Operations Management, our flagship journal, has established itself as the premier source for disseminating production and operation management research to academic researchers, educators, practitioners, doctoral students, public and private corporations, national and local governments, and the general public. I provide the following testaments that attest the reputation of POM Journal: POM is the only operations management journal on the Business-Week list of 20 journals. POM is also included in the Financial-Times list of 50 journals and the University of Texas list of 24 journals. POM ranks at the highest level in the Australian ABDC list. POM is the only opera-

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The POMS Chronicle is published by the Production and Operations Management Society to serve as a medium of communication and to provide a forum for dialogue among its members. Please submit articles, news, announcements, and other information of interest to the editor, Carlos M. Parra at cmaparra@fiu.edu

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POMS 33RD ANNUAL CONFERENCE
APRIL 21—25, 2022

2022 Annual Conference will be held at the Hyatt Regency, 9801 International Drive, Orlando, FL 32819, U.S.A.
Conference Theme: **Emerging Domains of POM**
General Chair Dr. Funda Sahin, University of Houston, Houston, TX, U.S.A.
Program Co-chairs
Dr. Bogdan Bichescu, The University of Tennessee, Knoxville, TN, U.S.A.
Dr. Rakesh Mallipeddi, Tulane University, New Orleans, LA, U.S.A.
Dr. Reza Zanjirani Farahani, Kingston University London, U.K. / Rennes School of Business, France

FROM THE PRESIDENT– CONTD.

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tions management journal to have all these four honors. In a recent survey, we asked our POMS members the following question: "Which operations management journals count for the purpose of faculty recruitment, tenure and promotion at your school/department/university?" Eight five percent of the respondents ranked POM "A" or better which is higher than the scores received by any other operations management journal.

As we have been preparing POMS 31st Annual online conference 2021, my message is about highlighting the importance of the conference. I would like to point out that our annual conferences are a major attraction to POMS' members where they present their research work, and exchange research ideas with a large group of POM professionals. Unfortunately, we have to cancel the Annual conference 2020, Minneapolis due to Covid-19 pandemic. However, we have managed to provide several POMS awards for year 2020. The winners are honored and acknowledged by the POMS by sending the winners the certificates of the awards. I would like to express my sincere thanks to various POMS award committee chairs for 2020, Charles Corbett, Milind Dawande, Subodha Kumar, Manoj Malhotra, Nagesh Murthy, Rogelio Oliva, Sridhar Seshadri, Martin K Starr, and their committee members for hard work and dedication.

The organizing committee members for 2020 have agreed to serve for POMS 31st Annual online conference 2021. On behalf of POMS, I would like to express my deepest gratitude and thank the organizing committee members for 2021, Scott Webster (General Chair), Burak Kazaz, Hongmin Li, and Rachna Shah (Program Co-Chairs), Ken Klassen (Scheduling Chair), Subodha Kumar (Virtual Meeting Expert), Tej Dhakar (Proceedings Editor), Burcu Keskin and Gil Souza (Emerging Scholars Co-Chairs), Karen Donohue and Susan Goldstein (Doctoral Consortium Program Co-Chairs), Seema Singhania (Program Coordinator), Gerald Burke (Vice President – Meetings), Bala Shetty (Associate Vice President for Sponsorship), Rakesh Mallipeddi (Co-Associate Vice President for Sponsorship), Nagesh Murthy (Associate Executive Director – Global Initiatives), Gerard Burke (VP of Meetings), Xiuli He (VP of Colleges), Bharat Kaku (VP of Finance), and Ram Tiwari (Coordinator Conference Activities).

The quality of POMS' conferences have increased under the continuous leadership of POMS' current and past Vice Presidents of meetings, Dr. Gerard (Jerry) Burke, Dr. Bharat Kaku and Dr. Nagesh Murthy. POMS' colleges, with a dedicated team composed of VP Colleges, Xuili He, and the eight POMS' college presidents, have contributed to the prestige of POMS' conferences by organizing mini-conferences. The 2021 meeting is no exception. With the cutting edge theme of POM in Building a sustainable, responsible, and resilient global future, we believe the 2021 conference would attract a large number of abstract submissions from all over the world. I particularly would like to express my heartfelt gratitude and thanks to Sushil Gupta (Executive Director) for his dedicated leadership, wisdom and skillful planning and execution of annual conferences over the years. I also thank the staff of the Executive Office, Susmita Sarawagi, Seema Singhania, and Ram Tewari, for their help and support. In addition to these individuals, I would also like to thank all the track chairs and session organizers, who are organizing invited and submitted papers to create an outstanding program for the annual meeting 2021.

The Program Committee is doing an outstanding job in organizing the online conference with excellent keynote speakers and mini-conferences. In the new online format, I am sure you will find the conference, sessions, and presentations with numerous learning opportunities, insightful, engaging, and thought-provoking. I look forward to welcoming you to POMS 31st Annual online conference 2021, April 30-May 5.

Chelliah Sriskandrajah
2020 POMS President
Hugh Roy Cullen Chair Professor,
Department of Information & Operations Management,
Mays Business School,
Texas A&M University

FROM THE EDITOR

Carlos M. Parra (Florida International University)
POMS Chronicle Editor

Dear fellow POMS member,

Welcome to this year's issue of POMS Chronicle.

We apologize for not having been able to publish an issue last year. In light of the current juncture we greatly appreciate your patience and understanding for not having done so.

This particular issue includes interviews with President Chelliah Sriskandrajah, as well as in-depth conversations with 2020 POMS fellows Annabelle Feng and Geoffrey Parker. Because of this, perhaps this issue may seem a bit long… But we consider comments, advice and recommendations from such an accomplished group of scholars to be one of the main value-adds of our Chronicles. Their graciousness and generosity will become evident to all those who take the time to read, and absorb their viewpoints and perspectives. Please note, however, that in case you do not have the time to read all these interviews, **links to accompanying podcasts are also provided** so you may listen to them while driving, exercising, etc. All POMS podcasts have been recorded and produced by Sriram Narayanan, Professor of Supply Chain Management at Michigan State University, Vice President for POMS publications, and may be found at https://soundcloud.com/user-398873235 We hope you enjoy them!

Finally, this issue would not have materialized without Sriram's mentorship and guidance. I am also grateful to Chelliah, Sushil and Subodha for trusting me, and giving me the opportunity to be of service to POMS.

We look forward to your continued readership, support and feedback,

Carlos

INTERVIEW WITH OUR PRESIDENT

Chelliah Sriskandrajah
Texas A&M University
Adapted from @Mays Magazine (Fall 2020) performed by Bala Shetty, Chair Department of Information & Operations Management, Mays Business School, Texas A&M University

Please access PODCAST at
https://soundcloud.com/user-398873235/an-interview-with-prof-chelliah-sriskandarajah-the-president-of-poms/s-8O1p6KBOiTB

Balla Shetty (BS): Hello, Chelliah. Please tell us a bit about yourself and your career before you arrived at Mays.
Chelliah Sriskandrajah (CS): I grew up in Sri Lanka. I received my undergraduate degree in Sri Lanka, masters in Thailand, and finally Ph.D. in France. I was employed as an assistant/ associate professor for 12 years in Canada (University of Toronto, Ecole Polytechnic of Montreal) and as an associate/full professor for 14 years at the University of Texas at Dallas (UTD), before I moved to Mays. I was recruited by UTD in 1998 to help develop their research and PhD program in Operations Management. Prof Suresh Sethi and I provided the research leadership and elevated the scholarly potential of UTD Operations Management group to its highest level. In 2012, as an empty nester I was looking for a new challenge in life. Timing was perfect in that Texas A&M was also looking for a senior scholar in operations management to provide research leadership. I visited the campus for an interview and fell in love with the institution and its people and priorities.

(BS): When did you feel that you belonged at Texas A&M?
(CS): I have received or provided education in seven different academic institutions in five different counties: Sri Lanka, Thailand, France, Canada, and the USA. I can confidently say the "sense of belonging" among the students, faculty and staffs is quite remarkable at this institution. You can feel the Aggie spirit inside the classroom and everywhere you go in the community. The students' unconditional love and loyalty to an institution is the best I have seen anywhere. The first class that I taught at Mays was in Spring 2013. It was supply chain management course for honors undergraduate students. During the delivery of my first class, I felt that it was indeed a different place and students were different from the ones I have encountered before. They were respectful, interesting, and held themselves to high standards consistent with Aggie values. Not just students but also our staff, faculty, and administrators made me feel very welcome and made me feel I belonged here.

