Management Science II, Summer Term 2022
ESMT Learning Center (Main Building), Schlossplatz 1
Thursdays 9:00am to 12:00noon (please see separate schedule for further details)

Part 1: Organizational learning, behavioral strategy, and luck

Chengwei Liu

Associate Professor of Strategy and Behavioral Science
ESMT Berlin
Schlossplatz 1, Office AB 2.04
+49 (30) 21231 1556
Chengwei.Liu@esmt.org
Office hours: by appointment

Part 2: Networks and organizations I

Eric Quintane

Associate Professor of Organizational Behavior
ESMT Berlin
Schlossplatz 1, Office AB 2.08
+49 (30) 21231 1548
eric.quintane@esmt.org
Office hours: by appointment

Part 3: Networks and organizations II

Matthew S. Bothner

Professor of Strategy
ESMT Berlin
Schlossplatz 1, Office AB 2.09
+49 (30) 21231 1541
Matthew.Bothner@esmt.org
Office hours: by appointment

Course overview

This course is composed of three parts. The first part of the course focuses on organizational learning and its implications for strategy. We will cover canonical ideas/models, such as the exploration and exploitations trade-off, the traps when organizations learn from successes and failures, how randomness complicates learning, and how learning reinforces or changes organizational routines. A framework of strategy as arbitrage will be introduced to connect several ideas covered in this course. The second part of the course introduces social network analysis within organizations. We will start by discussing key ideas and debates in social network analysis, such as the notion of embeddedness, network structure and the role of individual agency. We will then take a deeper dive into the methodological implications of doing research with social network data. We will cover 1) measures used to identify network positions and key network characteristics, 2) more advanced statistical models

developed to handle the problem of dependence of observations and 3) concepts and measures regarding network dynamics. This first part will equip you with the knowledge that you need to embark in more advanced topics in network analysis.

The third part of the course explores applications of network-analytic methods to a wide array of agents—plausible candidates for which include professional auto racers, gangsters, college fraternity members, and words in semantic networks.

Course format

We will meet once a week for three hours. In each meeting, you are expected to have prepared the assigned readings for each session. While reading the papers it may be useful to first identify the research question, major concepts used to formulate the research problem, the methodology used, key findings and its major shortcomings or weaknesses. You should then be able to suggest research ideas on how to address the weak or problematic aspects of the article.

Selected readings are available at: https://cloud.esmt.org/s/aBWesioZ9M69HGH

Each participant will be assigned to present at least one paper in class during the course depending on the number of participants. The student assigned the paper being discussed is not only expected to introduce the paper but also to lead the class discussion. The presentation assignments will be communicated after the first session.

Prerequisites

Participants should be familiar with basic microeconomic tools as well as have a basic understanding of multivariate regression analysis.

Course evaluation

Performance evaluation will be based on three building blocks:

Class participation (25%) The course will be highly interactive and you are expected to advance discussions in the class-room by your participation. Note that the evaluation of your class participation will be based on quality not quantity.

Paper presentations (30%) You are expected to present at least one paper during the course.

Term paper/referee report (45%) Grading of the written contribution is based on one individual assignment for which each student is expected to write one referee report on a recent research paper. The instructors will provide a list of research papers on the topics of each part of the course from which students could choose one paper to prepare a referee report. The list of research papers will be provided during the course. Alternatively, students can opt to write a term paper in the form of a research proposal. **Referee reports and research proposals are due by August 15, 2022.**

Part 1: Organizational learning, behavioral strategy, and luck

Chengwei Liu

Course Sessions

Session 1
Thursday, April 21, 2022
9:00–12:00

Session topic	**Explorations and exploitations in organizational learning**
	We examine the structure of "exploration mechanisms" that focus on how an attribute A increases performance because it leads to superior experimentation. A specific aim is to understand the first part of the classical March 1991 model.

