How do Social Structures Emerge?

An Introduction to the Micro-Macro Problem

SOC 3490

Uris Hall 320
Th 2:00pm - 4:30pm

Instructor

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Office Hours:	Th, 10:00-12:00
	Link to make appointments
	(You can reserve up to 2 slots per day)

Course Description

Where do social structures come from? We know that social structures emerge from interaction between individuals. But not all interactions create durable structures. In this course, we will explore several micro-mechanisms through which the intended and unintended consequences of interdependent action create macro-level structures that, we as sociologists, care about. How can small initial difference blow-up into large macro-level inequality? Will interpersonal influence alleviate or aggravate inequality? Why do individual actors engage in collective action to create public goods, when everyone will enjoy the benefits of such goods regardless of one's participation? How large an in-group bias is needed to create segregated neighborhoods? These are examples of questions that we will explore in this seminar. Exploring these questions will lead us to topics in interpersonal influence, diffusion, collective action, and emergence of norms, hierarchies, and segregation patterns, among others.

Enrollment, Class Format, Requirements, and Grades

This is a 3 unit seminar. All participants are expected to *read the readings carefully in advance and actively participate in the class discussions*. The quality of the discussion is a public good, the value of which exponentially decreases with each additional free-rider. In the first week of the course, each of you will be assigned a set of papers that you will summarize for the class before we begin our discussion. You can choose any format for your presentation: you might use

slides, distribute handouts, use the blackboard, or just give an oral summary without additional materials. Just make sure to *keep your presentation within 15 minutes*.

For most weeks that you *do not* present, you are required to post a short memo that includes one or two questions/critiques/comments about the reading on Canvas. You should submit your memo *by noon the day before each class*. The memo should raise points that you think are worth discussing during our class. You might critique a paper, think about extensions, introduce an example where the same mechanism might be at work, etc. You may focus on any reading assigned for that week or offer comments on the week's topic in general. These memos do not have to be formal essays and they do not have to be long. Their main purpose is to share your thoughts and to facilitate discussions in class. *All students are required to read these questions before they come to class. In total, you are required to submit 4 to 6 memos, depending on the number of enrolled students, throughout the semester. So, I recommend that you plan ahead.*

Grades will be distributed as follows:

- Presentations: 40%
- Memos/Questions: 30%
- Participation in Discussions: 20%
- Attendance and Misc: 10%

Note to Students with Disabilities

If you have a disability-related need for reasonable academic adjustments in this course, please request your accommodation letter from the Office of Student Disability Services as early as possible, so we have adequate time to arrange your approved academic accommodations. If you need immediate accommodations, please arrange to meet with me within the first two class meetings.

Course Reading

There is no required textbook for this course. Yet, we will read through several chapters of the following books, which have been put on reserve in the library:

- Schelling, Thomas C. 2006. *Micromotives and Macrobehavior*. WW Norton & Company
- Centola, Damon. 2018. *How Behavior Spreads: The Science of Complex Contagions*, NJ: Princeton University Press
- Axelrod, Robert. 2006. *The Evolution of Cooperation, Revised Edition*, Basic books
- Olson, Mancur. 1971[1965]. *The Logic of Collective Action*, Harvard University Press.
- Peter Hedström and Peter Bearman (eds.), *The Oxford Handbook of Analytical Sociology*, Oxford: Oxford University Press.

All of the remaining readings will be articles that can be downloaded via the library or single chapters that will be uploaded to Canvas.

Items that have a $*$ mark are assigned readings that need no presentation/summary. Keep in

mind that you are still required to read them and that you might discuss them in your memo. Items that have a † mark are readings that are advanced or a bit technical. It is okay not to understand all of the technical details of these papers/excerpts. However, you should be able to understand the basic intuition behind the arguments.

Course Schedule (Subject to Revision)

Week 1: Introduction

No Reading.

Week 2: The Micro-Macro Problem

The goal of this week is to introduce you to the two basic questions that will accompany us throughout the semester:

1. *How do social structures come into being?*
2. *How should we explain the emergence of social structures?*

The first article is an introduction into the problem of sociological explanations of macro-structures. Colman explains how and why quantitative sociological research drifted away—both in its theoretical focus and empirical approach—from studying system-level outcomes and, instead, concentrated on individual behavior. The key insight of the paper is that sociology must deal with micro-to-macro transitions—i.e., how individual action and interaction generate macro outcomes—to offer plausible theories of society, small and large.

The second reading introduces you to fundamental premises of the "analytical" tradition in sociology. This tradition takes Coleman's call to focus on micro-to-macro transitions seriously and focuses on mechanism-based explanations of social phenomena.

Lastly, the third reading introduces you to some simple models of micro-macro transitions. This will give you a taste of the theoretical models that you'll encounter throughout the semester.