INTERVIEW WITH OUR PRESIDENT

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(BS): Can you please tell us about POMS, its importance to the field, and the scholarly journal it produces?
(CS): POMS mission, as an international organization, is to represent the interests of POM professionals from around the world. More specifically, the purposes of the Society are: (i) to extend and integrate knowledge that contributes to the improved understanding and practice of POMS; (ii) to disseminate information on POM to managers, scientists, educators, students, public and private organizations, national and local governments, and the general public; and (iii) to promote the improvement of POM and its teaching in public and private manufacturing and service organizations throughout the world. It publishes one of the premier journals in our field, the Production and Operations Management Journal, which is listed as a top journal by Business Week, Financial Times, and the UTD ranking database.

(BS): Professionally 2020 was a huge year for you. You were elected as President of the Production and Operations Management Society. Only the most prominent scholars in the field receive that honor. Following that, the academy named a major award in your honor, "The Chelliah Sriskandarajah Early Career Research Accomplishments Award." What do all these mean to you?
(CS): As President, I am serving and leading a distinguished society with an impressive 30 plus years of history. It is my honor and privilege to serve as President of POMS. I have been actively involved in serving POMS at various capacities since 1998. It has enriched my professional life and I am passionate about its mission as an international organization representing the interests of POM professionals from around the world. I am humbled that the Society found me worthy of naming a major award in my honor. Being recognized by the POMS for my research work is definitely an extraordinarily satisfying moment in my life and is a strong indicator of the impact of my scholarship. The award is an inspiration to continue my research with vigor and enthusiasm.

(BS): What would you consider to be your legacy at Mays?
(CS): When I came to Mays in fall 2012, the INFO department did not have any full professors in operations management except the department head, Rich Metters and Bala Shetty, who was our Executive Associate Dean. The PhD program in supply chain management area was in its infancy. I was asked to play a leadership role in promoting research and mentoring and developing young faculty. I believe I have significantly contributed to the research mission of INFO and Mays business school by working with the faculty and leading the PhD program. During last eight years, five members of the faculty have been promoted to the rank of Full Professor and one promoted to Associate Professor. Currently, the INFO department is a research powerhouse within Mays business school and in the field due to the collective efforts by INFO faculty. I feel happy that I have been able to contribute significantly to the PhD program by directing PhD students' dissertations since 2012 and being a PhD Coordinator in the last three years. This past year two of my students assumed faculty role at such excellent institutions as University of Arizona and Tulane university. Our recent placements also include University of Florida, University of Minnesota, Florida State University. I've served as chair or co-chair of 16 dissertations, and it has been very satisfying to see so many of my doctoral students succeed as prominent scholars and rise to the top of their craft at many major business schools.

(BS): Let's talk about your scholarly contributions and recent research efforts. Specifically, the type of problems you have worked on, what inspired you to pick those problems, and how your work has impacted and continues to impact businesses. Let us start with your work in the area of scheduling in robotics. It is a difficult area of research but very timely and applicable to AI.
(CS): Over the years, I have led a number of research projects in the area of scheduling jobs and sequencing robot moves simultaneously within a robotic cell. This is a challenging but important combinatorial optimization area. A team of researchers and I provided a comprehensive treatment of the theoretical, practical, and design issues that arise from the scheduling of robotic cells using a dual-gripper robot. In contrast to the earlier work on single-gripper robot cells, a cell with a dual-gripper robot – although more productive – is quite challenging computationally. Our work on dual-gripper robot called for a significant extension of the existing analytical framework, as well as the development and performance evaluation of efficient solution algorithms. I worked extensively with my PhD students at a Dallas-based robotic cell design company in order to develop procedures and algorithms that optimize the performance (i.e., maximize productivity) of a robotic cell with parallel machines and multiple robots. Our extensive work resulted in a book published by Springer in 2007 "Throughput Optimization in Robotic Cells" Most recently my co-author and I wrote an extensive review of research in dual-gripper robot cells entitled, "A Review of Recent Theoretical Development in Scheduling Dual-Gripper Robotic Cells, for the International Journal of Production Research, 2018. Our many years of work on robotic cells contributed to throughput optimization in semiconductor manufacturing systems.

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INTERVIEW WITH OUR PRESIDENT

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(BS): You have done some ground breaking work in the area of currency supply chain management. Recently I read an article in popular press about the coin shortage during COVID. That underscores the challenges Feds face in managing the currency supply chain. Can you give us a sense of your work in that area and the impact it had?
(CS): We have been fortunate that we were able to identify several important research opportunities in the area of the supply chain management of currency (cash). Even though more and more transactions and payments are conducted electronically, physical currency (banknotes and coins) still plays an essential role in commerce and trade all over the world, and it is expected to maintain its dominance in the near future. Over the last 15 years, my collaborators and I have analyzed various currency supply chains across the world. That has led many excellent pieces of research published in the premium journals in our field.

(BS): Please give us a few examples of the most significant applied work you have been involved in.
(CS): I have also worked on many applied research projects. My applied research projects all tend to be very closely related to my theoretical, academic research work. I worked with a robotic-cell design company, FSI International in Allen, Texas, and developed algorithms that optimize the performance (i.e., maximize productivity) of a robotic cell using parallel machines and multiple robots. By implementing the schedule that I and my coauthors designed, a semiconductor manufacturing company could potentially increase its revenues by $3 million USD per week. I have worked with many other companies such as Blockbuster, Brinks Securities Inc., Hong Kong Mass Transit, etc. My work led to several implementations of my findings at Blockbuster and Hong Kong Mass Transit.

(BS): You were inducted as a POMS fellow in 2012, the year you joined Mays. Recently a ranking of scholars in operations management by a major journal listed you as 9th in the world based on publications in the top journals and 5th in the world based on publications in the journal of Production and Operations Management. What do the fellow award and this ranking mean to you?
(CS): POMS fellow is the most prestigious honor awarded by the Production and Operations Management Society. To date, there are only 42 POMS fellows. The fellow award and this ranking were real boost for me on both personal and professional fronts. It is very satisfying and humbling to be ranked one among the top scholars in our field. It also elevates the reputation of our department and our business school among scholars around the world. It also helps to recruit strong doctoral students to our school.

(BS): What does the next 5-10 years look like for you in terms of what you would like to accomplish?
(CS): The research and the professional service are two main focuses in the near future. My research revolves around solving various operations management problems with the goal of making production or service systems more economical and efficient. I also plan contribute significantly to the PhD program by directing PhD students' dissertations. I have recently initiated some important research projects in Healthcare area and Energy System. I have also begun directing a PhD research project in the field of AI and machine learning applied to solving operations management problems. I will continue to pursue my research objectives in the above-mentioned areas. I am also currently working on an industry project in logistics and warehousing area. My short-term objective is to gain knowledge in emerging fields in the area of production and operations management (POM) such as AI and machine learning. My long-term objective is to make lasting impact to POM research. On the professional side, I will continue my involvement with Production and Operations Management Society and continue my editorial work as the department editor of Production and Operations Management Journal.

(BS): Finally, as we conclude this interview, would like add anything we have not covered? Or give a shout out to anyone who supported you along the way.
CS: First of all, I would like to express my deepest gratitude to my wife, Kohila, and my children, Vani and Madan, for their unconditional love and support throughout my career. I enjoy working in the Department of Information and Operations Management because we have excellent faculty and staff colleagues. Specifically, I am thankful to Subodha Kumar and Neil Geismar, my former doctoral students and co-authors on many projects, for their years of friendship and support. I would also like to express my gratitude to Dean Eli Jones, Dr. Duane Ireland, and Dr. Rich Metters for always supporting me with my scholarly endeavors. Finally, I would like to thank my colleagues, Bala and Blake, for their assistance in facilitating this conversation.

Please access PODCAST at
https://soundcloud.com/user-398873235/an-interview-with-prof-chelliah-sriskandarajah-the-president-of-poms/s-8O1p6KBOiTB

CONVERSATION WITH 2020 POMS FELLOW ANNABELLE FENG

Please access PODCAST at https://soundcloud.com/user-398873235/conversation-with-poms-fellows-annabelle-feng-purdue-university

Sriram Narayanan: Hi Annabelle. Thank you for joining us as a newly minted POMS fellow and congratulations on your accomplishment.