Required Readings:	March, J. G. (1991). Exploration and exploitation in organizational learning. Organization Science, 2, 71-87.
	Task 1: focus on the first model, on socialization. Each of you should write a paragraph explaining in the best possible way your answer to the following question:
	"Why is average knowledge highest, in the March 1991 model, when p_1 is low and p_2 is high? Why should not p_2 be low also, or p_2 low and p_1 high?".
	Posen, H. E., D. A. Levinthal. (2012). Chasing a moving target: Exploitation and exploration in dynamic environments. Management Science, 58(3), 587–601.
	Fang, Christina, Jeho Lee, and Melissa A. Schilling. 2010. "Balancing Exploration and Exploitation through Structural Design: The Isolation of Subgroups and Organizational Learning." Organization Science 21(3):625–42.
	Task 2: what are the attributes in these papers that predict higher performances and what are their underlying mechanisms?
Further Readings	Jerker C Denrell, Michael Christensen, Chengwei Liu, Thorbjoern Knudsen. Making the best use of diversity: When fast learning is superior to slow. [Working Paper]().

Session 2
Thursday, April 28, 2022
9:00–12:00

Session topic	**The traps of learning from successes and failures**
	Conventional wisdom suggests that alternatives that led to successes should be repeated and alternatives that led to failures should be avoided. Our aim is to understand when this conventional wisdom fails systematically.

Required Readings:	Denrell and March (2001) Adaptation as information restriction: The hot stove effect, Organization Science, Vol. 12, No. 5, 523-538.
	Denrell, Liu and Maslach (2021) Underdogs and One-hit wonders: When is Overcoming Adversity Impressive? Conditionally accepted at Management Science. Paper
	Task 1: why learning from experiences can be a poor teacher in these two models?
	Levinthal, Daniel A., and James G. March. 1993. "The Myopia of Learning." Strategic Management Journal 14(8):95–112.
	Task 2: specify a learning myopia in a context of your interest with its mechanism, consequence as well as possible remedies.
Further Readings	Strang, D. and Macy, M.W. (2001) 'In search of excellence: fads, success stories, and adaptive emulation', American Journal of Sociology, 107 (1), pp. 147.
	Levitt, B., and J. G. March. 1988. "Organizational Learning." Annual Review of Sociology 14:319–40.
	Greve, Henrich R. 2003. Organizational Learning from Performance Feedback: A Behavioral Perspective on Innovation and Change. Cambridge, England: Cambridge University Press.
	Liu, C. (2021). In luck we trust: Capturing the diversity bonus through random selection. *Journal of Organization Design*, *10*(2), 85-91.

Session 3
Thursday, May 5, 2022
9:00–12:00

Session topic	**A random school of thought in organization science** Chance models—mechanisms that explain empirical regularities through unsystematic variance—have a long tradition in the sciences but are marginalized in the management scholarship. During this session, we will have an overview of how this school of thought provides alternative explanations for organizational and management phenomena as well as their implications.

Required Readings:	Liu and Tsay. The Variance of Variance. Forthcoming at Research of the Sociology of Organizations. Paper. *(also quickly read through the 6 original papers by James G March reviewed in this paper, see Further Readings, focus on their mechanisms)* *Task: Based on one of the chance models reviewed, develop a chance model that may provide an alternative explanation for a phenomenon (or empirical regularity) central in your field of interest.*
Further Readings	Denrell, Jerker, Christina Fang, and Chengwei Liu. 2015. "Chance Explanations in the Management Sciences." Organization Science 26(3):923–40. Cohen, Michael D., James G. March, and Johan P. Olsen. 1972. "A Garbage Can Model of Organizational Choice." Administrative Science Quarterly 17(1):1–25. Harrison, J. Richard, and James G. March. 1984. "Decision Making and Postdecision Surprises." Administrative Science Quarterly 29(1):26–42. March, J. C., and J. G. March. 1977. "Almost Random Careers: The Wisconsin School Superintendency, 1940-1972." Administrative Science Quarterly 22(3):377–409. March, J. C., and J. G. March. 1978. "Performance Sampling in Social Matches." Administrative Science Quarterly 23(3):434–53. March, James G. 1996. "Learning to Be Risk Averse." Psychological Review 103(2):309.