1. Coleman, James. 1986. "Social Theory, Social Research and a Theory of Action." *American Journal of Sociology.* 91(6):1309-35 (read only up to p. 1324)
2. Hedström, Peter and Peter Bearman. 2009. "What is Analytical Sociology All About? An Introductory Essay," pp. 3-24 in Peter Hedström and Peter Bearman (eds.), *The Oxford Handbook of Analytical Sociology*, Oxford: Oxford University Press. (read up to p. 16)
3. Schelling, Thomas. 2006[1978]. "Thermostats, Lemons, and Other Families of Models" in *Micromotives and Macrobehavior.* New York: Norton. (Read only pp. 83-110)

Week 3: Unanticipated Consequences of Purposive Social Action

This week, we will discuss "unanticipated consequences of purposive actions," a term coined by Robert Merton. This concept refers to the process through which the action of an actor leads to outcomes that were unanticipated at the beginning. While this appears to be a mundane and boring observation (it happens all the time in our everyday lives!), a bit of reflection shows that the process through which our action lead to unanticipated consequences helps us understand the social structures in which we are embedded. The first reading introduces the phenomenon through the original article in which Merton discusses the concept. The remaining articles show examples of the phenomenon: the excerpt from Shelling's book demonstrates how 'small' preferences to live near similar others can create 'extreme' segregation patterns at the macro-level; the article by Bearman et al. shows how individual choices of sexual partners give rise to unique macro-structures with implications for the spread of STDs.

1. Merton, Robert K. 1936. "The Unanticipated Consequences of Purposive Social Action," pp. 173-182 in Robert K. Merton, *On Social Structure and Science* (Piotr Sztompka ed.), IL: University of Chicago Press.
2. Schelling, Thomas. 2006[1978]. "Sorting and Mixing," *Micromotives and Macrobehavior*. New York: Norton. (Read only pp. 137-155. Thereafter, visit this website to see for yourself how these simulations play out for larger neighborhoods.)
3. Bearman, Peter S., James Moody, and Katherine Stovel. 2004. "Chains of Affection: The Structure of Adolescent Romantic and Sexual Networks," *American Journal of Sociology* 110(1): 44-91 (Skip pp. 63-73; restart from section "The Basis for a Spanning Tree Structure: Unarticulated Partnership Prohibitions")

Week 4: Emergence of Cooperation

This week will deal with cooperation between self-interested actors. We ask "why would two self-interested actors ever start to cooperate, when defection leads to higher pay offs?" This question is also closely related to the problem of collective action.

The first reading will introduce you to a very simple game: the "prisoner's dilemma" as well a longitudinal version where the dilemma is repeated between the same set of actors. The second chapter of Axelrod's book summarizes the results of a very interesting computational tournament, which gives insights into why cooperation might be the rational strategy in some situations.

The last chapter then shows how the mechanisms explicated in the first two chapters might explain the emergence of cooperation in a real world scenario, where cooperating while the other party defects can have deadly consequences.

1. Play the "evolution of trust" game (follow the link here)
2. Axelrod, Robert. *The Evolution of Cooperation*
   (a) Chapter 1

(b) Chapter 2
(c) Chapter 4

Week 5: The Problem of Collective Action

In this week, we discuss the problem of collective action. The fundamental statement of the problem is offered by Olson. Before Olson, many social scientists have believed that actors will engage in collective action if they share a shared goal from which everyone would benefit. Olson's conclusion, however, is the opposite: for rational actors, the optimal strategy is to "free ride" on other's effort instead of contributing to the collective good.

A related problem that has haunted rational choice theorists in political science is the very act of voting. The probability that your vote will influence the election outcome is negligible and, therefore, it is irrational to vote, you've probably voted on election day. And so did millions of other citizens. If voting is irrational, why do people turn out to vote? The second and third reading will discuss this issue.

The last reading is a chapter from, perhaps, the most influential treatment combining social networks, collective identities, and insurgent movements. You will read the introduction to this book, which lays out Gould's general theoretical model of how insurgencies arise.

1. Olson, Mancur. 1965. *The Logic of Collective Action.* Cambridge: Harvard University Press, pp. 1-16, 33-36, 43-52, 57-65.
2.* Feddersen, Timothy J. 2004. "Rational Choice Theory and the Paradox of Not Voting," *The Journal of Economic Perspectives* 18(1): 99-112 (read the introduction and "The Decision-Theoretic Apprach," pp. 99-102.)
3. Gerber, Alan S., Donald P. Green, and Christopher W. Larimer. 2008. "Social pressure and voter turnout: Evidence from a large-scale field experiment." *American political Science review* 102(1): 33-48. (you might skip the section "Calculus of Voting" and the results from page 39 onwards. But make sure to read the "Discussion")
4. Gould, Roger V. 1995. "Collective Identities and Social Conflict in Nineteenth-Century France" pp. 1-31 in *Insurgent Identities*, University of Chicago Press. (Skip the section "Critical Urban Sociology and the Question of Class Struggle")

Week 6: Emergence of Categories

In this week, we discuss how "clusters" or "groupiness" of the world emerges. A well known mechanism that results in clustered networks is "homophily": the phenomenon that similar people tend to associate with one another—in short, "like attracts like" or "birds of a feather flock together." In the first assigned reading, Feld and Grofman offers insights into how homophily comes to be. The main argument is that more than choosing each interaction partner in terms of similar traits, we select into "foci" of interaction that are already segregated by these characteristics.