Annabelle Feng: Thank you.

(SN): For our audience. Annabelle Feng is the youngest in her field to be designated a POMS Fellow, has published in numerous academic journals on the topics of procurement and inventory management, design and manufacturing outsourcing, supply contract negotiations, workforce requirement forecasting and optimization, and the role of population in economic growth. Her most recent work focuses on developing the notions of stochastic functions and developing the general theory for data-integrated decision modeling.
Annabelle. Thank you for joining us. We also have Carlos Parra here with us. He is our POMS chronicles' editor and this is our first POMS fellows interview. We are going to try and double this up as a podcast and a POMS chronicles article, which Carlos is going to be in charge of. We are really excited to do this together.
Annabelle, congratulations on being a POMS fellow and Carlos, would you like to start us off?

Carlos Parra: Thank you very much Sriram and thank you very much for taking time to do this interview Annabelle. Congratulations, quite an accomplishment, and very well deserved. So why don't we just start with you telling us about your trajectory, you spent quite a bit of time in industry. First in Arthur Andersen and then at Hewlett Packard. How was your transition into academia?
(AF): To start with, I think that was a pure accident, but a good one, of course.
After getting my undergrad, I started working in consulting and lived in Shanghai. The economy was growing very rapidly then, and it was actually a very exciting time. The general norm in consulting had been that analysts get assigned to different projects, but they never really got to go deep into anything. I thought that I should eventually try to become an expert in some area. But it turned out to be really difficult to make a choice. I explored many different fields: manufacturing, technology, etc. but I could not make up my mind.
That's when I realized that going back to school would give me time to think, pick a field, and decide what to do next. For a 20-year old, it is really hard to tell what would be right for the rest of the life.
I first applied a few MBA school and almost decided to go to Michigan. Accidently, I met a friend, who was going through PhD programs. He explained to me that if I didn't really like research and teaching, after the first two years, I could just get my masters, find a job and go back to industry.

What excited me the most about academics was the freedom to decide who we are, and who we're going to be!

Since Ph.D. seems to be a low risk option and I ended up at UT Dallas. It was not an original intention, but I ended up there, and that's when I started to learn about research and academic career.
During the first two years in the PhD Program, I was still undecided about which path to take: academics or going back to industry. So, I decided that I to keep connection with industry by going on summer internships. I worked at HP and realized that oftentimes in industry it is important to get things work, but not necessarily optimized. And I feel I can always find a way and it did not seem challenging to accomplish. This would take away uncertainty and challenge, which did not seem all that fun…
Even though by the time I finished my PhD I still had a chance to go back to the industry, I chose an academic career because of the freedom it provided. I would have the freedom to choose what I would like to work on, and I would not be constrained by predefined schedules, milestones or corporate targets, and other things that were not necessarily interesting to me...
In addition, I feel in academia can allow me to fully explore my own talents and avoid my weaknesses. Of course, I think everyone recognizes that we are good at certain things, and not good at others. An academic career allows us to fully expand our talent, and if we find things that are not necessarily dear to our heart, we may be able to avoid them. Of course, not always, but most of the time we should be able to. I think that's what excited me the most about academics: the freedom to decide who we are, and who we're going to be! It is the biggest attraction of an academic career.

(CP): And was there a mentor, or someone that helped you make that realization?
(AF): I think a lot of them. Actually, as the years have gone by, more and more I have come to appreciate the influence from people at UT Dallas, like my advisor, Suresh Sethi . He never tried to focus me on a specific area or a specific methodology. During my PhD days, he would send me papers that seemed completely irrelevant to what I was doing, and even irrelevant to OM. He would simply say: "Here's something of interest!" And I have come to realize that was extremely helpful. Of course, everyone has their own research style. But I think he was the person that opened my eyes and instilled in me the ability to see connections between different things that would initially seem completely unrelated. And I am grateful for that.
I could name many people. Another one is Alain Bensoussan. I always admired him because he is like a dictionary. If I was stuck on something, I could go to him and say: "Oh, I have a problem. I'm kind of puzzled by this." The next day he would bring in 40 pages of notes and say: "Here you go! These are some concepts and methods you might want to look into." Full of things that I have never heard of. For example, I had been working on stochastic dynamic programming for two years when I met him. But it was only when I re-

Research is a journey of learning!

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CONVERSATION WITH 2020 POMS FELLOW ANNABELLE FENG

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alized how little I knew about stochastic dynamic programming. These are several amazing people, including Vijay Mookerjee, Milind Dawande and Shun-chen Niu who have influenced me a lot.
Finally, I think one of the most important things I learned from my PhD days was realizing that academic researchers are always learning! Research is a journey of learning. We never really create new knowledge, we just keep on learning, and then we discover that we have learned something new, even if it's just a little bit more probably than others, then this bit might become part of our research. I guess that's how I would put it.

(CP): Just out of curiosity, is there anything you miss from your time in industry?
(AF): In industry, you'll find that people have very different backgrounds. They may not be technically strong, but they have great ideas. Also, people in industry can have extremely strong domain knowledge, especially in consulting, where you have the chance interact with colleagues with many different talents. And you get to learn a lot from them.

(SN): That's fabulous. I do have to ask you a sort of offbeat question since you are the youngest POMS fellow: Did you ever imagine you'd become a fellow so fast?
(AF): Of course not. When I graduated, just like everybody else, I was all about tenure. The tenure clock started ticking and then we are all about getting papers published. I think, everybody goes through that process. For some of us, it may have been too long since all that unfolded to recollect how stressful it was. How, every time we got a rejection, we'd be emotionally distressed. Yeah, I'm no different from anybody else in that sense.

When we work on something that we really like, we will really be passionate about it, and invest a lot of time and energy in it!

(SN): This actually gets us to publishing. When many young scholars start their efforts on the publishing journey and start seeing rejections: What advice do you have for younger scholars who would like to learn from your experience?
(AF): I actually have a lot to say on the matter. But let me try to be brief and highlight two important things.
First, it is important to remember that after all reviewers are also human beings. Thus when we act as reviewers we bring our tastes, what we like and what we do not like. So, if we feel a reviewer has trashed our work, it is sort of useless to get too depressed with that. It is key not to get too emotional with rejections. I know some rejections, or too many rejections, can hurt our confidence, which may lead us to start judging ourselves. Sometimes we may even question whether an academic career is really for us.
However, when we start having doubts, then we start departing from the of joy of research and of learning. I think, the reason we are in academics is because we are truly passionate about what we are doing, and about our chosen field. We should never let a negative response take the joy and passion away! Otherwise, this career may become a miserable endeavor.
I have gone through tough periods myself. For example, 2008 was the worst year ever of my career because every single submission sent was rejected. It was terrible. Some of the articles submitted were in the third round of review and they still got rejected. When we experience something like this, it is very difficult not to question ourselves and say "Am I really cut out for this career?" And I believe that's the worst thing that could happen, getting too emotional about rejections or taking them too personally. I persevered and eventually all the papers that were rejected in 2008 got published. Some quicker than others. One of them took six years to get published. So, it is normal to go through rough patches, we have all experienced that.
The second thing about dealing with rejections is being cool about reviewers' feedback and calmly thinking about the questions raised. Instead of simply saying: "That reviewer just didn't understand my work at all!", we should try to put ourselves in the reviewer's shoes.
Always try to keep an open mind and ask: "Did I explain that clearly enough for someone who does not necessarily have my exact background to be able to understand it? What is it that reviewers don't like about the study? What could I improve upon so that my work will be more acceptable for a more general audience." This is a must exercise for all of us to grow and improve. Though sometimes we might feel that reviewers' feedback is not very relevant, always ask ourselves: What did we do wrong? What could we do better, so as to avoid misunderstandings.