March, James G., and Zur Shapira. 1992. "Variable Risk Preferences and the Focus of Attention." Psychological Review 99(1):172–83.

Session 4
Thursday, May 12, 2022
9:00–12:00

Session topic	**Experiments in organizational learning**
	This session is about how to use experimental methods in the context of organizational learning. The session will consist of three parts:
	(1) General introduction on how to use experiments in organization and strategy research.
	(2) We will take a look at different tasks to study organizational learning /exploration-exploitation. (Please recall also insights from the readings of session 1.)
	(3) We will focus on one particular experiment by Cohen & Bacdayan (1994) (don't shy away: old, but gold!)
	This session will be led by guest speaker Dr Franziska Lauenstein (University of Southern Denmark)

Required Readings:	Cohen, M. D., & Bacdayan, P. (1994). Organizational routines are stored as procedural memory: Evidence from a laboratory study. Organization science, 5(4), 554-568.
	Task: If this experiment is conducted online, are there different opportunities to measure the dependent variables in this task? Please make suggestions how.
	A link to the online version of the experiment will be shared before the class.
Further Readings	Billinger, S., Stieglitz, N., & Schumacher, T. R. (2014). Search on rugged landscapes: An experimental study. Organization Science, 25(1), 93-108. (For a quick overview on NK landscapes see Csaszar, (2018))
	Csaszar, F. A. (2018). A note on how NK landscapes work. Journal of Organization Design, 7(1), 1-6.

Daw, N. D., O'doherty, J. P., Dayan, P., Seymour, B., & Dolan, R. J. (2006). Cortical substrates for exploratory decisions in humans. Nature, 441(7095), 876-879.

Denrell, J., C. Fang, and D. A. Levinthal. 2004. "From T-Mazes to Labyrinths: Learning from Model-Based Feedback." Management Science 1366–78.

On experiments more generally:

Falk, A., & Heckman, J. J. (2009). Lab experiments are a major source of knowledge in the social sciences. science, 326(5952), 535-538.

Di Stefano, G., & Gutierrez, C. (2019). Under a magnifying glass: On the use of experiments in strategy research. Strategic Organization, 17(4), 497-507.

Session 5
Thursday, May 19, 2022
9:00–12:00

Session topic	**Behavioral strategy** We will introduce a framework of strategy as arbitrage and discuss the source of strategic opportunities that are created by judgment biases, learning traps, resistance to changes, or conformity.

Required Readings:	Liu, C. (2021). Why do firms fail to engage diversity? A behavioral strategy perspective. *Organization Science*, *32*(5), 1193-1209. *Task: Specify a source of the CSRL limits that is not covered in this paper that can create/protect a strategic opportunity.* Denrell, Jerker, Christina Fang, and Sidney G. Winter. 2003. "The Economics of Strategic Opportunity." Strategic Management Journal 24(10):977–90.
Further Readings	Gavetti, Giovanni. 2012. "Toward a Behavioral Theory of Strategy." Organization Science 23(1):267–85. Zuckerman, Ezra W. 2012. "Construction, Concentration, and (Dis) Continuities in Social Valuations." Annual Review of Sociology 38(1):223–45.

Session 6
Thursday, June 2, 2022
9:00–12:00

Session topic	**Exceptional performance: Skill or luck?** Conventional wisdom suggests that luck is the residue of rationality and foresight. We will discuss how the impact of luck can be modeled and measured and its implications.
Required Readings:	Liu et al (2022) Testing Non-monotonic Associations in Performance Data. <u>Working paper</u>. Denrell, J., and C. Liu. 2021. "When Reinforcing Processes Generate a Outcome-Quality Dip." Organization Science. 32 (4), 1079-1099 Denrell, Jerker, and Chengwei Liu. 2012. "Top Performers Are Not the Most Impressive When Extreme Performance Indicates Unreliability." Proceedings of the National Academy of Sciences 109(24):9331–36. *Task: specify another empirical context where performance non-monotonicity can be expected ad tested.*
Further Readings	Liu, C. (2020). *Luck: A Key Idea for Business and Society*. Oxford, UK: Routledge.