The second reading shows one reason why the social world appears to be "groupy" by analyzing how our mind interprets interaction patterns of others in our social surrounding. Freeman and Webster shows convincingly that we are quite delicate when describing the network near our position, while lumping socially "distant" others into groups. The last reading introduces you to a simple micro-mechanism that leads to clustered and segregated networks at the macro-level——structural balance. *What happens if everyone would follow the rule: (1) a friend of a friend is a friend, (2) a friend of an enemy is an enemy, (3) an enemy of my friend is my enemy, (4) and an enemy of an enemy is my friend? It turns out that either everyone gets along or the group splits into two subgroups of friends that regard the other subgroup as enemies.*

1. Feld, Scott, and Bernard Grofman. 2009. "Homophily and the focused organization of ties." pp 521-543 in Peter Hedström and Peter Bearman (ed.) *The Oxford handbook of analytical sociology.* Oxford University Press. (Skip the subsection on "Representing the Triplexity of Social Structure")
2.† Freeman, L.C. and Webster, C.M., 1994. "Interpersonal proximity in social and cognitive space." *Social Cognition*, 12(3): 223-247. (It's fine to ignore the the technical details of this paper)
3. Easley, David and Jon Kleinberg. 2010. "Positive and Negative Relationships," in *Networks, Crowds, and Markets* Cambridge University Press (read Subsections 5.1 to 5.4; skip sections "Proving the Balance Theorem" and "Proving the Characterization," i.e., feel free to skip all the proofs.)

Week 7: Emergence of Status Hierarchies

In this week, we discuss how hierarchies emerge through interaction. The first excerpt discuss how status emerges in groups from a social exchange theory perspective. It offers insights from gift exchange, rational choice, and impression management, as well as a theory of integration via status differentiation in small groups.

The second paper is a classic on dominance hierarchies. Notice that a perfect dominance hierarchy implies a linear ordering of status: i.e., if A dominates B and B dominates C then A has to dominate C as well; and this has to hold for all relations between any three participants. In short, for a dominance hierarchy to form, each triad has to be "transitive." Chase explores the emergence of strict hierarchies by studying the pecking order among hens.

In the third article, Eric Leifer discusses the process through which coveted roles/statuses are claimed by strategic actors. The key insight comes from his concept of "local action." He shows that, sometimes, not acting at all or being ambiguous is the rational strategy to gain status.

The last article moves our topic from status of individuals to that of music. Using a clever experimental design, the authors demonstrate the unpredictability of successful

songs and how interpersonal influence exacerbates the difficulty in predicting status.

1. Blau, Peter M. 1964. "Social Integration," pp. 33-59 in *Exchange and Power in Social Life*, New York: Wiley.
2. Ivan D. Chase. 1980. "Social Processes and Hierarchy Formation in Small Groups: A Comparative Perspective." *American Sociological Review* 45: 905-924.
3.† Leifer, Eric M. 1988. "Interaction preludes to role setting: Exploratory local action." *American Sociological Review* 53(6): 865-878.
4 Salganik, M.J., Dodds, P.S. and Watts, D.J., 2006. "Experimental study of inequality and unpredictability in an artificial cultural market." *Science*, 311(5762), pp.854-856.

Week 8: Self-fulfilling Prophecies & The Matthew Effect

In this week, we will discuss the "self-fulfilling prophecy" and the "Matthew Effect," two terms that were both coined by Robert Merton. The self-fulfilling prophecy refers to the mechanism where the prophecy of actors shape their expectations and behavior in such a way to make the prophecy come true. The "Matthew Effect" refers to the process where advantage leads to more advantage and generates exponentially growing inequalities—i.e., a rich-gets-richer mechanism.

1.* Merton, Robert K. "Self-fulfilling Prophecies," *Antioch Review* 8: 193-210.
2. Salganik, M.J., and Watts, D.J. 2008. "Leading the herd astray: Experimental study of self-fulfilling prophecies in an artificial cultural market." *Social Psychology Quarterly*, 71:338-355.
3. Merton, Robert K. 1968. "The Matthew Effect in Science," *Science*, 159: 56-63.
4. van de Rijt, Arnout, Soong Moon Kang, Michael Restivo, and Akshay Patil. 2014. "Field experiments of success-breeds-success dynamics," *Proceedings of the National Academy of Science* 111(19): 6934–6939.