(CP): Along those lines, will you please tell us -from a high level perspective- how do you view the process of establishing your name in a field? Including picking a field, realizing you are good at it, and always going back to your passion to remind yourself of why is it that you chose your field, as well as an academic career.
(AF): There's a process of becoming more mature in this career. Part of this process is accepting that we are always growing, along different dimensions. A key thing is to focus on shaping the unique identity because we are all different. Sometimes we may say: "Oh, this person as really successful and is my role model!" But we should not strive to copy another person, even our advisors. I think it is important to understand what our strengths are and what our weaknesses are. In fact, I would say it's more important to know what we are not good at. The first question to ask is whether a research topic is really dear to our heart, What is it that we really want to do?
For example, during my PhD days many people thought that working on popular topics would make their studies easier to be published. But I decided not to go that path. Of course, I'm not saying that my way is the best way, because again, everybody is

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CONVERSATION WITH 2020 POMS FELLOW ANNABELLE FENG

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different. I realized that I have limited energy for exploring or working on too many things. I prefer to focus on just a few things and then try to do my best. I was not going to be chasing waves or attempt to be on top of those waves. Instead, I focused on what I really wanted to do, and I believed that became apparent through my work. I always believe that if we have done good work, we can always get it published.
It is essential to pick something that we really like and also that we are really good at. In the early stages of our career, this is especially important because if it's something that we really like, we will really be passionate about it, and invest a lot of time and energy in it. This should help establishing our name in our chosen field.

(CP): Thinking back on how you arrived at stochastic inventory management, since production and operations management is such a wide field, how did you figure out that that was what you were really good at? How did you come to that conclusion?
(AF): Yeah, I think I was lucky. My PhD advisors had a wide range of interests as well as pretty diverse profiles. I actually worked with them on many different things, including, for instance, information systems, product development, among many others. Only after having worked on different areas, I realized that stochastic inventory was what really interested me. That's how I eventually arrived at and ended up choosing stochastic inventory as my field, in which I continue to work on to this day. This reminds me of another piece of advice. Please don't say we're not interested in something unless we have actually tried it and worked on it first.

(SN): I'm sure it was a difficult task to just leave away temptations to work on other areas that came your way. Surely many people have come and asked you to work on something with them. How do you pick what to work on and manage your time accordingly?
(AF): I'm actually a very conservative person. I always remind myself that I only have 24 hours a day when new things come my way, even though they may be very appealing. I feel I should devote a significant portion of my time to my own research. So, I am actually very selective. I always try to have a rough idea of how much time I would like to spend on each task so as to more or less know how much time I have for myself. I'm not someone who can run 20 working projects at the same time. I normally just focus on one or two. When I decide to work on something, I need to write my own code, I need to check every line of derivation myself in order to feel comfortable advancing to the next stage. That's how I am and that's what I enjoy. Because of this I have to ask myself, do I want to spend the next three months or more working on that? Or is there more interesting to me? I have to make a choice, and this has helped me manage my time as well as balance different obligations and commitments.
In addition, when we pick a project that involves a new field, we have to invest time in learning and understanding what people have done in that field, so as to avoid misunderstandings and/or generating wrong results. Before venturing into using a new tool or applying a new framework, it's critically important to have a deep and thorough understanding of that new tool or of that new framework. There is definitely a price to pay when we decide to enter a new area. But once again, if we want to be a scholar, we have to enjoy the learning process, we must like understanding new things. And I happen to think that that is actually a very enjoyable process.
For example, I have been heavily focused on negotiation and bargaining. I branched into this field, which was not completely irrelevant to my PhD dissertation, but was new to me. And it actually took me one year to learn about bargaining from the economics and marketing literature, before being able to produce a paper on the topic, which was never published, unfortunately. Now I'm working on data integration models, and I actually started learning about the area almost eight years ago. There're a lot of things out there on the topic, from traditional applied statistics to learning algorithms, etc. So, to be able to comfortably produce something new in a field, we must first understand it really well. I like working on projects in which I get to learn something new as the process of producing a related study unfolds. This is a very enjoyable experience for me.

(SN): That's great. Could you now please talk to us about your teaching?
(AF): I have taught at every level, undergraduate, masters, MBA executives, and PhD. When we teach in a new program it is really important to learn about our students. I do spend a lot of time teaching and I do not think teaching is a burden. In fact, due to Covid19, we proposed a new fully online MS program on Global Supply Chains Management here at Purdue. In January 2021, we'll meet our first batch of new students. I've been spending a lot of time learning about how to do online teaching for a fully online program and this has been an enjoyable experience. This is especially because I have had to pick up new courses in areas that I'm not that familiar with. For example, I have been developing a course on advanced manufacturing management. Throughout the process of preparing this new course, I've also learned a lot for myself! I would not have realized that, for example, lean manufacturing has evolved a lot in the last 10 years, and I have had the chance to update my knowledge on new practices.
And there are tons of new and exciting things like smart factories and themes related to industry 4.0. In fact, thanks to this new prep, I have also realized that there's actually a lot of open space for research in these areas.
We should always try to update our knowledge, and we have to learn about what industry is doing. We need to know what will be useful for our future students when they go out to industry. Having to prepare a new course, once in a while, is probably

We have to enjoy the process of learning!

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necessary for us to update our knowledge, as well as for us to be able to keep up with what our students will be exposed to.

(CP): It seems like learning and the love of learning is something that it's very important to you, which has guided your research as well as your teaching. Does it do the same for service?
(AF): I think at a certain level of service can be very useful. We are not by ourselves. We are in a family. From my personal experience, I believe, we all need to have an environment and a feel that are all part of something. In order to have that kind of atmosphere, it needs everyone's contribution.
As I joined Purdue. I got involved in a lot of different things, and that was a good experience for two reasons.
First, I get to understand how the academic institution runs. Service allows us to understand who we are where we are, as well as the role we're playing in the university. After all, education is our major responsibility, and it is essential for us to know how the educational institution we are part of works.
And second, academics can take different paths after tenure, and even after full. Some might focus on administrative work, other continue on with research, and others may move on to consulting, etc. And once again, this is one of the best things about academics: at every stage of our career we get to decide and choose what really fits us. Just like with research streams, we should never say that we are not interested unless we've already experienced it. Do not decide what to focus on, as we move along in your career, without trying things out first. For example, I would have I never known what administrative work actually entails, if I had said "I'm not really interested in doing too much administrative work!" We have to go and experience it, and see what value we may be able to bring, add and create, see what type of things we may do right.
Again, everyone is good at somethings and bad at others. When it comes to service for my school, for a community of scholars, for a professional society, etc. I also focus on the things I'm good at. For example, I do a lot of review work for different journals because I truly enjoy that process. It gives me an opportunity to learn about people and what they are working on. As I have emphasized before, we have to enjoy learning!

(SN): Now, in terms of relevance. How do you assess the current impact of POM Society on the community? How would you wish our impact to be? Should we change as a society or the way we influence our discipline going forward?
(AF): I think every academic society -like POMS- evolves according to the influence of its membership. One of the things that I like most about POMS, as a society or as a journal, is its inclusiveness. We can clearly see that we have a large number of international members in the society, as well as international subscriptions to the journal. Of course, in light of the current juncture, we don't have the chance to go, see and network with people all over the world at our POMS conferences. That's something I miss. In these meetings, as well as in the research presented and discussed, we will find a rich cultural diversity, as well as that people have very different ways of looking at things.
There' always something to learn. From a new social practice that we are not familiar with, to a completely new research approach that is unique. All this, I believe, helps facilitate learning, by simple exposure to others in an inclusive environment. Same thing with the journal, which is not narrowly focused. As a department editor, I get submissions from all over the world on a variety of topics. When I read them, I feel that I'm always learning something new. This is important because if everybody wanted to be and do the same, then there would not much innovation. Bouncing ideas with people from different backgrounds together enables the sparkle that pushes the frontiers of our research. For example, we may find papers tackling an interesting problem, but using a not very mature methodology. This type of research is still very valuable because it may potentially open up new areas, or gain interest from other people for whom that particular methodology may be more appropriate, who then start to work on it and refine it. In sum, POMS' inclusiveness not only enables learning by bringing people from different backgrounds together, but also by being open to different ideas.

There's a lot of open space for developing and applying the theory of stochastic functions!