Part 2: Networks and organizations I
Core concepts and methods to understand networks in organizations

Eric Quintane

Course Sessions

Session 7
Thursday, June 9, 2022
9:00–12:00

Session topic	**Key ideas in organizational network analysis** Departing from other perspectives, Social Network Analysis focuses on the relations between social actors (e.g., individuals, groups, organizations). The shift in perspective from actor level characteristics to (or combined with) relations between actors has

contributed to our understanding of individual, group or organizational level outcomes and the social processes that drive them. In this first session we will introduce the social network perspective in management studies and articulate the key ideas and debates that permeate the study of organizational networks today.

Required Readings:	Borgatti, S. P., A. Mehra, D. J. Brass, and G. Labianca. 2009. Network Analysis in the Social Sciences. Science, 323: 892–895. Kilduff, M., and D. J. Brass. (2010). Organizational Social Network Research: Core Ideas and Key Debates. Academy of Management Annals. 4:317 - 357.
Task (participation grade):	Based on the required readings, prepare a brief (one paragraph) answer to each question and submit before class: 1. Why does social network analysis matter (for the study of organizations)? 2. How do social networks exert influence? 3. (How) Do individuals matter in a network?
Optional Readings:	Burt, R. S. (2004). Structural Holes and Good Ideas. American Journal of Sociology, 110(2), 349–399. Burt, R. S. (1987). Social contagion and innovation: Cohesion versus structural equivalence. *American Journal of Sociology*, 92(6): 1287–1335. Feld, S. (1981). The focused organization of social ties. American Journal of Sociology, 86(5), 1015–1035. Granovetter, M. (1973). The Strength of Weak Ties. American Journal of Sociology, 78(6), 1360–1380.

Session 8
Thursday, June 16, 2022
9:00–12:00

Session topic	**Network data, measurement and methods** The beauty of network analysis lies in its underlying mathematical nature. Building on matrix algebra and graph theory, network measures have been developed to represent precisely the patterns of social relations that surround actors. However, network data requires specific tools and methods for its collection and analysis. In this second session, we will introduce social network analysis as a method for social inquiry. We will discuss some of the key issues in using social network analysis as a method and review some of the most commonly used measures in organizational network analysis.

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Thursdays 9:00am to 12:00noon (please see separate schedule for further details)

Required Readings:	Burt, R. S. (2019). Network disadvantaged entrepreneurs: Density, hierarchy, and success in China and the West. Entrepreneurship Theory and Practice, 43(1), 19-50.
	Sparrowe, R. T., Liden, R. C., Wayne, S. J., & Kraimer, M. L. (2001). Social Networks and the Performance of Individuals and Groups. Academy of Management Journal, 44(2), 316–325.
Task (participation grade):	Based on the required readings, prepare a brief answer (one paragraph) per item and submit before class: Identify how network data is collected. Identify the network measures used. Explain how the network measures are calculated. How are these network measures interpreted differently?
Optional Readings:	Borgatti, S. P., Everett, M. G., & Johnson, J. C. 2013. *Analyzing social networks*. SAGE Publications Limited. Chapters 2, 3, 4, 10 and 11 Freeman, L. C. (1979). Centrality in Social Networks: Conceptual Clarifications. Social Networks, 1(3), 215–239. Marsden, P. V. (1990). Network Data and Measurement. Annual Review of Sociology 16: 435-463. Marsden, P. V. (2002). Egocentric and Sociocentric Measures of Network Centrality. Social Networks, 24(4), 407–422. Robins, G. (2015). Doing Social Network Research: Network-based Research Design for social Scientists. Sage. Schorch, S. and Quintane, E. (2018). Social Network Analysis. In Edlund, J. E & Nichols, A. L. Eds. Advanced Research Methods for the Social Sciences. Cambridge University Press.