Week 9: Weak Ties and Small worlds

This week's readings are about small worlds and weak ties. The first article introduces the idea of weak ties and its role in integration and information diffusion.

The second paper introduces the small world problem—how is it possible that our local networks tend to be highly clustered, which should lead to segregation, while, simultaneously, we are able to reach socially very distant people in a few steps? The answer, as you might guess, are weak ties (or shortcuts) that span long distances in social space.

The last excerpt offers a bit more modern approach to discussing small world networks and discusses the implication of small world networks for diffusion and other dynamics at the macro-level. This will set the stage for next week.

1. Granovetter, Mark S. 1973. "The strength of weak ties." *American journal of sociology*, 78(6): 1360-1380.

2. Milgram, Stanley. 1967. "The small world problem." *Psychology today* 2(1): 60-67.
3. Centola, Damon. 2018. *How Behavior Spreads: The Science of Complex Contagions*, NJ: Princeton University Press, Chapter 2.

Week 10: Diffusion

In this week, we will discuss how "stuff" spreads through populations. A core concept that we will discuss is "complex diffusion"—diffusion of things that need more than simple contact, such as the spread of behavior or norms. We will read through three chapters of Damon Centola's book on complex diffusion and finish the week with an experimental study that shows how homophily—which has been theorized to lead to clustered networks and, therefore, suppress diffusion can in fact help behavior to spread.

1. Centola, Damon. 2018. *How Behavior Spreads: The Science of Complex Contagions*, NJ: Princeton University Press
   (a) Chapter 3
   (b) Chapter 4
2. Centola, Damon. 2011. "An experimental study of homophily in the adoption of health behavior." *Science* 334(6060): 1269-1272.

Week 11: Emergence of Social Norms & Conventions

This week, we'll read about three studies about the emergence and spread of social norms and conventions. Each of the reading considers different aspects that are important for norms to emerge: simple observation, policy changes and actors' interpretations thereof, and tipping points.

1. Keizer K, S. Lindenberg and L. Steg 2008. "The spreading of disorder." *Science* 322: 1681-1685.
2. Gneezy U, Rustichini A. 2000. "A fine is a price." *The Journal of Legal Studies* 29:1-17.
3. Centola, Damon, Joshua Becker, Devon Brackbill, Andrea Baronchelli. 2018. "Experimental evidence for tippingpoints in social convention," *Science* 360: 1116-1119

Week 12: Friendship Paradox

The friendship paradox argues that your friends will have, on average, more friends than yourself. It's called a paradox because many people think that they have more friends than others (I wonder if this indeed true). The first NYT article introduces the paradox and why it is a mathematical truism. The next two papers show how this paradox has been applied in empirical research with real-world consequences.

1. Strogatz, S. 2012. "Friends you can count on." New York Times, September 17
2. Christakis, N.A. and Fowler, J.H. 2010. "Social network sensors for early detection of contagious outbreaks." *PLoS ONE* 5(9):e12948. (skip from "Although the method described here does not require information about the full network..." on page e12948 until

before the "Discussion" section. Skip also the "Materials and Method" section.)

3. Kim, D. A., Hwong, A. R., Stafford, D., Hughes, D. A., O'Malley, A. J., Fowler, J. H., and Christakis, N. A. 2015. "Social network targeting to maximise population behaviour change: a cluster randomised controlled trial." *The Lancet*, 386(9989): 145-153. (Skip sections "statistical analysis")

Week 13: Democracy and Polarization

This week deals with topics in politics. The first reading introduces you to a long-standing puzzle that social scientists have dealt with since the invention of the sample survey—how are democratic systems able to survive while most citizens fall quite short of the ideal that most democratic theories assume.

The second paper shows that even significant in-group preferences in terms of partisanship might not necessarily lead to geographic polarization due to macro-constraints and because individuals take multiple characteristics into account when choosing their neighborhoods. The last paper demonstrates large biases in perceptions of partisans regarding the "other side," which creates exaggerated images of polarization, and demonstrates the consequences of such misperceptions.

1. Bernard R. Berelson, Paul F. Lazarsfeld, and William N. McPhee. 1986. "Demcratic Practice and Democrdatic Theory" in *Voting :A Study of Opinion Formation in a Presidential Campaign*, University of Chicago Press
2. Mummolo, Jonathan, and Clayton Nall. 2017. "Why partisans do not sort: The constraints on political segregation," *The Journal of Politics* 79(1): 45-59.
3.* Ahler, Douglas J., and Gaurav Sood. 2018. "The parties in our heads: Misperceptions about party composition and their consequences." *The Journal of Politics* 80 (3): 964-981. (read 964-971 and then the conclusion)

Week 14: Review