(CP): Specifically, regarding your work, you started with stochastic inventory, you moved to negotiation and bargaining, and then to data integration. Where do you think your research is likely to go in the future?
(AF): I don't really know.
But to me it seems that those research streams are connected. Even though the bargaining work may initially seem irrelevant to stochastic inventory, the fields do merge at some point. When I started working on stochastic inventory, most believed that problems in this area grew increasingly difficult. They're still important problems, but sometimes we don't know yet how to address it, probably because we do not yet have the appropriate models or tools.
That's how I started working together with George Shanthikumar, who is an expert on stochastic orders. We developed a set of notions on stochastic functions. This line of work is more on the methodological side, but driven by all the problems we felt we could not solve. It started with one specific problem: the dynamic pricing-inventory problem. We then discovered the possibility to derive a theory that could be refined and applied to a wide class of problems, which includes bargaining problems. In essence, this approach requires us to look at different bargaining mechanisms and to treat consumers' utility as stochastic functions. Before this development, we did not have a handle on this class of bargaining problems, but now these problems can be nicely analyzed to produce elegant solutions and interpretations.
Now, if you ask where this will lead to? I really don't know. But

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I know that there's a lot of open space for developing and applying the theory of stochastic functions. Traditionally, when we formulate a model we are dealing with deterministic functions defining input/output relationships. And normally, what we do is treat uncertainties as random inputs to the function, but notice that the function in question is itself deterministic. What if we decided to move away from the deterministic thinking of a function and start defining stochastic functions.
We would find that the ability to, or the phase in which we usually, maneuver things expanded dramatically. This allows us to go back to many solved and unsolved problems and ask ourselves: What if we look at it in the stochastic function sense? I think that this is an exciting area, which in fact is also related to the work we are currently developing on data integration models.
Whether we are building econometric models, machine learning models, or dealing with theoretical or applied work, we usually focus on analyzing data itself. But we should remember that data are realizations of random variables.
So, when exploring relationships in a dataset, any model applied will involve stochastic input/output relationships. When we realize we're actually looking at random outcomes from random inputs, we find that there's some stochastic function hidden behind that data. When we start thinking of stochastic functions, we can then develop theories for looking at, for example: how what we want to predict a stochastic function of the data, or what we want to decide could be a stochastic function of the data. This way of thinking allows to explore properties, and develop new and alternative ways looking at the problem we are dealing with. This is the path to which, I think, my research streams are eventually converging. How it will evolve further down the road. I don't really know. We're still exploring!

(SN): Fascinating! Thank you for sharing that. How do you think things will evolve in the future, particularly in academia, say, five years from now?
(AF): If you had asked me that question a year ago I may have answered it differently. But I think Covid19 has changed a lot of things. For example, it has sped up digitization in industry. In light of this many industries are operating very differently even when talking about traditional sourcing and order fulfillment. According to a recent HBR article
procurement had turned into key for survival in many firms. So I think changes like this will definitely drive a new wave of research on how to reshape supply chains and operations within a company, including resource planning, logistics, procurement, import/export, etc. There will be a lot of new practices, as the landscape of the industry is evolving very rapidly, that our filed will have to look into.
Things are also moving very rapidly on the education. Before the pandemic, the forecast may have been that every university would have an online program in 10 years. But now, any major university would quickly build up online programs. Also. the enrollments in two-year MBA programs are continuously shrinking. Very soon, while evaluating tenure promotion cases, people might no longer ask whether the candidate has taught and MBA class, but rather whether this person has taught online classes.
I have felt like a rookie having to read about how to teach online, which is completely different from the experience we used to have in the classroom. Many of the things we did before do not carry over anymore and we have to learn how to teach again.
In sum, the way we think about our profession: as teachers and as researchers has to be changed. Just like the way we will evaluate our colleagues and award tenure.
This change will not be immediate, but I think five years down the road, things might be dramatically different. But of course, this also presents lots of exciting opportunities for all of us to reshape ourselves and re-determine what and where we want to be.

It is so important to believe in what we're doing and believing that what we're doing is important!

(SN): Any last thoughts you would like to share?
(AF): Academics is a very good and a very exciting career! Personally, I love operations and supply chain management. And part of the reason for doing so, is that I get use it in my day-to-day life. At this moment, there's a lot of challenges ahead of us and there's also a lot of opportunities as well. I think it is important to trust ourselves and to have our own confidence, and not to get discouraged by negative reviews. All of us go through that, no matter the publication record we may have. All of us have experienced rejections as well as frustration with the publication process. My hope is that such situations do not affect anybody's confidence, that's why it is so important to believe in what we're doing and believing that what we're doing is important!
Always remember to keep an open mind. To get to know things we don't know so as to be able to get to the future ahead of us.

(SN):
Thank you.

(CP):
Thank you.

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https://soundcloud.com/user-398873235/conversation-with-poms-fellows-annabelle-feng-purdue-university

CONVERSATION WITH 2020 POMS FELLOW GEOFFREY PARKER

Please access PODCAST at
https://soundcloud.com/user-398873235/conversation-with-poms-fellows-geoffrey-parker-purdue-university

Sriram Narayanan: Congratulations on your POMS fellow designation, that was quite the honor. Very well deserved. And thanks for all that you've done for the community over the years.
Geoffrey Parker: Thank you so much, Sriram

Carlos Parra: For our readers Geoffrey Parker is a professor of engineering at Dartmouth College where he also serves as Director of the Master of Engineering Management Program. In addition, he is a research fellow at MIT's Initiative for the Digital Economy where he leads platform industry research studies and co-chairs the annual MIT Platform Strategy Summit. Prior to joining Dartmouth, Geoff was a professor of business at Tulane University. He received a B.S.E. from Princeton and M.S. and Ph.D. from MIT. Geoff has made significant contributions to the field of network economics and strategy as co-developer of the theory of "two-sided" markets. He is co-author of the book "Platform Revolution." His current research includes studies of platform business strategy, data governance, smart cities and energy systems, financial services, and electronic healthcare record systems. Geoff's research has been funded by grants from the National Science Foundation, the Department of Energy, the states of Louisiana and New York, and numerous corporations. He serves or has served as department editor and associate editor at multiple journals and as a National Science Foundation panelist. Geoff won the Thinkers50 2019 Digital Thinking Award, along with Marshall Van Alstyne, for the concepts of the inverted firm, two-sided markets, and how firms can adapt and thrive in a platform economy. He is a frequent keynote speaker and advises senior leaders on their organizations' platform strategies. Before attending MIT,

I love my job! Once you get through the growing process of the apprenticeship period, you gain so many degrees of freedom!

he held positions in engineering and finance at GE Semiconductor and GE Healthcare. Congratulations and thank you very much for your time and your patience coordinating this interview. First, we would like to find out how you got into academics and how did you decide to become a scholar.
(GP): I kind of came by it naturally because my father was a professor. He worked in natural sciences as a neuro physiologist. As a young child, I would go to his labs and run around and play with the equipment. He had these cool oscilloscopes and operating room equipment and all kinds of fun things for a kid to play with.
So, from my point of view, that's what every kid did. Of course, only much later did I realize that, for most people, the idea of being a professor is both daunting and they have a hard time envisioning themselves doing it. Whereas, growing up, I always figured I would go to grad school. Even though I went into General Electric, first as an engineer, and then as a finance person, I always expected that I would go back to grad school. Evidently, it was a pretty strong signal because I'm one of four children. I have three sisters, and three of the four of us have been professors in our careers, and I suspect that the fourth, who's a lawyer in government service, is very likely to go on to teach in a law school when she retires.
It's kind of a simple answer, but I think the reason why it was so appealing is that my father would say: "you know, I can't imagine having done anything else for the past 25 years. This is the most fun I could imagine having! I love my job!" Once you get through the growing process of the apprenticeship period of both PhD and junior faculty, you just have so many degrees of freedom. So, he was absolutely right. And we can kind of circle back to what I think of that apprentice period later on, but the punch line is I think we make it harder on people than we need to, but that's a whole separate issue.

(CP): That explains your interest in health sciences and your eclectic set of research interests. It's very interesting that you decided to go into engineering, even though your father worked in health sciences. Was there anyone else that may have guided you through the process, beyond your father, of picking your career?
(GP): Well, electrical engineering came naturally because I was a hand [amateur] radio operator and I liked to build radios. In fact, there's one, funny story where my parents were gone for a day, and I was stringing in antennas in the backyard and I cut down and mangled a number of trees, making room to hang dipole antennas. I got in some degree of trouble for that one but they were pretty good sports about it.
My father liked working with animal tissue and living organisms. But I always was interested in objects and, in particular, electronics and computers, and honestly that came through even at the beginning of my career because I straddled the IT and Operations Management worlds. Relatively early in academia, I found myself taking TIVOs apart and reprogramming them, exploring their Kernel operating systems, etc. And so, I was clearly, and have remained, interested in the physical and digital.
You asked one other question about health sciences. What happened there is kind of a funny story. At Tulane, where I was teaching operations management in the professional MBA program, a number of medical doctors would take that MBA. So, even though they were my peers and people in their 40s, who are very senior doctors at Tulane medical school, they showed up as MBA students. And they said, "Listen, we need to be able to argue with twenty-fiver year old finance people. So just give it to us as hard, straight, and basic as you can, don't treat us like executive MBAs, treat us like first year newbie quants!" As a result of that class, I met a number of the professors, including the head of transplant surgery at Tulane, and that pulled me into a whole network of faculty who are publishing a number of

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papers. That's been recent but say within the last five or ten years that research stream has been coming along. And it's becoming increasingly relevant. In many ways my interests in platforms, in operations, and in healthcare are starting to converge. I think of myself as a digital economics and strategy operations guy first, and then healthcare and energy second.