Session 9
Thursday, June 23, 2022
9:00–12:00

Session topic	**Dependence assumptions and exponential random graph models** The core focus of social network analysis on the relationships between social actors implies that observations in social network analysis are dependent. This means that standard statistical analysis methods are in most cases inappropriate (because they assume independence of observations). We will review some of the most used statistical frameworks that have been developed to handle the issue of dependence of observations in social network analysis.

Required Readings:	Kleinbaum, A. M. 2012. Organizational misfits and the origins of brokerage in intrafirm networks. *Administrative Science Quarterly*, 57(3): 407–452. Brennecke, J. (2019). Dissonant ties in intraorganizational networks: Why individuals seek problem-solving assistance from difficult colleagues. Academy of Management Journal, 63(3), 743–778.
Task (participation grade):	Based on the required readings, prepare a brief answer to the following questions and submit before class: What is the dependence of observations? Explain how the authors handle the dependence between observations in their empirical contexts.
Optional Readings:	Krackhardt D (1987) QAP partialling as a test of spuriousness. Soc. Networks 9(2):171–186. Pattison, P. E., Robins, G. L., Handcock, M. S., & Snijders, T. A. B. (2006). New Specifications for Exponential Random Graph Models. Sociological Methodology, 36(1), 99–153. Robins, G., Pattison, P., & Woolcock, J. (2005). Small and other Worlds: Global Network Structures from Local Processes. American Journal of Sociology, 110(4), 894–936. Robins, G., Pattison, P., Kalish, Y., & Lusher, D. 2007. An introduction to exponential random graph (p*) models for social networks. Social Networks, 29(2), 173–191. Snijders, T. A. B. (2011). Statistical Models for Social Networks. Annual Review of Sociology, 37, 131–153.

**Session 10
Thursday, June 30, 2022
9:00–12:00**

Session topic	**Dynamics of networks**
	While much of the existing literature on social network analysis has focused on the analysis of networks observed at one point in time, the increased availability of time stamped data about interaction behavior is calling for the development of new methods and perspectives. In this session we will take a deeper look at the dynamics of networks. We will introduce a statistical model used for longitudinal network data and discuss some more recent models and measures designed specifically for sequences of time stamped relational events.

Required Readings:

Tröster, C., Parker, A., van Knippenberg, D., & Sahlmüller, B. (2019). The coevolution of social networks and thoughts of quitting. Academy of Management Journal, 62, 22-43.

Quintane, E., & Carnabuci, G. (2016). How do brokers broker? Tertius gaudens, tertius iungens, and the temporality of structural holes. Organization Science, 27(6), 1343–1360.

Task (participation grade):

Based on the required readings, prepare a brief answer to the following question and submit before class:
Explain how network change is conceptualized and measured in the two papers and articulate their differences.

Optional Readings:

Rivera, M. T., S. B. Soderstrom, & B. Uzzi 2010. "Dynamics of Dyads in Social Networks: Assortative, Relational, and Proximity Mechanisms." Annual Review of Sociology, 36: 91–115.
Block, P., Koskinen, J., Hollway, J., Steglich, C., & Stadtfeld, C. (2018). Change we can believe in: Comparing longitudinal network models on consistency, interpretability and predictive power. Social Networks, 52, 180-191.
Chen, H., Mehra, A., Tasselli, S., & Borgatti, S. P. 2022. Network Dynamics and Organizations: A Review and Research Agenda. *Journal of Management*, (71902088): 014920632110632.
Falzon, L., Quintane, E., Dunn, J., & Robins, G. (2018). Embedding time in positions: Temporal measures of centrality for social network analysis. Social Networks, 54, 168–178.
Kalish, Y. (2019). Stochastic Actor-Oriented Models for the Co-Evolution of Networks and Behavior: An Introduction and Tutorial. Organizational Research Methods, 1–24.
Soda, G., Mannucci, P. V., & Burt, R. S. 2021. Networks, Creativity, and Time: Staying Creative through Brokerage and Network Rejuvenation. *Academy of Management Journal*, 64(4): 1164–1190.

Part 3: Networks and organizations II
Further topics in network analysis

Matt Bothner

Course Sessions – details to follow