(SN): Geoff, you published a book recently, which has done really well, on platforms. Do you want to talk a little bit about your book and what led to that book?
(GP): That that's a funny story because a lot of people talk about platforms today. But, when we first got interested them in the late 90s, nobody talked about them. Because that Silicon Valley stuff was just not interesting to people who worked in the "real economy" such as banking, manufacturing, automotive, and healthcare. They just had a very different mindset about how the world worked, and even the way they did project management was very stage gate. It was very enterprise focused. So, people weren't really interested in these issues of network effects. The way we got into it was trying to understand pricing anomalies. And I did a lot of that early work with one of my PhD buddies, Marshall van Alystyne, who is at BU now. And so we started talking about things in the coffee room probably around 1997 and then we wrote our first paper on two sided networks in 1999 and that took forever to get published, because it was new. The publishing antibodies against new theory are very strong.
This led to a whole stream of work first on essentially industrial organization economics, really nailing down pricing in the presence of network effects and why you might observe zero prices forever, and why that would be good for both profit maximizing, good for overall welfare, and for consumer welfare. And that up turned over a lot of anti-trust theory because it looked like predatory pricing, but in fact it was perfectly rational firm behavior. So that notion of two-sided network theory had to get absorbed into all kinds of different regulatory bodies and that all was happening, say around 2005 to say 2015. Those ideas began to diffuse pretty completely.
Then we shifted our attention around 2005 to broader questions of industry structure and strategy. We published a two-sided network theory paper that came out in 2005. Then we got a 2006 Harvard Business Review article that really was our way of starting to build out platform strategy. And then Marshall and I were teaching the content in our MBA classes and I'd say that we knew we were going to write the book probably starting about 2011 but he wanted to do a startup, and I wanted to write a book... I forget exactly how we decided what to move forward with, but he won. We started a business, got it up to about 10 people, but it didn't have product market fit, we did a lot of things wrong, spent a fair bit of money and then wound it back down.
And then I said "Ok, now it's my turn, let's write a book" and we got that going in about 2013 and the book, Platform Revolution, is built directly off of our MBA classes. I'd say most of those chapters are rooted in a pretty good body of literature and some of that is engineering design. For example, all the work that Carliss Baldwin, Kim Clark and many others did in product modularity is very front and center in that chapter. And then, of course, our own work on two-sided networks as well as a ton of scholars, with whom we've been fortunate enough to bounce off of and learn from. So, we tried to distill that course into a digestible book because we were only reaching between us maybe 100 to 200 people as opposed to the hundreds of thousands that we're now reaching through the book. It's used in many companies and in a number of online courses. We had a sense that you could scale, but it was really true and that was a lot of fun.

I think of every research stream as building a team and building a business, whether the business is designed to create a profit or whether it's designed to create influence, visibility, or discover something new!

(CP): So, you're also an entrepreneur. That's amazing. I didn't realize that you had gone into business with Marshall and at that point, it sounds like there was an opportunity for you to go back to industry and perhaps quit academics, or do both: How did you work all that out? Do you still explore business opportunities?
(GP): Well, you said something really interesting, which is entrepreneurial, but I think every faculty member is entrepreneurial. I think of every research stream as building a team and building a business, whether the business is designed to create a profit or whether it's designed to create influence, visibility, or discover something new. My mindset is: every one of these projects that I undertake is first about: Is this interesting? Is it worth my time? Second, who do I like working with? Who's also competent to work on this project? Note the order. I will order based on: Who do I care to work with? Because life is too short! And it may get hard if you don't enjoy the process, because every project just takes a ton of time. And, so you may as well have fun while you're doing it.
And then, you build a team and then essentially: it's literally like trying to find product market fit. Let's get a bunch of examples. Let's figure out what is missing in this. Ask what resonates? What do we think is interesting? What's possible, in terms of either the data that you can collect, the models that you could build, the theorizing that you could do, and then you go after it! And I don't see how that's that much different than building products and services directly for a market. So, I think that entrepreneurial mindset is one that we should probably teach our junior faculty, a bit more directly because that really is how I think you can make it fun and have a lot of impact and influence as well.

(CP): That should probably your next book: the entrepreneurial mindset to academics, because it sounds like you have an HR strategy, a marketing strategy, a financial strategy for each one of the projects that's fascinating.
(GP): Let's drill down on that a little bit because I think the fi-

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nancial strategy is a good one. I mean, we're probably coming to the end of the era where people will blindly pay for research and academics' time, to spend on creating knowledge without asking some pretty hard questions about what that knowledge is, and what its usefulness is.

So, in many fields you can say: "well, this could be fundamental research. And that's knowledge that's worth pursuing for knowledge's sake!" But there are other types of knowledge that you might produce, which is often integrative. Which means, we're not doing fundamental physics theory or discovering fundamental new mathematics. We're often using tools from disparate fields and combining them. That's most of what social science research, or management research, and a lot of economics would look like.

And then you ask: "Where are the resources coming from, that allow us to have the time to do this?" And you know our business model is you teach some, and then you are free with the rest of your time to do research. And so, clearly there's some surplus that you're generating either through teaching or, in many schools, the business model entails hiring adjuncts, or professors of practice, who then generate enough revenue to allow research faculty to do their thing.

Where are the resources coming from, that allow us to have the time to do what we do?

But I think we're going to have to scrutinize that pretty carefully. And as a result, it's going to become more important that we answer questions that are clearly ones that people care about! So, it really is about a business mindset: What's the audience? Is there a market for it? And it's one of the reasons why I've often tried to do sponsored research. Not because business schools required it... I'm in an engineering school, and they certainly smile when you have sponsored research, but the first 18 years of my career was in a business school, they didn't require me to get Department of Energy (DOE) grants, or National Science Foundation (NSF) grants, or generate corporate sponsorships. But I did it anyway and partly as a signal that said: "Hey, people are willing to spend in aggregate many millions of dollars to sponsor these streams!" and as a signal that says that

Learn what a fundable proposal is!

"Somebody cares" And by the way, it's also a really great way of making sure that you have current information, because you're able to get that from the corporations that you work with. So, you get to understand at a pretty fundamental level what they're grappling with.

(SN): And that brings up another very interesting question, Geoff, you've been a fairly early leader in sponsored research, certainly at business schools, you've done a lot of that. How would you advocate scholars to actually think about sponsored research and moving in that direction?

(GP): Having done my PhD at MIT, I was sponsored by foundations like: Sloan Foundation's Leaders for Manufacturing, which was a program sponsored by a number of companies and I was a teaching assistant and RA as part of that. I was also funded by the International Motor Vehicle Program. So, there was a lot of sponsored research that was taking place with business school faculty and I think I grew up in an academic world with that mindset.

However, I'd also have to credit my good friend and co-author, Marshall because he was not in a business school at the beginning of his career. He was in the School of Information at Michigan. And they have much more of an engineering school mindset, where everybody pursued sponsored research. And I looked at that. And I said: "Well, that looks like it gives you some freedom in funding, and it helps you sharpen and focus the pitch for your ideas." And so, I partnered with Ed Anderson, a long time POMS member, and we did our first big NSF project. And that was great, because it allowed us to study distributed product development, distributed product innovation, and distributed knowledge work. It gave us the money, essentially, to be able to travel and interview a ton of firms in the U.S. and Europe in their places of work.

So, the advice that I would give is twofold: if you're going after the corporate side then it's about answering questions that serve the dual purpose of both furthering your academic research, while not getting captured for consulting.

Because of this, I would actually counsel junior faculty to go after National Science Foundation (NSF), National Institute of Health (NIH), Department of Energy (DOE), Environmental Protection Agency (EPA) grants. And the reason is that you don't have that dual pressure of trying to satisfy the company's direct interests, because as a more senior faculty member, you can kind of hold the companies off and say: "Listen, I have to be able to sponsor students, I have got to be able to produce something at the end of this that will further the academic enterprise, while at the same time helping you address your business interests and questions." But that's a tougher game to play. So, I would tell junior faculty to give a shot at doing some government sponsored work first.

And then the direct way to do this is to serve on a review panel. And so, you should go to the presentations that the program officers attend -and they attend our INFORMS, POMS, etc.- they will come, and you can meet program officers from NSF,

With corporate funding, provide value on the book ends, while doing academic research in the middle

DOE, etc., listen to what they have to say, and offer to serve. Iit's much like reviewing papers, it's a lot of work! I've done a fair bit of it, and it helps you really learn what a fundable proposal is.

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(CP): Could you please give us some hints on the administrative architecture associated to corporate funding to help ensure that their goals that are met, as well as academic ones? Is there an administratively effective way of balancing things out?
(GP): Yes, there it is! And the way to do that is to build out a statement of work with both parties' objectives pretty clearly stated.
So, if you do NSF, you'll have to have a: body of theory, testable hypotheses, proof that you have access to data, and perhaps industrial connections, etc.
Now, on the corporate side, in order to ring fence yourself, a statement of work that clarifies what's going to get produced, on what time frame is protection against scope creep at the end. Of course, you should bake in some things that are of direct interest to the company. So, I usually start with data gathering and maybe a big workshop. And that big workshop, in many ways will help the company along the lines of what executive education might look like. And you can tailor design those workshops, so they'll view that as being highly valuable. That is something that I do anyway, in the normal course of business, by just being a faculty member. But it's also fun! And it's a way to meet people, and you can set them off in sub-working groups. And then you can tailor interesting questions to their industry, and environment, and context, and then see what they have to say. So, that serves a couple of goals in terms of onboarding. Afterwards, you can come and launch into: "Okay, we're now going to run down a little more deeply!"
Which is going to be the academic component of the project. And then at the end, you do some kind of back translation into the business context, so that the corporation is getting value on the book ends, while academics do research in the middle.

You ought to be able to take things from what's happening every single day and bring it into the class. Otherwise, you're teaching the history of management, not the practice of it!

(CP): You mentioned we need to change our mindset in research and make it much more applicable. Do you think that also applies to teaching?
(GP): Always!
The beautiful thing is that if you're doing work that is of direct relevance, especially on the industrial side, then you always have current examples! You can always bring speakers in who can illustrate the issues.
For example, I teach a course called platform design management and strategy. I teach it in the engineering school, but the Business School students found it, so it's about a third MBAs and about two thirds engineering students. In that class when I want to talk about launch, product market fit, network effects, two-sided pricing. I can bring a founder in (of a company that's got double digit billion dollars of market cap) and ask: "What did you grapple with? How did you make these decisions? What would you do differently, if you could wind back time? So, that it's not just me telling them. I really like that because I can weave in visits from people that they'll listen to just by the nature of who they are.
And the other thing is, the cases that you bring into classes. Especially on the platform course, I probably change a quarter to a third of it every year. If it's a topic area, I just leave it blank in terms of what the cases are and then two weeks ahead of time, I just mine the news and then I build many cases based off what's current. So, they're reading something that was in the newspaper a week or two ago. Nobody will argue that it's not current.
And I think that helps us. You can have a classic case like National Cranberry. When I used to teach Operations Management, I would always teach that because it's the perfect process flow mapping, capacity management, type of case. But you shouldn't only teach that. You ought to be able to take things from what's happening every single day and bring it into the class. Otherwise, you're teaching the history of management, not the practice of it.

(CP): What do you feel most comfortable teaching?
(GP): The stuff that I need to practice the least for, I'd say is the platform work. Because that's where I spend the bulk of my time: working with companies, doing the projects that I'm involved in. The reason I'm brought into a lot of research projects is because of that specific background and expertise. So, even if it's in healthcare, even if it's in operations, it usually will have a platform overlap. So, that's probably the easiest and where I can just riff because I always have a Rolodex in my head of current examples.
Operations Management, because I did it for almost 20 years, and have published considerably in that, I use a lot of those examples in platform work. And so, I kind of tend to merge those together. Because there's a whole lot of thinking about processes, flows, measurements, incentives, which come directly out of operations.
Where I probably have to do the most work in prep is for data analytics. And that's where I really have to work my tail off. Because it involves a lot of detail: I code in either Python or R. I always have to rework things because we also do a lot of pulling live data from API's. They always break every year. So, you have to either personally, or have your TAs, go and just test everything way ahead of time to make sure that things work, and then rebuild exercises.
Because the platform work tends to operate more at the level of strategy and management, I find that's easier from a prep side. Whereas, if I'm doing granular coding it feels more like I'm teaching a combination of probability theory, statistics, and computer science and you just have to work harder at making sure you've got the detail right!

(CP): And what about healthcare? Do you do teach any healthcare courses?
(GP): I really don't yet. But I do use healthcare related examples

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in some of the other classes. So, for example, I was teaching data analytics -we have something called the Dartmouth coach, which goes about 8-10 times a day back and forth between Hanover and Boston- while riding the coach I ended up meeting the data scientists at Dartmouth Hitchcock Medical Center. Two women whom I invited came to speak in my class. And so, they came to the data science class, and they really helped students come away with a clear understanding of the range of types of data and questions that they ask. For instance: Why are we getting hospital acquired infections, in wing E of the building? So, that's a straightforward operations management style question. In which we have a fault and now we'll ask the five whys of what happened. But the way that you asked the five whys (or more), is that you've got a lot of data to collect. And the data are going to be all over the map. Some of it is going to be interview data. Some of it will come out of the electronic health medical record system. Some of it will be test data. And so you'll have many different types of data and then you have to use those to start to answer the question.

I compared the size of the data team at Dartmouth Hitchcock to the size of the data team at Airbnb. And I have a friend and colleague who's the head economist there. He'll pop in sometimes to talk to one of my classes, and explain how they approach data science and the types of questions that they asked, etc. The trick question that I asked the students is: Who has the bigger data science team Dartmouth Hitchcock (that is serving five or six million patients in the upper valley of New Hampshire, Vermont, and Maine which may the boundary at which Boston then becomes the center of gravity) or Airbnb (which is serving hundreds of millions if not billions of people and in hundreds of cities all over the world and handles vastly more transactions)? And of course, it's Dartmouth Hitchcock. Because the complexity is much higher in terms of the types of transactions, interactions, and therefore the data that they're capturing. I think it's important to help the kids understand context. And that's how I connect my teaching with healthcare.

The number of people who have a legitimate claim on your time only goes up...

(SN): So how did you strategize about picking the areas you've worked in? Or do they come and grow organically? How do you approach your research as streams? Given that you have so many different areas in which you are successful.

(GP): Mostly organically, from what I'm interested in. Definitely the work in operations came out of focusing on new product development that people like Karl Ulrich, Steve Eppinger, Charlie Fine and Dan Whitney were doing at MIT. That group of people were hugely impactful on how I viewed the world and then the work with Ed Anderson really naturally followed. So, we did some theory work for example around how multi-level learning curves at a component level interact with learning at a subsystem and whole system level. So, you really need to manage that when you think about outsourcing, and define: Where are you going to retain knowledge? Where are you going to let it go to the supply base? And you might think about those questions. But that was just stuff we thought was really interesting and it was important because firms were grappling with: How do you manage outsourced projects that are complicated? It's not the same as buying screws. So, if you're going to outsource either programming or sort of subsystems that are integral to the rest of your product. There's a lot of communication and coordination that needs to happen. And I just thought those were interesting problems. They were hard! And I had seen some of it in the industrial context when I worked at GE.

And then on the IT and information economics side, same thing. Honestly, it was all because Twin Peaks got canceled. And I was very frustrated that a show that, I thought, was really interesting got canceled. But then we looked into the economics of it, and how an ad sponsored system would not work for niche programming. Or course it does now, because it's a subscriber sponsored system, but at the time it didn't work... So, we started looking at software markets where there was all this free stuff and wondered if they were ever going to charge for it. So, those were interesting questions. It wasn't also not very strategic. It was mostly just what I felt was important enough to be worth the time, and interesting enough, that allowed you to sustain your focus on it.

(CP): How do you manage your time? How do you find time to do everything you do?

(GP): Well, my wife would tell me that I'm working harder now than at any point in my life ever (probably the easiest part was being a doctoral student). Before that I had worked at GE which was sort of like joining the army at the time. And so being somewhat of an older PhD student meant that it was a job. So, I'd go to work, go to the office leave at five or 5:30pm go work out, which took a couple hours, we'd meet up at nine have dinner. Go to bed, wash, rinse, repeat. So that was the doctoral program. Very simple, very focused, you knew what you were supposed to do. Then, honestly, being an assistant professor wasn't that much different.

But after that, things get really complicated. You end up taking on a lot of different roles and responsibilities. The way I like to explain it is the number of people who have a legitimate claim on your time only goes up.

So, the number of people that you have to pay attention to, and you want to, but also, you really have to goes up. For example, you're on a university level committee and it's dealing with something important. You can't blow the Provost off. Your Dean wants to get your help with hiring strategy. You can't ignore that. You know you're in the middle of hiring and you have to go to these seminars, because that's the future of your school and eventually you're going to ride off into the sunset. You can't ignore that. You are department editor for POM Journal and you have a backlog of stuff. You can't ignore that. So, you just you just try to stay on top of as many things as you want. And

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honestly, the ball sometimes falls on your feet, and you break your toes, and you think hard about that. I find myself riding the edge of what you can do. And my wife would say you've got to learn how to say no and just choose more, and my problem is there's just so much interesting stuff that choosing is hard.

(SN): In terms of POMS and service. And the impact of POMS. How has POMS made a difference to you?
(GP): POMS has had a hugely positive impact on my career. Not least of which is that they published the first three papers I ever got published. And those papers were unusual in the sense that they were not obvious operations management papers. So, for example, one was called: From buyer to integrator - the transformation of the supply chain manager in the vertically disintegrating firm. And that was literally building on this idea

POMJ has been much more open minded in the breadth of research that they were willing to publish

of firms outsourcing a ton of things, but they still needed to have coherent products and services. How can they do that? That actually came because I went and interviewed all the graduates of the MIT Leaders for Manufacturing Program over the prior first 10 years of its history, as well as all their managers, and I discovered that most of them were supply chain facing because they were all trying to solve this hard coordination problem.
But that's not an obvious paper that you would open up sort of POMS or MS or OR and find anything that looked like that. So, I give a huge amount of credit to Kal Singhal and Anant Raman (up at Harvard), for pushing the envelope on what was going to be valid research and interesting things that they'd be willing to publish. And so, POMS was much more open minded in the breadth of research that they were willing to publish than some perhaps more technical journals.
And I think, as a result, POM Journal has been able to have more impact by publishing a lot of interesting things. But that's obviously a personal bias, because I'm interested in lots of different things. Of course, there are different types of careers. I mean, we have some amazing technical colleagues who have explored in great detail some of the beautiful mathematics that describe our field and there's got to be room in the field for all. POMS for me has been an outlet that has been willing to publish simulation work, has been willing to publish survey articles, has been willing to publish interview-based and framework articles, as well as empirical pieces and of course modeling papers. And that's been wonderful.

(CP): Having a multidisciplinary and entrepreneurial mindset seems key for the future. How else do you view the future of academics?

(GP): In the near term, regarding operations, I used to feel like a two headed monster. Where my information economics work was running up one vertical silo, and my work in operations was running up another vertical silo. But I'd say in the last four or five years, those two worlds have collided in a good way. Probably because the structure of the economy has changed. It's now obvious that big tech companies that can have both huge scale (at the cloud level), but also harness network effects (on the demand side), are now growing much faster than any other segment of the economy. And so, if you have some good theory, and you have some understanding of that world, and you can start to apply it in a more industrial and tangible context. I think that's where we're going to head. So, for example, a lot of the big tech firms grew up in more of a B2C world. I think that we're going to see the wave of B2B. Which is good for us, as operations management people, because now the physical constraints of systems are going to come to bear, and that will matter in ways that they really didn't in a B2C world. And thus, a good understanding of supply chains will matter. And I think we have increasingly a lot to offer to that conversation. Especially regarding aspects for which perhaps pure economic theory ran ahead of where we were a decade and a half ago.
In addition, you've got sort of the whole rise of data, the ability to do artificial intelligence, machine learning, etc. And that's going to have an enormous impact on our field. Because the information is there, you can do interesting things with it. You can apply it.
Longer term. I think the forces on us are going to be pretty severe, frankly, in the sense that we've got to be mindful, in higher ed, of where resources come from and what society is going to be willing to pay for. And I think we've had the luxury of growing up in a time when society was willing to fund research and willing to fund higher ed. Now, a lot of really hard questions are getting asked by parents, by state legislators, etc. State level funding for universities has dropped like a rock, and I find that frustrating. But I think that means on the political side that we've perhaps not done a great job at explaining the value proposition. The withdrawal of support from society is reflective of that. We're in STEM, so we're a little bit more insulated from that conversation, which is a really hard one for our colleagues in other fields. But I think that's a macro trend that isn't going to go away and it's going to have us asking some pretty hard questions about how we operate our business. How we articulate the value of what we do, to defend it, and celebrate it. Frankly I think there's a huge amount to offer, but we've done a poor job in higher ed of making that clear.

**How can we better articulate the value of what we do?
To defend it, and celebrate it!**

(SN): That's very true. What advice would you have for young scholars who are entering academia?
(GP): In terms of strategies, I think you've got to have a portfolio. If you think about what you're trying to do, you're trying to prove that you can master the craft of producing journal articles, of course. But, also of teaching and then you can manage your

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time to do the work that the job requires, because in many ways there's a lot of freedom, and that freedom requires you to be focused.
I would say think about it as an apprentice period. You must make these papers, and prove that you can do it. And so those are your singles and doubles and they're really about mastering the craft of producing publishable work. But that's not good enough, because that's not going to keep you in the field. That may get you tenure, but I've seen a lot of people that kind of fall over the finish line, exhausted, and sort of done!
I've never felt that way. I thought that was step one, and just the very beginning. And the reason is, in addition to kind of cabinetry work, you should also have things that you're deeply passionate about. They may not get you tenure, and so you don't want to put too much of your time on them, but you can't put

Find people you like to work with, that you're compatible with, of course who are capable of doing the work, and make it fun!

zero. Because you've got to have the next set of things that you care about. Much like you've handed in your dissertation and you can't stand it anymore. If you've kind of gotten your first group of work out, you better have something that you love and care about that keeps you going. So, that would be part one: think about the job as you've proven that you can do it, and having projects that are contained enough so they're not so open ended that you get bogged down, and you can get those out the door.
And then the other part is that I've succeeded, frankly, through teamwork. I mean, if you were to look at the things the streams of work. I've worked with a lot of different co-authors, but the ones that I keep coming back to are the ones I used to do problem sets with in grad school. Ed and I would do our problem sets every weekend, and the pizza guy knew where to come. We had one conference room that we took over Saturday and Sunday. We really enjoy each other's company, we respect one other, and know that the other will get the work done. And it's a lot of fun. Early in our careers, we traveled back and forth all the time, stayed at each other's houses and had a lot of great dinners. And so, the other thing I would say is try to find people you like to work with, that you're compatible with, of course who are capable of doing the work, and make it fun! A lot of this it's social. I don't want to work 12 hours a day… I want to work eight hours and then I want to go do something fun. Like have a nice dinner and a bottle of wine, and I want to work with people who share that, or whatever it might be.
Because a career is really long and it's nice early on when you identify those people with whom you enjoy building things and doing things. That's your core team, and then you build out from there. So I tell this to my students all the time: "Look left look right, the people that you've met here are people you should hang on to, because you've enjoyed their company here, and they're going to be people that you can do stuff with later."

(SN): That's fantastic. Thank you so much. We promised we wouldn't keep you too long. So,
(GP): Let me just say as a parting word. It's an incredible honor to be nominated as a POMS Fellow because if you look at the membership, it's really impressive. People who have done a lot in our field. And if you think about the arc of a career, getting this recognition is something to be very proud of. So, I'm deeply honored and really appreciate everything that POMS has done for my career. Honestly, they've been there at critical moments when I could have easily fallen off the rails, and had to go do something else and POMS' colleagues supported me... So I am deeply appreciative.

(CP): Congratulations again and thank you for your time.

(GP): Thank you both!

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